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**SCIENCE AND TECHNOLOGY FOR DEVELOPMENT:
ORGANIZED LABOR'S CONCERNS**

PROCEEDINGS

Of a Workshop conducted by the American Association for the Advancement of Science for the U.S. Department of State, as a contribution to U.S. preparations for the United Nations Conference on Science and Technology for Development.

May 7-8, 1979

Joseph Mintzes, Rapporteur

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

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INTRODUCTION

These are the proceedings of a workshop on "Science and Technology for Development: Organized Labor's Concerns," held 7-8 May 1979 at the Brookings Institution in Washington, D.C. The meetings were sponsored by the American Association for the Advancement of Science at the request of the U.S. Department of State. They provided a forum for discussion and analysis by approximately 35 participants from labor, industry, government, and universities. The workshop focused on issues related to U.S. technology and international economic policies toward developing countries which were of special concern to organized labor.

The report has been submitted to the State Department for use by the U.S. delegation to the United Nations Conference on Science and Technology for Development (UNCSTD), which will be held in August 1979. The views contained in this report are for the consideration of the delegation as it prepares for and participates in the Conference.

In addition to the summary report of the proceedings of the conference, this volume includes an agenda for the workshop and a list of participants. Also appended to the report are the papers and notes prepared for presentations corresponding to items II through VI on the agenda.

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Summary

Organized labor's concerns over U.S. technology and international economic policies with respect to developing countries were aired at a May 7-8, 1979, workshop sponsored by the AAAS in connection with preparatory work for the upcoming U.N. Conference on Science and Technology for Development (UNCSTD). Authorities from labor, industry, the academic community and government responded to an invitation from Ambassador Jean Wilkowski for a free exchange of views which could be taken into account in considering U.S. positions for UNCSTD which will convene in August in Vienna.

Fear of job losses due to growing U.S. imports from LDCs that might be further stimulated by possible U.S. government policies toward the developing countries at UNCSTD was a pervasive theme of labor representatives throughout the workshop. In particular, they singled out U.S.-based multinational corporations (MNCs) as the major source of technology transfers which have enhanced export capabilities of LDCs. Rising output from U.S. subsidiaries in the developing countries was seen by trade union experts as a major source of U.S. imports as well as a replacement for U.S. exports to certain foreign markets. The trade trends, in turn, have been accompanied by declining employment in important U.S. manufacturing industries.

These labor concerns were not assuaged by statistical evidence which showed that the domestic impact of imports from developing countries was

of minor proportions when compared with other factors affecting employment in U.S. manufacturing industries. Estimates presented to the workshop indicated that changes in productivity and demand had a much greater negative impact on domestic employment levels than imports in practically all the U.S. import-competing industries in which LDCs have acquired export capabilities. Observations that job-creation effects of growing U.S. exports to developing countries often more than offset the negative potential employment effects were of little avail in meeting the basic complaints of trade unionists. The latter pointed to limited labor mobility characteristics of many of the workers in U.S. industries affected by imports from LDCs that did not qualify them for job openings in the exporting industries. However, there was wide agreement that significant progress toward a full employment economy with declines in persistent high unemployment levels would help meet labor's concerns. Some participants also favored a greater government role in industrial policy and economic planning to meet problems of growing import competition.

U.S. trade adjustment assistance (TAA), which includes more liberal provisions than normal unemployment compensation for qualified workers who are displaced by import competition, was considered inadequate as far as compensation is concerned. TAA's time-consuming procedures and its ineffectiveness with respect to adjustment (i.e. finding new jobs) were also criticized. One labor spokesman, who appeared to reflect a widely held view among the trade unionists, favored trade measures such as orderly marketing agreements (OMAs) over TAA to meet labor displacement

problems in import-competing industries. Another labor discussant advocated a more liberal TAA compensation scheme on the order of arrangements made for redundant railway workers and more recently for workers displaced by the extension of public parkland in California's redwood forests. The proposal was intended to compensate workers for their lost "property rights" to jobs which were preempted for the common good on the order of the principle of eminent domain. This labor participant also recommended an internationally pooled trade adjustment assistance scheme to be financed as far as possible by export levies. Some discussants favored special adjustment assistance for workers displaced because of operations of MNCs. Others advocated an active manpower policy in the U.S. that would adequately help all structurally unemployed and thus obviate the need for special adjustment assistance such as TAA to certain categories of jobless workers.

Domestic job concerns of the trade unionists tended to overshadow considerations of science and technology issues which were reviewed at the workshop. One labor spokesman's observation that developing countries should shift development emphasis away from industrialization toward food self-sufficiency in agriculture was viewed by some development specialists as being unduly colored by this pervasive concern over the domestic employment impact of imports from the LDCs. There was widely shared agreement that balanced attention to both industry and agriculture was needed in most developing countries. It was noted that activities in both broad sectors were frequently interrelated.

Differing patterns among developing countries were stressed by

development economists in countering what they saw as questionable generalizations. It was noted that the newly industrializing countries (NICs), the source of the bulk of U.S. imports from LDCs, represent only a relatively small number of Far Eastern countries (Taiwan, Korea, Singapore, and Hong Kong) and the Latin American countries of Brazil and Mexico. Most developing countries are at much lower levels of industrialization -- those in Africa and some in Asia have hardly begun the process of industrialization. For these countries, the choice between industry and agriculture was called a "non-issue." Some comments which appeared to exaggerate the role of U.S. and other developed countries in the LDCs drew the observation from a development authority that internal resources meet 90 percent of development requirements of the developing countries.

An inconclusive discussion centered on the idea of international fair labor standards which have been advocated for a number of years by American trade unionists. The labor proponents of this approach favor an international institutional framework such as General Agreement on Tariffs and Trade (GATT) to oversee a procedure that would tie the opening of trade opportunities to compliance with international labor standards in export industries. These standards would relate to labor income and working conditions such as occupational safety, health and environmental protection, trade union rights, collective bargaining, child labor, etc. Among other than the labor discussants, some questions were raised on whether this proposal was protectionist in intent and on its feasibility in view of implied intervention in sovereign states. A

labor discussant refuted these concerns, pointing to the history of the proposal which was launched in the Havana Charter for a U.N. International Trade Organization and was subsequently endorsed by the Roth Report and the Williams Commission that dealt with U.S. trade and international economic policy. Some development economists claimed that the income effects on the proposal would tend to favor the "haves" in the urban industrial labor force of most LDCs as contrasted with the "have nots" in the largely rural populations and among the unemployed and underemployed. Effects of high wages in Venezuelan oil and iron ore industries were cited to dispute this view. One labor specialist suggested that, in view of the lack of progress on this complicated proposal after 30 years of effort, it should be abandoned.

An industry representative claimed that an open flow of ideas meets U.S. self-interest. It would not be possible for a free society to cut off this flow at the border. He saw a role for collective bargaining with respect to provisions on technological displacement of workers. However, he differed with some trade union discussants on the feasibility of international collective bargaining with MNCs in light of differing national situations and practices.

In describing the plight of much of the developing world, a development economist cited pervasive unemployment and underemployment that represent as much as 40 percent of the labor force. Joblessness was characterized as the worst indignity that people could suffer. Having work, therefore, could be considered as a key human right. This theme was echoed by a trade union spokesman who also applied it to unemployed

workers in the U.S.

In summarizing issues that bear on the North-South dialogue on science and technology, a development economist suggested ways of reconciling short-term labor concerns with longer-term development requirements. Costs of alleviating the social impact in the U.S. may mean some slowing of the rate of technology transfers to the LDCs. U.S. production-sharing arrangements with developing countries might reduce domestic job losses by enabling certain industries to remain viable. Economic cooperation of developing countries should be encouraged so that more trade would be carried on among them.

Chairman Guyford Stever concluded the meeting by urging American labor to join in the important task of educating the developing countries. He reminded the workshop of the important distinctions made between NICs and the bulk of the developing countries where labor's potential contribution could be significant.

Workshop Highlights

(Topics identified by correspondingly numbered agenda items.)

Status of UNCSTD Preparations

According to Ambassador Jean Wilkowski, Preparatory Committee meetings for the Conference on Science and Technology for Development have up to now been at the technician level. With just a few months until the Vienna Conference in August, it is hoped that policy officials will become involved. The U.S. is interested in having the UNCSTD focus on development. So far, more emphasis has been placed on access to foreign technology than on building indigenous capabilities. There is need for more attention to social implications of technological development. In response to questions, labor representatives were assured that the development of U.S. positions in the period ahead could still take into account their views.

I. Technology in the Growing Role of the LDCs in the World Economy.

Professor Gustav Ranis of Yale University's Economic Growth Center observed that trade and technology were hand-maidens to economic growth. He briefly reviewed historical background that confirmed this pattern which increasingly developing countries are also pursuing. Like returning the genie to the bottle, this process cannot be stopped. Stemming the flow of technology to developing countries would be self-defeating. The U.S. would disadvantage its technology intensive industries, if it protected low technology labor intensive industries. Our

exports to the LDCs depend on U.S. acceptance of their products. We need an open international economy to stimulate innovation in the U.S.

Ranis noted that, since 1973, the newly industrializing countries (NICs) have been a buffer in the general decline of economic activity. They remained good customers for exports from the developed countries. He claimed that the U.S. government role with respect to activities of multinational corporations (MNCs) in the developing countries is limited. Benefits from open trade with the LDCs are slow and diffused widely in the economy while restrictive policies have an immediate impact. Safeguard action and trade adjustment assistance were advocated as a better alternative.

Martin Lees of the U.S. Development Program explained that international resource flows to the developing countries are relatively small compared with the latter's indigenous development efforts. He saw the need for more precision in distinguishing among differing situations in various developing countries. There is more than one way to develop; LDCs do not have "to plug into the North." Lees saw the need for leadership in view of world demographic levels which by the year 2020 will result in only 9 percent of the world population in developed nations and 4 to 5 billion people in the less-developed countries.

A question was raised regarding the benefit of technology transfers to the less-developed by Mark Anderson of the International Affairs Department of the AFL-CIO. He claimed that the situation for the lower 20 percent in income distribution in Brazil has worsened despite such transfers. Moves by less-developed countries to attract MNCs by use of

subsidies was criticized. Anderson objected to such practices as the relocation of an asbestos factory to the Mexican border in order to avoid U.S. occupational safety and health regulations.

Nat Weinberg, formerly of the United Automobile Workers (UAW), urged "international fair labor standards" to meet situations such as the Mexican asbestos factory.

Referring to the question of protection versus free trade as a non-issue, Elizabeth Jager of the AFL-CIO Research Department urged a more realistic view of trade promotion and protection policies of other countries. She pointed to Mexico as a closed economy.

In replying to comments, Ranis indicated the poorest economic performers among developed countries are those with closed economies. The NICs have relatively open economic systems. Foreign aid policies are oriented toward improving income distribution in recipient countries. Proposals for international fair labor standards and possible paternalistic intervention in the LDCs were questioned. According to Ranis, the worst offense to human dignity is unemployment, which has plagued most of the developing countries.

II. U.S. Domestic Employment Impact of Growing Imports from and Trade with the LDCs.

Professor Anne Krueger of the University of Minnesota cautioned the workshop that there is no simple, straightforward way of clearly identifying the employment impact of LDC imports. She cited a number of interrelated dynamic factors which influence changing employment

patterns. The question to determine is who bears the employment impact of imports from LDCs before adjustment to new jobs can be made. It was pointed out that those industries in which the NICs have been particularly successful in their exports are precisely the same industries which, in the U.S. and other developed countries, are most adversely affected by the domestic growth process.

A tabular presentation (1929 to 1977) showed that long-term changes in the U.S. economy were moving employment and output away from low technology and labor intensive industries long before imports became a problem. Krueger claimed that these long-term structural changes in the U.S. economy will only be marginally affected by trade. Her data showed that the bulk of world trade is still among industrialized countries although rates of growth in LDC exports are rising more rapidly than those of the developed countries.

Changes in demand in the marketplace and improvements in productivity were much more important in influencing U.S. employment trends than were imports (from all sources) between 1970 and 1976, according to another tabular presentation. (This referred to 19 2-digit SIC industrial classifications for U.S. manufacturing industries.) Only in the U.S. apparel, leather and electrical and electronics industries did trade have a significant influence on employment declines during this period. Krueger concluded that trade adjustment problems for workers are mostly regional in nature; that a general approach to meet employment problems would be better than an industry approach and that trade restraints could only slow down declining employment in

manufacturing in the short run.

Stanley Ruttenberg, a consultant with considerable labor background, observed that the problem of worker displacement due to imports was more significant than implied by comparative advantage. He questioned implicit assumptions that job losers would be absorbed into export industries.

(Skill and geographic mobility factors did not assure a good match.)

Ruttenberg found that MNCs were reducing U.S. export opportunities through their overseas operations. He claimed that the U.S. steel industry would have been stronger without import competition. Ruttenberg argued that greater employment effects of imports than those provided by Krueger's tables would show up in more detailed industry examinations of trends (at 4-digit rather than 2-digit SIC industrial classifications). Labor-intensive industries in the LDCs are becoming more capital intensive according to Ruttenberg.

In replying, Krueger pointed to the need for adequate levels of economic growth to help overcome structural unemployment problems. She noted that the competitive position of an industry such as apparel was affected by U.S. trade restrictions in textiles which added to the cost of American-made clothing.

Ruttenberg favored a micro (industry) rather than a macro (broad economic) approach in view of the characteristics of workers affected by imports. Trade adjustment assistance in the U.S. was criticized as being inadequate; this should be supplemented by trade action such as orderly marketing agreements (OMAs). LDCs have legitimate goals and we cannot dictate to them regarding their labor standards, but might

influence the situation indirectly. He did not see international fair labor standards as a practical answer.

Elizabeth Jager claimed that the U.S. is taking a greater relative share of LDC imports than other OECD countries. She noted that the NICs are not only exporting the traditional products such as textiles, but also telecommunications, drydocks, and aircraft.

Weinberg pointed out that the International Monetary Fund (IMF) already sets conditions for help to LDCs (food riots in Egypt of a couple of years ago were attributed to such IMF action). He saw no reason why conditions bearing on positive social objectives should not be tried.

Martin Lees (UNDP) emphasized the importance of differences among the LDCs. He deplored the zero sum type of debate on trade. There is need to stimulate world demand which is mutually beneficial to the LDCs and developed countries. He would be optimistic about UNCSTD prospects, if the U.S. would provide leadership instead of merely enduring it.

III. Role of Multinational Corporations in Technological Development of LDCs.

IV. Domestic Impact of Foreign Direct Investment in the LDCs.

(NOTE: Presentations of both topics were made consecutively with combined discussions which followed.)

Victor Radcliffe (of Resources for the Future) reviewed the rapid growth patterns of U.S.-based MNCs since World War II, mostly in Europe,

and a number of accompanying controversial issues which, to some degree, also relate to their activities in LDCs. Recipient countries of U.S. foreign direct investment have welcomed the resulting technology transfers, broadening tax base, employment creation and balance-of-payments improvements -- but have become concerned about the growing dominance of the U.S.-based MNCs in some of the most important industrial sectors. He cautioned against broad generalizations when dealing with the diversity of background and experience among the LDCs with their widely differing levels of income and degrees of development.

In the absence of a better indicator of technology flows, Radcliffe drew on balance-of-payments data on receipts from royalties and patent licensing and related types of fees. According to these data, the U.S. is by far the principal exporter of technology (predominantly via MNCs), although other developed countries are becoming important suppliers. The LDCs account for less than 10 percent of the total flows reflected by these statistics with the bulk going to the NICs among the developing countries. U.S. remains the principal source of foreign direct investment in the LDCs, representing over half of the total, followed by Germany and Japan. Radcliffe noted that there was no clear agreement on the development impact of foreign direct investment contrasted with general recognition of the importance of MNCs in exports from these countries. He traced some history of tensions between U.S.-based MNCs and host developed and developing countries and concluded that experience has muted these conflicts. Requirements for technology have obliged LDCs to rely on MNCs. Tensions remain, but appear to be

more manageable.

With respect to domestic employment effects of U.S. foreign direct investment in both LDCs and developed countries, Duane Kujawa of the Florida International University reviewed a wide range of available estimates which reflect varying assumptions and orientations.^{1/} Regardless of whether aggregate estimates of job effects are positive or not, there is some adjustment problem for displaced workers in the U.S. Kujawa quoted studies which show that resultant domestic shifts in income due to overseas activities of MNCs were more significant between classes of workers (from less to more skilled) than between labor and capital. He pointed to U.S. organized labor's consistent criticism of foreign direct investment in nearly all its varied aspects. This opposition was explained by labor's perceptions of its class interests and its inability to influence key decisions made by MNCs that affect workers.

In opening the discussions of these topics, Nat Weinberg, formerly with the UAW, said he would not oppose technology transfers, provided labor in the supplying and receiving country was not hurt and benefits went to the people and not the elites of the LDCs. He questioned foreign direct investment as the best vehicle for technology transfers to the LDCs; other arrangements which do not involve equity relationships were favored, since this would reduce oligopolistic trends. Weinberg claimed that, if MNCs refuse such transfers, governments could take over patent

^{1/} Available studies do not provide separate estimates for effects of U.S. foreign direct investment in LDCs.

rights under eminent domain and make them available to LDCs. In citing the weakening of labor's leverage with MNCs, which obtain substantial profits from their international operations, he advocated joint collective bargaining between affected national unions and the particular MNCs. He favored international fair labor standards.

Weinberg viewed international regulation of the MNCs as inevitable. However, he was critical of U.S. government policies that watered down OECD voluntary codes on foreign direct investment. The work of the U.N. Commission on Transnational Enterprises was also criticized because of the lack of concern about labor by the Group of 77 (caucus of LDCs), whose governments mostly represent the elites of these countries. Alluding to his work on the U.N. Group of Eminent Persons that examined social and other issues involved in foreign direct investment, Weinberg supported an interim proposal for regulating MNCs until a formal code is adopted. Home countries (i.e. the U.S. and other developed countries) would set conditions for locally based MNCs with respect to practices of their subsidiaries in LDCs. The developing countries, in turn, would have the choice of accepting these conditions or forgoing the investment.

Weinberg saw a rocky road ahead for LDC exports to the developed countries, unless full employment is achieved and adequate adjustments assistance is provided. When the MNCs are responsible for worker displacement, he would have them and not the government finance adjustment help. Weinberg suggested pooled international funding of trade adjustment assistance through export taxes. (U.S. constitutional restrictions

on export taxes would be made up by equivalent import levies abroad on U.S. exported products.) His standard on adequate assistance to displaced workers would be modelled on arrangements made for workers affected by the expansion of the Redwood National Park in California and displaced railway workers in the Amtrak and Conrail systems. Weinberg favored an industrial policy and indicative planning in the U.S. that could enable the U.S. economy to absorb LDC exports without high social costs.

Thomas R. Atkinson of General Motor's International Economics Research Office limited his comments to the automobile industry. He pointed out that LDCs imported 4 million vehicles; about 2 million vehicles include an important content of locally produced parts. About 40 developing countries have production facilities, but are high cost auto producers because they lack an economic base for large scale production. Import-substitution policies, including legal requirements on local content in foreign-owned subsidiaries, account for some of the cost disadvantages in LDCs. For U.S. automobile firms that wish to participate in LDC markets, pressures to meet local content and export requirements force investment and technology transfers. He claimed that these moves are usually not self-initiated by the U.S. companies, but are part of conditions imposed by the developing countries. Atkinson noted that the U.S. auto industry has an \$8 billion trade deficit with other developed countries and a \$2 billion surplus with LDCs.

Kujawa expressed doubt about the likelihood of changing U.S. labor

law to cover economic issues relating to foreign direct investment.

According to Radcliffe, economic growth of the LDCs is generally accepted as inevitable and that technology from the developed countries, largely in the hands of the MNCs, will be keyed to it. He stressed the importance of the growth of markets in developing countries and that we should be better equipped to respond to opportunities.

Jager claimed that Kujawa's presentation failed to point out the full costs of technology transfers on the U.S. economy -- not only of displacements, but also of creating alternative activities. She also mentioned the erosion of U.S. technological advantages by such transfers.

Jack Baranson (consultant, formerly with the World Bank) observed that foreign direct investment in the LDCs is changing. Up front (or more advanced) technology is involved in the more competitive industries. Co-production agreements of the Eastern European type are becoming more important. At the same time, the domestic activities of the U.S.-based companies are moving into the easier service industries.

According to Lees, the developing countries need a billion new jobs by the end of the century. This imposes enormous requirements on both the LDCs and the developed countries. He cited a positive approach by Germany's textile industry which successfully shifted to new products when imports from LDCs displaced older lines.

V. Labor Force Implications of Trade and Investment Patterns of LDCs.

Michael Aho of the Labor Department's Bureau of International Labor Affairs (ILAB) based his presentation of this topic on ILAB

analyses which examined occupational and other characteristics of workers affected by foreign trade. Information on the identifiable effects of U.S. foreign direct investment was not obtainable. His focus was on micro (industry) effects in a comparison of the 20 main employment losers among U.S. import-competing industries with the 20 main employment gainers among the export industries with respect to trade with the LDCs. Aho observed that the adversely affected industries employed relatively more minority workers and relatively older workers than the positively affected industries. The number of workers with incomes below the poverty line was three times as great in industries among the "losers" as contrasted with those among the trade "gainers." Higher average education and skills were found among the latter group of industries. Little difference was found between the domestic employment impact of trade with LDCs and trade with the developed countries. Aho concluded that micro-economic policy such as trade adjustment assistance is necessary to offset the adverse effects of LDC trade, even though its impact on aggregate employment may not appear to be serious.

Everett Kassalow, the senior labor specialist of the Congressional Research Service, pointed out that special adjustment assistance is also needed for workers affected by foreign direct investment and technology transfers. According to Kassalow, the U.S. needs a foreign labor policy, not just international economic policies. Examples of problems of excessive dualism in the economies of Iran and Mexico were cited. Some control over activities of MNCs in the LDCs was recommended by Kassalow.

On the last point, Radcliffe pointed to LDC aspirations of having ready access to technology. He also claimed that the new modes of technology transfers, mentioned earlier by Baranson, are still relatively unimportant and that LDCs also need capital which can be provided by MNCs. Radcliffe also urged that worker displacement due to all factors, not just trade, should be handled by the government in the context of broader socio-economic policy concerns.

In response to comments, Aho noted that MNC sales in the U.S. from their foreign subsidiaries represented about 30 percent of total U.S. imports. It is difficult to provide a regional analysis of employment effects; and ILAB is attempting to identify the degree to which imports from LDCs are displacing those from Japan and other developed countries.

High level technology is involved in some transfers to LDCs, according to Jager, who mentioned an example of oil-drilling technology to Malaysia. She also questioned concern only over basic steel imports which ignores important embodied steel imports in bridges, drydocks, etc.

Ranis questioned the static analysis employed in examining domestic employment effects of trade. He claimed that trade is helpful in stimulating innovation. A defensive posture by labor will lead to sharing a small instead of a growing pie. In reference to the international labor standards idea, Ranis saw a conflict with desirable income distribution objectives in the LDCs since urban industrial workers in these countries are already relatively high income recipients.

Replying to the latter observation on international labor standards, Weinberg claimed that the existing distortion in income distribution was toward their elites. Citing the example of wages of iron ore and oil workers in Venezuela that are geared to productivity in their particular industries, others also benefited as spending by the higher paid workers filtered through the economy. Alternatively, the difference between local wage levels and the appropriate productivity level could be captured by a social fund that would be used by government to benefit low income workers. Weinberg also pointed to foreign exchange savings for LDCs by this approach and observed that higher paid workers tend to be a bastion for stability in developing countries.

On the issue of possible intervention in the LDCs, Weinberg claimed that the U.S. does intervene, citing the example of Iran in the early 1950s. He suggested that it could be done on the "right side" against unrepresentative, authoritarian regimes.

VI. Adjustment Experience of Trade-Displaced Workers.

Louis Jacobson, an economist with the Center for Naval Analyses, explained that for the most part other countries do not have special trade adjustment assistance (TAA) programs such as the U.S. program. The latter's TAA provides higher levels of assistance beyond normal unemployment compensation and for relatively longer periods to workers certified for such help. In answering the question whether trade impacted workers are adequately compensated, he reviewed criteria for determining lost earnings due to imports. He drew on labor turnover levels, seniority and earning rates in various industries as the basis

for determining fair compensation to workers for such losses. Jacobson concluded that workers in the textiles and shoe industries, where turnover rates are high and earnings are low, probably receive adequate compensation; while those in steel and autos do not receive adequate compensation -- based on relatively low voluntary quit rates (turnover), strong union seniority and relatively high incomes. Imports from the LDCs are mostly in the first group of industries.

Helen Kramer, an economist with the Machinists' Union, expressed sharp disagreement with Jacobson's approach. It neglected such costs to import-displaced workers as their possible loss of medical insurance coverage, pension rights, housing equity and social disorganization (family impact, etc.). Situations differed between workers facing permanent loss of jobs compared with those experiencing temporary lay-offs. Community or regional labor factors have a bearing on availability of alternative jobs. She advocated a broad manpower program on the order of European practice that is concerned with all secular unemployment not just that affected by imports (as in the case of TAA).

The United Steelworkers' (USW) legislative representative, Jack Sheehan, found much that was positive in Jacobson's presentation which accepted the idea of compensation to workers for trade-induced losses. In reviewing the history of TAA, he complained that Congress would not accept a good adjustment program. He also favored the broader European approach to all secular unemployment. TAA has been helpful in the cyclical temporary lay-offs which are common in the steel industry. Sheehan pointed to some non-cash aspects of TAA which have been useful

in recent experience in the Youngstown, Ohio, area -- such as job search activities, etc. He recommended that TAA should take into account fringe benefits and should provide more rapid servicing which could be based on an automatic certification of workers on an industry-wide basis.

In criticizing the inadequacy of benefits of TAA, Weinberg noted that while this compensation was higher than U.S. unemployment compensation, it was still substantially lower than the relative level of normal unemployment compensation in most European countries.

In replying, Jacobson agreed that the TAA program should be more generous. Perhaps the European system is not appropriate in view of relatively higher industry and job mobility rates of U.S. workers. Disincentive effects on job-seeking should be avoided in any adjustment assistance program.

Ranis advocated a variable system of adjustment assistance that would be oriented to local problems. International discussions about adjustment assistance could be helpful.

Various comments were made on the applicability of European experience and the related industrial policy approach toward declining industries that may entail a higher degree of economic planning than U.S. practice could accept.

VII. American Labor and the North-South Dialogue on Science and Technology.

Gus Tyler of the International Ladies Garment Workers Union favored changing the North-South dialogue away from industrialization toward achieving food self-sufficiency in the developing countries. Per capita

income growth figures for the LDCs are misleading according to Tyler who alluded to inequitable income distribution. Food dependency of developing countries was attributed to neglect of agriculture and to a policy of artificially maintaining low food prices to help keep wages down. Science and technology, under his proposed approach, would be oriented to the agricultural sector. Tyler claimed that this was analagous to the historical development of North America during the colonial period. He foresaw the development of LDC internal markets under this approach and the gradual expansion of exports.

Joseph Grunwald of Brookings Institution warned against generalizing about LDCs. While he agreed that some undue emphasis on industrialization occurred in Latin American countries where import-substitution policies were adopted, the majority of developing countries have neglected all sectors -- not just agriculture. Most LDCs have grown faster than the developed countries in comparable periods of time. While income distribution has been poor in many LDCs, he noted that wages have gone up to such an extent in the important exporting countries of Taiwan, Korea and Singapore that some labor intensive processes have been shifted to lower wage LDCs. The poorest LDCs of Africa and parts of Asia have not even started the process of industrialization. Grunwald saw the need in the North-South dialogue to reconcile short-term labor concerns with longer-term development requirements within a dynamic framework. In light of the longer-term benefits, costs of alleviating the social impact should be met. This may mean some slowing of the rate of technology transfers.

On the domestic front, Grunwald advocated improvements in adjustment assistance and saw some need for a greater governmental role in industrial policy. He recommended production-sharing arrangements to minimize domestic job losses by enabling certain industries to survive. On the international side, possible international labor standards should not be used to restrict trade with LDCs. Renewed attention should be given to agriculture and economic cooperation among LDCs should be encouraged, particularly so more trade could be carried on among them.

In responding, Tyler claimed that foreign direct investment was disrupting the normal development process in the LDCs. Harking back to David Ricardo, he argued that comparative advantage in trade assumed international immobility of all factors of production. This is not true of capital and technology. Tyler warned against the U.S. finding itself in the same plight as the U.K. -- a rentier economy which lived off foreign investments, with manufacturing being neglected.

Lees observed that problems are more difficult and profound than Tyler suggests. Over 120 less-developed countries have pitiful levels of industrialization -- factory versus agriculture is a non-issue. He noted that some industrialization is directly related to the agricultural sector -- for example, fertilizer and farm implement production and agribusiness activities. The "take off" theme of Rostow is more philosophy than practice. He reminded the workshop that 90 percent of development comes from internal resources of the LDCs compared with 10 percent from international flows. The scale of problems for developing countries is enormous.

According to Ranis, Korea and Taiwan, two of the NICs, are LDCs which did not neglect agriculture. He hoped that the advice being offered to LDCs by the unions is not one of "keeping them off our backs."

Kujawa suggested that political modernization of the LDCs is another factor which should be examined.

Other Topics

In a luncheon discussion, Frank R. Doyle from General Electric's Employee Relations Office contrasted the acceptance of new technology by American workers with suspicion and resistance encountered in Europe and elsewhere. He attributed the U.S. response to traditional positive approaches in American society to technological change as well as to reliance on pragmatic resolution of issues in this sphere in U.S. collective bargaining. Recognition by American labor leadership that technology is a producer of jobs and higher wages was cited as a factor. This has played a key role in the U.S. competitive situation. Doyle expressed concern that labor views were moving toward constraints of the European type. A free flow of ideas meets U.S. self-interest according to Doyle who said it was not possible for an open society to cut off this flow at the border. He saw economic expansion as an essential lubricant of the American system that should overcome the possible negative effects of rising energy costs, environmental protection and other problems that could otherwise reduce productivity and technological growth. There is a lesson for others from labor's contribution

to this American consensus of recognizing the relationship of technological advances to economic growth and social improvement.

In answer to questions, Doyle favored resort to collective bargaining on technological displacement of workers, referring to such provisions as separation pay, retirement, work-sharing, etc. He went along with TAA for trade-displaced workers, but preferred attacking unemployment problems generally by stimulating the economy through macro policies. He differed with some labor discussants who saw a role for international collective bargaining. Differing situations and practices along national lines were cited as practical limiting factors.

Jacob Clayman of the Industrial Union Department of the AFL-CIO reviewed labor's deep concern about persistent unemployment in the U.S. over the past decade at another luncheon presentation. He pointed to the high individual and social cost of unemployment; each one percent of unemployment represented a cost of \$9.5 billion. Technology transfers were cited as an important factor in the worsening of the U.S. trade position. Clayman called for at least a slowing up of the outflow of U.S. technology, pointing to the MNCs as its principal exporters (responsible for about 90 percent of the flow). Clayman cited examples of movement of production to LDCs to escape U.S. health and safety standards. Labor favors foreign aid, but does not want to carry the burden of job losses. He made a plea for U.S. concentration on making the domestic economy viable. The developing countries should be helped on basic infrastructure with technologies relating to food, health, and education and not on ambitious projects such as steel mills.

Concluding Remarks

Chairman Guyford Stever closed the workshop by reflecting on the value of the discussions which were directed at the legitimate concerns of labor. From his long experience with science and development matters he saw a potentially significant role for American industry and labor in helping in the important task of educating the LDCs. Significant distinctions between the NICs and the rest of the developing countries, that came up in the discussions, should be kept in mind. He emphasized the need to look at longer-term considerations and expressed optimism with respect to opportunities at the coming U.N. Conference.

Si Bourgin of the State Department reminded the workshop that the task of writing government position papers is just beginning and will adequately represent labor's concerns.

APPENDIX A

Agenda

AAAS-Sponsored Workshop

on

Science and Technology for Development: Organized Labor's Concerns(Preparatory to United Nations Conference on Science and
Technology for Development - in Vienna, August, 1979)To Be Held at the Brookings Institution
Room 106, 1775 Massachusetts Ave., N.W.
Washington, D.C.

Monday, May 7 - Tuesday, May 8, 1979

Monday, May 7, 1979Chairman: William D. Carey, Executive Officer
American Association for the
Advancement of Science

12 noon

Luncheon Speaker: Frank P. Doyle
Vice President for Corporate
Employee Relations
General Electric Company

2:00 p.m.

Opening Statement: Ambassador Jean Wilkowski
U.S. Coordinator, UNCSTD

2:15 p.m.

I. Technology in the Growing Role of the LDCs in the
World EconomyPresenter: Gustav Ranis
Yale University Economic
Growth CenterPrincipal
Discussants: Martin Lees
United Nations Development
Programme
Michael Boggs, International
Dept., AFL-CIO

3:15 p.m.

Coffee Break

- 3:30 p.m. II. U.S. Domestic Employment Impact of Growing Imports from and Trade with the LDCs
- Presenter: Anne Krueger
Economics Department
University of Minnesota
- Principal Discussant: Stanley Ruttenberg, President
Ruttenberg and Associates
- 6:30 p.m. Cocktails and Dinner
- Speaker: Dr. Marcelo Alonso
Director, Scientific Affairs
Organization of American
States
- Tuesday, May 8, 1979 Chairman: Guyford H. Stever
Former Presidential Science
Adviser and Director,
National Science Foundation
- 9:00 a.m. III. Role of Multinational Corporations in Technological Development of LDCs
- Presenter: Victor Radcliffe
Resources for the Future
- 9:15 a.m. IV. Domestic Impact of Foreign Direct Investment in the LDCs
- Presenter: Duane Kujawa
School of Business
Florida International University
- 9:30 a.m. Principal Discussants:
- (both agenda items III and IV)
- Nat Weinberg, Consultant
(formerly United Automobile
Workers)
- Thomas R. Atkinson, Director
International Economics
Research
General Motors Corporation

- 10:45 a.m. Coffee Break
- 11:00 a.m. V. Labor Force Implications of Trade and Investment Patterns of LDCs
- Presenter: Michael Aho
Bureau of International Labor Affairs
U.S. Department of Labor
- Principal Discussant: Everett Kassalow
Congressional Research Service
Library of Congress
- 12 noon Luncheon Speaker: Jacob Clayman, President-Secretary-Treasurer
Industrial Union Department
AFL-CIO
- 2:00 p.m. VI. Adjustment Experience of Trade-Displaced Workers
- Presenter: Louis Jacobson
Center for Naval Analysis
- Principal Discussants: Jack Sheehan
United Steelworkers of America
Helen Kramer
International Association
of Machinists
- 3:00 p.m. Coffee Break
- 3:15 p.m. VII. American Labor and the North-South Dialogue on Science and Technology
- Presenter: Gus Tyler, Assistant President
International Ladies Garment
Workers Union
- Principal Discussant: Joseph Grunwald
Brookings Institution
- 4:30 p.m. Summation by Chairman

APPENDIX B

List of Participants

AAAS-Sponsored Workshop

on

Science and Technology for Development: Organized Labor's Concerns

(Preparatory to United Nations Conference on Science and
Technology for Development - in Vienna, August, 1979)

Brookings Institution
Washington, D.C.
May 7-8, 1979

Michael Aho
Bureau of International
Labor Affairs
U.S. Department of Labor

Marcelo Alonso
Director, Scientific
Affairs Office
Organization of American
States

Mark Anderson
International Affairs
Department
AFL-CIO

Thomas R. Atkinson
International Economics
Research
General Motors Corporation

Jack Baranson
Developing World Industry
and Technology, Inc.

Simon Bourgin
U.S. Coordination for UNCSTD
U.S. Department of State

Jacob Clayman
Industrial Union Department
AFL-CIO

Charles Dennison
Council on Science and Technology
for Development

Frank P. Doyle
Office of Corporate Employee
Relations
General Electric Company

Joseph Grunwald
Brookings Institution

Fred Haynes
Cooperative Technology
National Bureau of Standards

Klaus Heiss
ECON, Incorporated

Frank Huddle
Congressional Research Service
Library of Congress

Louis Jacobson
Center for Naval Analyses

Elizabeth Jager
Research Department
AFL-CIO

Everett Kassalow
Congressional Research Service
Library of Congress

Richard Kauzlerich
Office of Investment Affairs
Economic and Business Branch
U.S. Department of State

Helen Kramer
International Department
International Association
of Machinists and Aerospace
Workers

Anne O. Krueger
Economics Department
University of Minnesota

Duane Kujawa
School of Business
Florida International
University

Martin Lees
U.N. Development Programme

Flori Liser
Overseas Development Council

Matty Mathieson
Overseas Development Council

Hugh Miller
Office of the Foreign Secretary
National Academy of Engineering

Joseph Mintzes
Aspen Institute for Humanistic
Studies

Leo Packer
Council on Science and
Technology for Development

Harry Pollak
Office of International
Labor Affairs
U.S. Department of State

Victor Rabinowitch
Office of Science and Technology
for Development
National Academy of Sciences

Victor Radcliffe
Resources for the Future

Gustav Ranis
Economic Growth Center
Yale University

Robert J. Raudebaugh
U.S. National Commission
World Energy Conference

Stanley Ruttenberg
Ruttenberg and Associates

Glenn E. Schweitzer
Council on Science and Technology
for Development

Jack Sheehan
United Steelworkers of America

Helena Stalson
Council on Foreign Relations

Guyford H. Stever
Former Presidential Science
Adviser, and Director,
National Science Foundation

Gus Tyler
International Ladies Garment
Workers Union

A. G. Unklesbay
American Geological Institute

Nat Weinberg
Consultant, Formerly United
Auto Workers

Bill Wells
Subcommittee on Science, Research,
and Technology
Committee on Science and Technology
U.S. House of Representatives

Jean Wilkowski
U.S. Coordinator for UNCSTD
U.S. Department of State

Staff, AAAS

Gail Breslow
Office of Public Sector Programs

Dave Burns
International Office

William D. Carey
Executive Officer

Charles A. Mosher
Office of Public Sector Programs

J. Thomas Ratchford
Associate Executive Officer
Office of Public Sector Programs

Rapporteur

Joseph Mintzes
Aspen Institute for Humanistic Studies

APPENDIX C

U.S. Domestic Employment Impact of Growing Imports
from and Trade with the LDCs

U.S. DOMESTIC EMPLOYMENT IMPACT OF GROWING IMPORTS
FROM AND TRADE WITH THE LDCs

Anne O. Krueger

Professor of Economics
University of Minnesota

Notes prepared for the
AAAS-Sponsored Workshop
on
Science and Technology for Development:
Organized Labor's Concerns

7-8 May 1979

These notes and tables have been drawn from the following papers:

- 1) Krueger, Anne O., "The Impact of Foreign Trade on Employment in United States Industry," Current Issues in Commercial Policy and Diplomacy, John Black and Brian Hindley, Editors. London: McMillan Press, for the Trade Policy Research Centre. In press.
- 2) Krueger, Anne O., "LDC Manufacturing Production and Implications for OECD Comparative Advantage," presented at the Conference on Prospects and Policy for Industrial Structure Change in the U.S. and other OECD Countries; The Hudson Institute. To be published in Western Economies in Transition, in press.

I. Understanding how imports affect the U.S. economy is not possible unless two prior issues are cleared up first: determinants of the level of employment, and the effect of economic growth upon industrial structure.

A. Determinants of aggregate employment

1. This is mostly a macroeconomic phenomenon.
2. World trade balances and fewer imports would mean fewer exports.
3. There are significant indirect (impact) employment effects of attempts to restrict imports.

B. Growth and Industrial Structure

1. Economic growth, by its very nature, entails significant changes in economic structure.
 - a. Economic growth is accompanied by a shift in the composition of economic activity, first from agriculture to industry, and then from industry to services.
 - b. At a later stage in the growth process, productivity increases in industry are more rapid than those in services, and there is thus a tendency for a shift in employment and the share of output from industry toward the service sectors.
2. These shifts encompass a variety of phenomena which dislocate individuals and regions: there is generally a shift away from small-scale, final consumer goods

manufacturing production toward greater emphasis on large-scale consumer durables and other manufacturing processes.

3. Some of the causes of these shifts during the course of economic growth are obvious: as real incomes rise, individuals are enabled to spend larger fractions of their income on goods other than basic food, clothing, and shelter.

4. But there are some more fundamental processes at work in the course of economic growth. In particular, the process of increasing output per man (which is, by definition, increasing per capita income) is accomplished by providing more resources for individuals to work with and enabling them to make better use of those resources.

a. These processes generally entail increasing investment in man and in machines and other instruments of production.

The skill level of the labor force systematically increases with economic growth, as does the amount of capital stock available for the individual worker to enhance his productivity.

b. The economic growth of the OECD countries has been accomplished by (as well as caused by, at least in a simplistic sense) a drastic shift in the educational and occupational composition of the labor force: unskilled, illiterate workers are really a thing

of the past. As the labor force's training and skills become more productive, the real wage increases, since men are becoming scarcer relative to machines and to other resources.

5. Industries and sectors relying heavily upon manual labor and unskilled workers have been disadvantaged during the process of economic growth.
6. The phenomenon is well illustrated with historical data from the United States. See Table 1.

C. International Trade and Structural Change

1. The main benefits of trade to developed countries are generally fairly independent of the issues discussed above.
 - a. Most trade in manufactures is among countries with similar levels of per capita income: two-thirds of all U.S. exports go to other developed countries, and more than one-half of all imports originate from other developed countries.
 - b. Except for raw material availability, evaluation of future growth prospects for developed countries is undertaken almost independently of considerations pertaining to international trade.
2. The success the super-exporters have met in selling their exported manufactured goods to the developed countries has raised questions as to the impact those countries'

exports have on the structure of industry within the developed countries.

3. The LDCs have been successful in exporting a range of products, finished and partially processed, which use relatively more unskilled labor and fewer design and engineering skills than do the products they import.
4. Those are precisely the same industries which in the developed countries are most likely to be adversely affected by the domestic growth process.
 - a. On a priori grounds, one would expect that LDC competition would intensify difficulties that the affected industries would in any event encounter.
 - b. To the extent that LDC competition keeps the price of labor-intensive commodities lower than they would otherwise be, consumption in developed countries is greater than would be possible in the absence of imports.
5. Because structural adjustment in the developed countries is in any event necessary for economic growth, it can be cogently argued that competition from LDC imports would in fact speed up the growth process.
6. There is no simple, straightforward way of estimating the impact of LDC imports. The presence of LDC imports does not imply that domestic consumption and prices (not to

mention real income) would have been the same in the absence of those imports.

7. We are thus left with the conclusion that successful development of manufactured exports from LDCs may intensify the difficulties that the labor-intensive industries in developed countries will encounter, but will not cause them, and may accelerate the growth rates of the developed countries. It also follows that those industries would, in any event, be facing problems of structural adjustment. A major question, therefore, is the relative importance of the domestic adjustments confronting the labor-intensive industries contrasted with the pressures put upon them by imports. That question cannot be answered by theory alone, but requires examination of the empirical evidence, a topic to which we now turn.

II. Growth of LDC Manufactured Exports

A. The bulk of world trade is between industrialized countries.

See Table 2.

1. The same is true for manufactures. LDC exports of manufactures grew more slowly than world exports of manufactures until the late 1960s. Since that time, LDCs have increased their share continuously, with manufactured exports rising from \$6 billion in 1967 to \$32 billion in 1974 and \$56 billion in 1977.

2. For the period 1960 to 1975 as a whole, world exports of manufactures at constant prices are estimated to have grown at an average annual rate of 8.9 percent. For industrialized countries, the corresponding rate was 8.8 percent while, for LDCs, it was 12.3 percent.
3. Because that growth was from a small base, the share of LDCs in world exports was still only 7 percent in 1974, compared to about 4 percent in the mid-1960s.
4. Of the total increase in manufactured imports by industrialized countries, only 9 percent originated in LDCs.
5. Even if the manufactured exports of LDCs should continue to grow at the rapid 12.3 percent rate of the 1960-75 period while those of the industrialized countries were to continue to expand at 8.8 percent, the LDC share in world exports of manufactures would be only 9 percent in 1985 and would reach 20 percent only in 2013.
6. Without North-South trade, the aggregate size of the manufacturing sector in OECD countries would certainly be smaller than it in fact is.

B. The Affected Sectors

1. The issue of structural adjustment resulting from manufactured exports from LDCs arises in individual industries within manufacturing, not in the overall volume of LDC exports.

2. Table 3 shows that, only in three groupings -- Leather, Footwear and Travel Goods; Wood and Cork Manufactures; and Clothing -- did the LDC share of imports to OECD countries exceed 25 percent.
3. The LDC share of OECD markets was less than 10 percent for chemicals, paper, metal manufactures, rubber products, nonelectric and electric machinery, and transport equipment.
4. A 10 percent share of imports is probably the lowest at which structural changes can conceivably have been effected. By that criterion, Leather and Footwear, Wood and Cork Manufactures, Electrical Machinery and Clothing are the sectors in which there can have been significant effects from LDC imports. Those sectors are, by and large, usually labor-intensive.
5. The question arises as to the degree to which it was the process of domestic economic growth which led to structural difficulties, and the extent to which imports affected output and employment for the OECD countries.

III. Quantitative Importance of Productivity Growth, Demand Growth, and Imports

Focus is usually upon employment changes and their origins. The rate of growth of output is a function of the rate of growth of domestic demand and the rate of price change

within individual industries.

1. Focus here is upon the orders of magnitude of the total effects of all imports and all merchandise trade for the United States.
 2. One can decompose the observed increase in domestic consumption into the component satisfied by domestic output increases and that met by imports. The growth of output is then a function of those two variables plus the growth of exports. The rate of growth of employment is then equal to the rate of growth of output less the rate of growth of labor productivity.
 - a. One can then partition, in a definitional accounting sense, the changes in employment in particular industries into components -- exports, imports, domestic demand, and labor productivity.
 - b. These estimates of the "contribution" of each component are not estimates of causality.
- B. Table 4 provides data on U.S. output, employment, exports, and imports for two-digit SIC manufacturing industries in 1970 and 1976.
1. There were only five two-digit industries for which imports exceeded 10 percent of domestic output in 1976.
 2. Even in those sectors, exports were often a significant offset to imports.

C. Table 5 provides the decomposition of employment changes into its various components.

1. The influence of imports, even in this extreme form where exports are not taken into account, was generally fairly small relative to either labor productivity growth or domestic demand growth.
2. Variations in rates of demand growth and labor productivity growth exerted a far larger influence on rates of growth of output and employment than did the behavior of imports.
3. When the same calculations are repeated, using the net trade balance rather than simply imports to estimate the effect on sectoral employment, the impact of the trade variable appears even smaller.
4. If these numbers are used to estimate absolute numbers of jobs, the numbers are once again relatively small. Only in Apparel (6.1 percent), Leather (10.5 percent), and Electrical and Electronic Products (5.8 percent) is the number greater than 5 percent of 1976 employment, and in most other sectors the percentage implied is less than 1 percent.
5. When it is recalled that some of the domestic consumption increase would not have occurred had prices been higher and that there were exports, too, the conclusion once again is reinforced: import

competition may have intensified adjustment difficulties and the pace of structural change, but those difficulties would have been present even in the absence of competition.

6. This conclusion would be even further strengthened if the calculations were performed separately for imports from LDCs.

Table 1
 Changing Composition of Output and Employment in the U.S.
 (percentages)

<u>Composition Expenditures</u>	<u>1929</u>	<u>1940</u>	<u>1950</u>	<u>1960</u>	<u>1970</u>	<u>1977</u>
Durable goods	11.9	10.9	16.0	13.3	13.7	14.8
Nondurables	48.8	52.1	51.1	46.5	42.7	39.7
(Food)	(25.2)	(28.4)	(28.1)	(24.9)	(22.0)	(20.4)
(Clothing and footwear)	(12.2)	(10.6)	(10.2)	(8.2)	(7.5)	(6.8)
Services	39.2	36.9	32.8	40.2	43.5	45.5
(Housing)	(15.1)	(13.7)	(11.3)	(14.8)	(15.2)	(15.2)
(Transportation)	(3.4)	(2.9)	(3.2)	(3.2)	(3.4)	(3.4)
Employment						
Agricultural	21.9	20.1	12.2	8.3	4.4	3.6
Nonagricultural	78.1	79.9	87.8	91.7	95.6	96.4
Wage and salary workers						
manufacturing	34.1	33.9	33.7	31.0	27.3	23.8
(Durable goods)	n.a.	(16.6)	(17.9)	(17.4)	(15.8)	(13.9)
(Nondurable goods)	n.a.	(17.4)	(15.8)	(13.5)	(11.5)	(9.8)
Mining	3.4	2.9	2.0	1.3	.9	1.0
Construction	4.8	4.0	5.2	5.3	5.0	4.7
Transportation and utilities	12.5	9.4	8.9	7.4	6.4	5.6
Wholesale and retail trade	19.5	20.8	20.7	21.0	21.2	22.2
Finance, insurance and real estate	4.8	4.6	4.2	4.9	5.2	5.5
Services	11.0	11.4	11.9	13.7	16.4	18.7
Government	9.8	13.0	13.3	15.4	17.7	18.4

Source: Council of Economic Advisors, 1978 Economic Report of the President, pp. 272, 288 and 296.

Table 2
World Exports, 1955 to 1977

	<u>1955</u>	<u>1960</u>	<u>1967</u>	<u>1974</u>	<u>1977</u>
<u>Billions of dollars</u>					
Industrial countries	61.6	88.1	153.7	556.1	743.5
Oil exporting countries	5.9	7.3	12.1	117.8	145.6
Other developing countries	17.2	19.2	26.8	98.1	134.6
Total	<u>84.</u>	<u>114.6</u>	<u>192.7</u>	<u>772.0</u>	<u>1 023.7</u>
<u>Percent</u>					
Industrial countries	72.6	76.9	79.7	72.0	72.6
Oil exporting countries	6.9	6.4	6.3	15.3	14.2
Other developing countries	20.3	16.8	13.9	12.7	13.1

Source: International Monetary Fund, International Financial Statistics, May 1978.

Note: "Industrial countries" includes the IMF category of that name plus "Other Europe" and Australia, New Zealand and South Africa.

Table 3
 OECD Imports, by Commodity Groups and Origin, 1963 and 1977

(percentages)

<u>Commodity Group and SITC Number</u>	<u>Seven Exporting LDCs</u>	<u>Other non-OECD LDCs</u>	<u>Industrial OECD Countries</u>	<u>Total OECD</u>	<u>Share of OECD Imports</u>
<u>Chemicals (5)</u>					
1963	1.2	3.5	90.8	91.7	12.1
1977	1.4	4.1	91.2	92.3	12.9
<u>Leather, Footwear and Travel Goods (61, 83 and 85)</u>					
1963	4.9	7.6	81.4	83.7	2.2
1977	23.4	7.8	56.6	64.5	2.4
<u>Rubber Manufactures (62)</u>					
1963	.3	.7	97.6	97.8	1.1
1977	3.4	.7	90.0	94.2	1.3
<u>Wood and Cork Manufactures (63)</u>					
1963	6.1	8.7	74.0	80.2	1.4
1977	19.1	7.4	65.1	69.8	1.2
<u>Paper (64)</u>					
1963	.2	.3	98.4	98.5	4.5
1977	1.2	.1	96.5	97.5	2.9
<u>Textiles (65)</u>					
1963	3.3	11.4	80.5	82.9	8.9
1977	7.9	8.6	74.8	79.0	5.3
<u>Nonmetallic Mineral Manufactures (66)</u>					
1963	1.9	3.3	84.0	84.8	3.9
1977	3.4	7.0	73.4	74.9	3.3
<u>Iron and Steel (67)</u>					
1963	.8	.8	91.7	92.2	9.3
1977	2.4	1.7	87.9	90.3	6.4

Table 3, continued

<u>Commodity Group and SITC Number</u>	<u>Seven Exporting LDCs</u>	<u>Other non-OECD LDCs</u>	<u>Industrial OECD Countries</u>	<u>Total OECD</u>	<u>Share of OECD Imports</u>
<u>Metal Manufactures (69)</u>					
1963	1.0	.4	97.3	97.8	3.7
1977	5.4	.9	89.9	91.9	3.4
<u>Nonelectrical Machinery (71)</u>					
1963	.1	.3	98.5	98.7	20.1
1977	1.8	.4	95.3	96.3	16.6
<u>Electrical Machinery (72)</u>					
1963	.6	.5	98.0	98.2	8.3
1977	11.0	2.0	84.8	85.8	10.3
<u>Transport Equipment (73)</u>					
1963	.5	.8	97.5	98.0	12.2
1977	1.1	.4	95.8	97.5	18.2
<u>Miscellaneous Finished Manufactures (81, 82, 86, 89)</u>					
1963	3.5	.8	92.8	93.5	9.0
1977	9.9	1.4	84.3	85.6	10.2
<u>Clothing (84)</u>					
1963	16.1	3.0	77.3	78.5	3.3
1977	34.0	8.2	46.8	51.9	4.9

Source: OECD.

Table 4

Production, Trade, and Employment, U.S. SIC 2-Digit Industries 1970 and 1976

SIC Code	Industry Name	<u>Output</u>	<u>Exports</u>	<u>Imports</u>	<u>Employment</u>	<u>Output</u>	<u>Exports</u>	<u>Imports</u>	<u>Employment</u>
		(millions of 1970 dollars)			(thousands)	(millions of 1970 dollars)			(thousands)
20	Food products	103,631	2,520	3,562	1,574	111,892	3,826	4,019	1,536
21	Tobacco products	5,528	191	17	67	5,965	364	36	65
22	Textile mill products	24,030	461	1,059	907	35,887	1,433	1,388	876
23	Apparel	25,025	251	1,287	1,319	28,328	642	3,228	1,271
24	Lumber products	14,931	687	989	530	13,774	953	1,076	629
25	Furniture & fixtures	9,754	48	217	436	10,465	152	388	426
26	Paper & paper products	25,458	1,106	1,548	632	28,753	1,508	1,985	615
28	Chemicals	51,873	3,997	1,256	849	57,094	5,389	2,075	851
29	Petroleum & coal products	26,935	575	1,560	141	30,830	478	2,639	145
30	Rubber & plastic products	17,044	341	661	544	21,106	901	1,222	627
31	Leather products	5,218	64	702	274	4,597	145	1,114	247
32	Stone, clay & glass products	18,535	445	542	583	18,612	638	673	599
33	Primary metals	53,067	2,323	3,915	1,169	52,633	1,748	4,683	1,106

Table 4, continued

SIC Code	Industry Name	<u>Output</u>	<u>Exports</u>	<u>Imports</u>	<u>Employment</u>	<u>Output</u>	<u>Exports</u>	<u>Imports</u>	<u>Employment</u>
		(millions of 1970 dollars)			(thousands)	(millions of 1970 dollars)			(thousands)
34	Fabricated metal products	42,026	1,361	799	1,279	47,844	2,522	1,364	1,471
35	Nonelectrical machinery	55,560	7,880	1,999	1,744	64,502	12,855	3,620	1,960
36	Electrical & electronic equipment	49,168	2,971	2,716	1,659	53,142	5,876	6,056	1,579
37	Transportation equipment	89,920	6,486	6,362	1,621	97,799	12,497	11,027	1,668
38	Instruments	12,276	1,294	659	382	18,905	3,008	1,692	518
39	Miscellaneous manufacturing	10,122	485	1,196	411	11,469	993	1,810	410
	Total Manufacturing	644,083	33,486	31,046	16,119	681,083	55,927	50,098	16,599

Source: Department of Commerce Bureau of the U.S. Census, U.S. Commodity Exports and Imports as Related to Output 1970 and 1969 and 1976 and 1975. Annual Survey of Manufactures, 1970 and 1976. Output and trade data for 1976 were deflated by the Department of Commerce 2-digit SIC deflators contained in Wholesale Prices and Price Indices Data for January 1977. Data for January 1971, and December 1976 figures were used.

Table 5
 Contribution of Demand, Imports, and Labor Productivity
 to Rate of Employment Change 1970 to 1976
 (continuous percentage rates)

SIC Code	Industry Name	Demand Growth	Labor Productivity	Imports	Employment
20	Food products	1.30	-1.68	-.02	-.41
21	Tobacco products	1.32	-1.78	-.05	-.51
22	Textile mill products	6.70	-7.26	.09	-.58
23	Apparel	3.03	-2.68	-.96	-.62
24	Lumber products	-1.16	4.20	-.18	2.85
25	Furniture & fixtures	1.41	-1.56	-.24	-.39
26	Paper & paper products	2.16	-2.48	-.13	-.45
28	Chemicals	1.80	-1.56	-.20	.04
29	Petroleum & coal products	2.68	-1.78	-.43	.47
30	Rubber & plastic products	3.87	-1.20	-.30	2.37
31	Leather products	-.60	.38	-1.51	-1.73
32	Stone, clay & glass products	.18	.38	-.11	.45
33	Primary metals	.01	-.79	-.23	-.92
34	Fabricated metal products	2.32	.17	-.16	2.33
35	Nonelectric machinery	2.81	-.54	-.32	1.95
36	Electrical & electronic equipment	2.20	-2.12	-.90	-.82
37	Transportation equipment	2.04	-.92	-.64	.48
38	Instruments	7.75	-2.12	-.56	5.08
39	Miscellaneous manufacturing	2.66	-2.12	-.58	-.04

Source: Same as Table 4.

APPENDIX D

**Technology, Multinational Corporations and Development:
The Case of the Developing Countries**

TECHNOLOGY, MULTINATIONAL CORPORATIONS AND DEVELOPMENT:
THE CASE OF THE DEVELOPING COUNTRIES

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The conclusions and interpretations expressed in this paper are those of the author and should not be attributed to the institution.

I. Introduction

In essence, the span of this workshop covers the following questions:

- Where are the developing countries headed in the world economy?
- How are their trends affecting jobs in the United States?
- What part are international technology flows and multinational corporations playing in these changes in developing countries?
- What are the impacts on industry and jobs in the United States of the corresponding foreign direct investments in developing countries?
- Compared with other factors that are changing both industry and job structures in the United States, how important are effects from the growing export capabilities of developing countries?
- What is the most effective form of adjustment assistance for U.S. industries and workers affected by imports from developing countries?
- What is the likely position of U.S. labor on the relevant issues to be discussed at the forthcoming U.N. Conference on Science and Technology for Development?

The present paper, in focusing on the role of multinational corporations as sources of technologies that have expanded developing country shares in world economic activity and trade, seeks to address the third question. Proper treatment of the latter clearly also requires consideration of the

six other questions, because they are so closely interrelated. Nevertheless, this short paper can take formal account only of the most relevant aspects of some of them, and must make certain assumptions in advance as to the likely coverage of the other parts of the workshop. The discussions will reveal the reasonableness or otherwise of these assumptions.

Within these constraints, the paper has several aims. First to identify the principal issues that have accompanied the expansion of the activities of multinational corporations in both industrialized and developing countries. Secondly, to sketch what appears to be known as to the scale and nature of participation by multinational corporations in the flow of technologies to developing countries, and the effects on development and changing patterns of world trade. Thirdly, to consider the ways in which developing countries are seeking to ensure that appropriate benefits accrue to them to further their development priorities, and what this implies for multinational corporation activities in developing countries.

What is Technology?

Perhaps surprisingly, there is an absence of a generally accepted definition for either "technology" or "multinational corporations." Some of the confusion and dissonance apparent in discussions of their roles in development arise from this simple fact. Consequently, it is useful at this point to identify what these terms will be used to signify here. In the simplest sense, technology is defined as the purposeful combination of science, engineering and art to provide a useful product or service. The elementary agricultural tools, such as the hoe, and simple animal-powered irrigation systems, are obvious historical examples. They still dominate agricultural production in many developing countries today. At the other

end of the spectrum of definitions, technology is usually viewed by its industrial practitioners as an integrated, complex "know-how." It is this know-how that can apply scientific knowledge to generate and produce a particular product -- such as an automobile or a computer -- or provide a particular service -- such as long distance television communication via earth satellites.

Multinational corporations in particular see technology in this latter way; as "the knowledge necessary for productive functioning of an enterprise." Thus, the term is used to embrace not only the physical factors of machines and equipment, but also the know-how of skilled and experienced people in research, product and process development, manufacturing, marketing, distribution, servicing, finance, industrial relations, and management.* The transfer of know-how among these elements is an essential and continuing activity which usually occurs more effectively within the enterprise than from it. This broader view of technology, with its associated higher economic efficiencies and returns, is one of the factors behind the preference of multinational corporations for the direct investment "package" or "bundle" as the mechanism for transferring technology into other countries. The package includes the full range of elements necessary for the formation of a wholly or majority-owned subsidiary that can draw readily on the knowledge of the larger enterprise. Nevertheless, in some of the later discussions here, it will be necessary to also use a more restricted view of technology in examining its movement in trade, because of the current conventions of

*This broad view is also taken in some parts of the United Nations system. For example, "technology embraces the skills and resources needed to create and sustain an efficient, competitive business" (in Secretariat report to Commission on Transnational Corporations, 1978).

international trade statistics.

What is a Multinational Corporation?

Various criteria and definitions of multinational corporations were surveyed in the studies of such enterprises begun by the United Nations in the early 1970's. Consensus was reached on a definition as "enterprises which own or control production or service facilities outside the country in which they are based. Such enterprises are not always incorporated or private; they can also be co-operatives or state-owned entities." However, there were subsequent objections from Latin American countries, where the term multinational corporations was already in use to denote a company owned by several nationalities, whether or not it had affiliates in other countries. Consequently, the term "transnational corporations" has come into use in the United Nations on the grounds that it more clearly indicates the key feature of operations across national boundaries. Also, to some, it identifies the idea of subsidiaries' domination and control by the parent firm, which is a strong issue with developing countries.

There is still disagreement on the question of whether or not the term should be restricted to private enterprises. Several socialist countries maintain that it should be. However, outside the United Nations, "multinational" and "transnational" tend to be used synonymously, and the Organization for Economic Cooperation and Development considers that "multinational enterprises . . . usually comprise companies or other entities whose ownership is private, state or mixed." Given the increasing importance of the latter two types of multinationals in the advanced market economies and the onset of some based in developing countries, the broader coverage seems the more pragmatic, and will be adopted here.

II. Relevant Major Issues

The period of more than two decades that followed the initial recovery of the world economy from World War II and extended up to the first part of the 1970's was one of rates of overall economic development that were unprecedented. World average annual rates of growth of 5.5 percent in industrial production and more than 7 percent in trade were substantially higher and more stable than those over any other similar period of time in history. Furthermore, the strong growth occurred not only in the industrialized market and planned economies, but also in the developing countries.

Over this period, the activities of multinational corporations expanded rapidly and became generally recognized as a significant contributing factor to the world economic growth. Their effectiveness rested critically on the generation and application of technology as a central element of their business activities in home and host countries.

Developing Country Experiences

In the early stages of the period, direct investments by the corporations in developing countries, in particular, were encouraged by the industrialized country governments as an important contribution to development. At that time, bilateral and multinational assistance was helping to create a social infrastructure on which further development might be based, but adequate capital flows for the latter appeared unlikely to come from the private banks. The multinationals offered the additional advantage of combining the necessary capital investment with their know-how in relevant

technologies, marketing, and management.

Despite the major advances over this period in economic growth, life-expectancy, health, and education in the developing countries, the gap between their average levels of well-being and that in the industrialized countries widened. Over the same period, the majority of developing countries became politically independent. By the second half of the 1960's, these countries had begun to develop more coordinated political pressure for change -- not only for increased aid and other forms of transfer of resources, but also for a "new international economic order" that would reverse the widening of the economic gap. Increased self-reliance for the developing countries and more controllable interdependence with the industrialized market and planned economies were seen as essential elements of such a new order.

The successes of the oil exporting group of developing countries (OPEC) in 1973-74 initiated a new period of improved cohesion and bargaining strength for the developing countries as a whole. Actual progress in bringing about change in areas other than petroleum has been slow. Nevertheless, the political cohesion of the developing countries has persisted through the mechanism of the "Group of 77" in the succession of international meetings that began with the North-South confrontations of the Sixth Special Session of the United Nations General Assembly in 1974.

These meetings have centered around the four principal issues of North-South economic relations -- the availability of the financial resources necessary for the development process through direct aid, the multilateral financing agencies and private investment; trade in commodities; trade in

manufactures; and trade in technology. Complicating the developing countries' approach has been the recognition, following the postwar experience, of the complexity of the development process. In particular, the evidence is clear that flows of capital or financing are of limited value unless accompanied by steps to ensure fundamental economic and social changes. Yet the ability of a politically independent country to take these steps that would enhance its self-reliance can be strongly constrained by events outside its control in the larger world economy. Its economic sovereignty is limited.

Multinational corporations' dominance over their affiliates -- for example in location, production and trade -- in pursuit of short-term or global business strategies has long been viewed by host developing countries, because of the importance of such affiliates in their domestic economies and in trade, to be such an externally controlled factor that can result in conflicts with specific development objectives. In addition, there has been increasing concern for the influence of foreign companies on the character and style of long-term, national development strategies. In particular, there are contentions of sustaining inappropriate income distribution, and of deleterious effects on growth of jobs, balance of payments and consumer tastes. Even where near-term benefits from multinational corporation activities are readily evident, there is unease about building in a long-term dependence on technology, services and capital goods from abroad.

Finally, growth in the conviction that technology has a central importance in the development process has raised questions as to whether multinationals offer the best route for selection, adaptation and absorption of foreign technology, and especially for the development of an improved

domestic technological capability. That questioning has raised such varied issues as the importing by affiliates of advanced country technologies that do not meet the local development needs (or, conversely, failure to keep the imported technology up to date); affiliates' failure to establish research and development facilities that would contribute to country capability for technology adoption and innovation; access to technology; the price of patent licenses; and the existence of clauses in technology agreements that limit exports or impose other restrictions.

It is true that there are areas of major interest to developing country economies -- such as in agriculture and health care -- where there are obvious alternatives to the multinational corporations, since much of the relevant technology was developed through government institutions or support, and is not commercialized. However, in the field of industry -- across the full range of extractive, manufacturing and service sectors -- the dominant portion of modern technology has been developed by private businesses. Consequently, whether or not these businesses are multinational corporations, the decision is theirs in making technology available outside their own enterprise. If that decision is positive, then the issue becomes one of whether a balance of compromise can be reached among the objectives and concerns of the host country partner and government and those of private firms as to terms of agreement on price and other conditions.

Industrialized Country Experiences

The preceding discussion has dealt with the issues that have arisen with respect to the interplay between developing countries and multinational corporations. Comparison with the experience of the analogous interplay between industrialized countries and such corporations shows that many of

these issues are by no means unique to developing country situations. Accordingly, although some of the options for resolving the issues undoubtedly differ in the case of the industrialized countries, it is instructive to briefly review that experience.

The rapid growth of multinational corporation activity in the world economy in the immediate postwar period consisted principally of the expansion into the Western European countries by multinationals based in the United States. Although there were also efforts to expand into Japan, the Japanese government early established strict controls to inhibit economic penetration in the form of foreign investment. No such controls were applied by the European countries. By the mid-1960's, the magnitude and focus of the activities of these multinationals in a number of the European countries, in particular the United Kingdom, France, and West Germany, had raised serious concerns in those countries. These concerns focused on the issues of a growing technological dependence on the United States, of a danger of American domination of significant individual national firms, and of the prospect of losing country control over the course of national economic development.

The first issue arose from the much smaller research and development expenditures in the European countries, and the increase in the emigration of their scientists and technologists to the United States -- the "brain drain." These features pointed to the likelihood of a steady weakening of their national technological capabilities relative to that of the United States and to a widening "technology gap."

The issue of industrial dominance by foreign-owned companies grew in

importance with the increasing rate of American acquisitions or attempts at acquisitions during the early 1960's. A prominent example of the latter was General Electric's attempt to buy the French computer firm, Machines Bull. In addition, the American multinationals were seen as focusing their activities in the most rapidly growing and important industrial sectors. In the light of balance of payment deficits with the United States and the persistent overvaluation of the U.S. dollar, the European countries saw this trend as continuing, with the likelihood of long-term economic and political effects from possible preemption of the development of independent national corporations in important industrial sectors of future growth. The third issue, of potential loss of control over macroeconomic policy, was exemplified by the corporate decisions of some U.S. multinationals to close plants at several French subsidiaries, and by the fact that IBM-France was refused permission by the United States government to sell computers to the French government. Analogous examples of such external decisions with considerable impact on their economies occurred in the other countries also.

The fact that many obvious benefits for the European countries were associated with their expanding role as host countries for the American based multinationals was not sufficient to reduce the increasing seriousness with which these issues came to be regarded by the mid-1960's. The benefits were similar to many of those now seen in the new and expanding arena of developing countries -- for example, broadening the tax base, strengthening the balance of payments, creating employment, raising local wages, and providing the local economy with improved or new technologies. It is apparent that the fundamental issues in this new arena are

also similar.

The next section sets some of the above issues in the context of the principal characteristics of multinational corporations, in particular those involved in their role in international technology flows. However, before moving on to that section, as one of these characteristics is diversity, it is useful to identify here the analogous diversity that exists among the developing countries themselves. It is the existence of such diversities among countries and among companies that severely limits the numbers of meaningful generalizations that can be made about desirable and undesirable aspects of relations between developing countries and multinational corporations as sources of technology for development.

The Diversity of Developing Countries

In the earlier part of this section, the basic problem of disparity in average per capita income between the industrialized and developing countries was cited. These averages in fact mask wide ranges in population and growth rates. Fitzgerald (1979) has prepared a world set of relevant country statistics that is especially revealing in that it is up to date -- for the year 1978 -- and minimizes the distortions of comparisons in living standards that result from the use of conventional exchange rates for conversion to a common currency. These distortions frequently result in understatement of living standards in the poorer countries. The resulting three major groupings of per capita income shown in Table 1 demonstrate the wide span of living standards that still persists, despite the major world economic growth of the past several decades.

Out of the total of 167 countries, 48 are in the high income range (\$3,200 to \$15,000) with 28 percent of world population; 45 are middle income (\$1,375 to \$3,200) with 13.5 percent; and 74 are low income (below

\$1,375) with 60 percent of the world population. Half of the latter group have incomes below \$875 per capita. Table 2 shows the dominance of low income in the African and Asian countries, whereas the majority of the Latin American countries are in the middle income range. Such statistics help to provide a sharper focus on where the greatest leverage on the advance of developing countries is likely to be exercised through technology flows involved in the activities of multinational corporations. In this way, they help to pinpoint the industrializing regions in the middle and low income groups from which expansion into competitive world trade can be expected over the decades ahead. Conversely, they mark the areas most likely to offer markets for capital equipment and specialized products from the already industrialized countries.

III. Multinational Corporations and Technology Flows to Developing Countries

The acceleration of international flows of technology over the past 30 years has been striking. No country, including the most advanced, relies solely on its domestic capability for technological innovation. To varying degrees, all draw on this international flow, but with wide ranges in the extent to which they use the different channels. The principal categories of such channels are:

1. The open technical literature: the professional and trade journals, together with patent documentation.
2. Educated and trained people: the sending abroad of nationals for university and other forms of technical education, including experience in foreign industries, and the temporary or permanent importation of teachers, consultants, and other skilled individuals.
3. The imitation of existing technologies: the process of "reverse engineering" to determine the content and mode of manufacture of specific foreign consumer and capital goods.
4. Non-commercial technical assistance: through international agencies and bilateral agreements with countries and non-commercial institutions.
5. The importing of capital goods: from individual instruments

or machines to turnkey factories or service systems.

6. Patent and trademark licensing and other forms of technology agreements and industrial cooperation with foreign firms: from straightforward licensing of basic data, process and product designs, management and other know-how to more complex arrangements for supply and leasing of plants, contract manufacturing, production sharing, etc.
7. Foreign direct investment: from wholly owned subsidiaries to joint ventures and other forms of investment relations with foreign firms.

As was noted earlier, the multinational corporations correspond by formal definition only to the last of these categories. However, because of the predominant position of such firms in generating and applying modern technology, the bulk of technology flows to developing countries, in the form of capital goods and the various forms of technology agreements, also originate with multinational corporations.

Given the above diversity of channels for the international flow of technology to the developing countries, it is clear that there is no satisfactory common measure to indicate the quantity of the total flow, let alone to compare the relative effects of all the individual elements. This lack is a serious obstacle to assessing the full contribution from transfers of technology to the economic development of the importing developing countries and to changes in their competitive position in world trade. A somewhat analogous state of affairs has long bedeviled efforts to quantify the contributions of technology to the economic advancement of the United States

and the other industrialized countries.

Royalties and other Fees

The most widely used quantitative indicator for international trade in technology is the commercial payment of royalties and fees for patent licenses and other forms of technology agreements. The data correspond in principle to item number 6 in the above list, but in practice the coverage varies somewhat from country to country, and there are significant lags and other timing problems.* Table 3 indicates the relative magnitude of the receipts and payments involved for four illustrative industrialized countries, and their changes from 1961-1975. The growth in this component of international flows of technology is seen to be substantial. The world total has been estimated as some \$2.5 billion in the early 1960's, growing to some \$11 billion in 1975. The United States is by far the largest single contributor to this trade -- somewhat more than half of the total in 1961, declining to somewhat less than half by 1975 -- and has maintained a ratio of technology exports to imports of roughly ten to one. Only two or three other countries have even a slightly positive balance in this trade, and most are in substantial deficit.

Such technology imports by developing countries, even by the mid-1970's, accounted for less than 10 percent of the total international payments involved. The largest share of these payments (roughly three-quarters) was to United States firms. More than half of the technology imports were by Latin American countries -- in particular by Brazil and Mexico, which are among the larger and more rapidly industrializing. For a number of individual developing countries, such payments for foreign technology are large enough to be significant in their national balance-of-payments; for the

*For example, the payment flows do not necessarily reject current flows of technology per se since the latter may have been completed at an earlier time.

heaviest importers, they appear to amount from 3 to 11 percent of earnings on all exports.

Most of the total international payments of royalties and fees are intra-company, i.e., from affiliates to the parent firms of multinational corporations. This proportion is largely the result of the dominance of the United States in the total trade. While more than three-quarters of the receipts for the United States are from affiliate firms, that proportion appears to be only one-third or less for other industrialized countries. In consequence, these statistics for royalties and fees might seem to provide a useful approximation to the total international flows of technology through the various non-equity and equity arrangements involved in the last two "channels" in the list given above. However, the usefulness in that sense is questionable because of the uncertainties in coverage for the "royalties and fees" statistics mentioned earlier, and the fact that not all multinationals require formal payments for technology, or identify them as such in the total returns that they derive from their affiliates. The latter is more likely to occur when the affiliate is wholly owned. Moreover, the statistics lack details on the structure of the flows -- such as countries of origin and destination, and the types of technology involved -- that are sufficiently comprehensive across the countries to assess their implications, especially for developing countries.

Foreign Direct Investment

Because of the predominance shown above of multinational corporations and intra-firm transactions in the international commercial flows of technology, the more comprehensive statistics* available on the

*Although more comprehensive, these data are also not without problems -- such as time lags and country variations in definition. Furthermore, foreign direct investment as an indicator of multinational corporation activity necessarily ignores the increasing proportion of such activities during the 1970's that seems to be taking non-equity forms, especially in the developing countries.

structure and industry emphasis of the foreign direct investment activities of such firms can provide useful information on technology beyond that available from "royalties and fees" statistics. Not only are some insights into the technology flows associated with multinationals possible, but, by the same token, into the bulk of all the commercial flows of technology. The validity of this indirect approach is enhanced when "technology" is defined in the broader sense generally used by such corporations, as was described in the Introduction. The approach has the advantage of permitting the statistical association of technology exports to developing countries with corresponding increases in those countries' industrial and world trade activities. The latter occur because of such changes in the developing countries as substituting domestic production for manufactured goods previously imported, generating competitive exports, and expanding domestic markets for capital goods and other specialized products from industrialized countries.

From the early 1960's to the second half of the 1970's, multinational corporations have increased considerably with respect to the numbers of firms, the range and scale of industries, the numbers of home countries in which they are based and of host countries in which their affiliates operate. Nevertheless, over this entire period, the bulk of their operations has remained concentrated in the industrialized countries, and the proportion in developing countries has actually declined. Table 4 illustrates some of these changes from 1967 to 1976 in terms of the amount and distribution of the stock of private foreign direct investment (i.e., the flows of equity and loan capital from parent corporations to their foreign affiliates) by home and host country. The total stock increased almost threefold in size over the period -- from \$105 billion to \$287

billion. The total annual investment flows* grew from some \$13 billion per year in the mid-1960's to the vicinity of \$30 billion per year in the mid-1970's. The principal country of origin remained the United States, but the U.S. share in the total stock declined over the period from 54 percent to 47 percent. The share of the next ranking home country, the United Kingdom, also declined, while those of Germany and Japan increased, overtaking France, Switzerland, and Canada, to reach third and fourth place respectively. These four ranking countries are the origin of more than 75 percent of the foreign direct investment stock.

Over the period, industrialized economies remained the principal host countries for this investment, with their share of the total close to three-quarters in 1975. The United States is not only the principal home country for multinational corporations, it is second only to Canada in the ranks of the host countries. The United Kingdom and Germany are the next ranking. The developing countries' share of the total stock actually declined over the period, to some 26 percent, because of a lowered rate in the increase of annual direct investment compared with that in industrialized host countries. That the overall decline in developing country share was not due simply to the investment changes in the OPEC countries associated with the 1973-74 crisis is shown by the fact that such a lowered rate occurred as well for the total of the non-OPEC countries.

Despite the decrease in developing country share, the stock of foreign direct investment in such countries approximately doubled, from close to \$32 billion in 1967 to more than \$67 billion in 1975. Over half of that is United States in origin, but several other countries, especially Germany and Japan, are increasing their shares rapidly. The majority of this stock is concentrated

*In terms of net annual increments in total stock.

in only a few developing countries. Almost a quarter of it is in the oil-producing countries, and another 40 percent is in only ten countries. In descending order of importance in 1975, these were: Brazil, Mexico, India, Malaysia, Argentina, Singapore, Peru, Hong Kong, Philippines, and Trinidad. The nature of these particular countries reflects foreign investment interest in them as sources of natural resources for world markets, large markets, or "export platforms" for certain classes of manufacture.

How is the foreign direct investment of the United States in developing countries distributed across the principal economic sectors -- extractive, manufacturing, and service industries? Table 5 shows the distribution of total United States stock in all countries, compared with that in developing countries, in 1973 and 1976, i.e., before and after the oil crisis. It is apparent that the investments in developing countries are more skewed towards service industries and away from manufacturing compared with those in the industrialized countries. It is noteworthy that, while by 1976 both the manufacturing and service sectors in developing countries increased their shares of the total foreign investment in these sectors, it was the service sector that increased the more rapidly. Manufacturing sector investments in developing host countries grew only from 34 percent of all foreign direct investments in developing countries to 39.1 percent, whereas services grew from 29.5 percent to 43.0 percent. These distributions of investment activity across the major economic sectors also provide a useful indication of the corresponding emphases in the character of the technology flows going to the developing countries from the multinational corporations

in the home countries.

The manufacturing sector is the area of industry where the growth of competitive production capabilities in developing countries would be expected to have the greatest potential for effect on international trade patterns and on specific industrial activities and jobs in the advanced market economies. Have the distribution of investments and implied technology flows to developing countries from multinational corporations based in the United States contributed disproportionately to the manufacturing sector compared with investments by other industrialized countries? Table 6 shows that this does not appear to have been the case. The share of United States investment in manufacturing in developing countries is close to its roughly half-share of all foreign direct investment. Likewise are its shares in transport equipment and in machinery. It does have higher concentrations in food products and chemicals, which are offset by a lower share in primary metal production than the other countries.

Unfortunately, extensive data are sparse on the share of foreign direct investment enterprises in total manufacturing in developing countries, although indications suggest they are important. For example, in the two countries with largest foreign investment -- Brazil and Mexico -- the shares of "foreign owned" enterprises in manufacturing sales appear to be close to 50 percent and 25 percent respectively. However, the criteria for defining "foreign owned" are not always consistent in these and other developing countries. Blond (1978) has estimated that the share of multinational affiliates in manufacturing activities in Latin America is as high as 47 percent.

Impact on Development

The evidence discussed above indicates the significant role that multinational corporations play in the economies of the developing countries. Surprisingly, there appears to be no real agreement from theoretical economic analyses and empirical studies as to whether or how much the impact of foreign direct investment* on development in these countries has been positive overall. The effects on increasing direct income, jobs and government tax revenues are usually seen as positive. However, the evidence is equivocal on the question of whether in the overall balance of payments, substitution of domestic production for imports and the expansion of goods exports are not more than offset by repatriation of earnings and increased requirements for imports of capital goods and specialized equipment.

In contrast to the lack of real agreement on the net impact of foreign direct investment on development, the significant role of multinational corporations in increasing exports of manufactures from developing countries appears uncontroversial. Blond (1978) estimates the 1972 share of multinational's subsidiaries in all such exports from all developing countries as 37 percent. The shares for particular industries and regions can be considerably higher -- for example, 86 percent for transport equipment in Latin America, where foreign investment has been especially intense. However, much of the increased export trade has been intra-developing country. Furthermore, the main thrust of exports to the industrialized countries has come from a handful of developing countries -- Hong Kong, South Korea, Taiwan, Singapore, Brazil and Mexico -- where there is by no means a one-to-one

*As distinguished from the technology that might have flowed from multinationals via non-equity channels, as occurred for example in Japan.

correspondence between exports and the activities of affiliates of multinationals. It is appropriate to note that while the developing country share in overall trade has been growing, it is still only some 10 percent of all manufactures imported into the industrialized countries. Up to the present, such trade has caused serious adjustment problems for only a few sectors -- especially textiles, clothing, consumer electronics -- where competitive technology and lower labor costs give a strong comparative advantage that raises the level of imports well above average.

At the same time, the advance of a number of developing country economies has provided important increased markets there for exports from the industrialized countries. For example, in the case of the United States, shipments of merchandise to developing nations in 1977 already amounted to 36 percent of total United States exports. More than 25 percent of U.S. manufactures went to the non-OPEC developing countries alone. Thus, developing country markets are already more significant in United States export trade than in all of Western Europe combined. Clearly to sustain and expand further such new markets depends not only on continued development in these countries, but on their ability to generate foreign earnings by exports to pay for their imports from the advanced countries. The problems in this convergence of mutual self-interest lie mainly in the weakness of the existing mechanisms for continued economic development in the Western countries to adjust their industry structures and job opportunities.

Attention was drawn earlier to the shortcomings of the data on multinational corporations, on which the discussion in this section, because of the lack of alternatives, has had to be based. Nevertheless, a number of

key features of their involvement in technology flows to developing countries now appears reasonably well defined in the context of their worldwide activities. We can turn next to the questions of the changing efforts by host developing countries to ensure that greater benefits for their development objectives accrue from the activities of multinational corporations, and of the implications of such efforts for the future.

IV. The Changing Scene and the Future

The point was made earlier that the basic issues of enhancement of self-reliance and the management of interdependence pressed by developing countries over the past decade have parallels in the issues seen as central by the Western European countries and Japan during their postwar recovery and growth. In the latter countries, their role as hosts to the foreign direct investment activities of multinational corporations raised concerns about foreign domination of significant national firms, of further growth in dependence on foreign technologies, and of the inadequacies in the national governments' control over the strategies of national economic development.

The "foreign" threat of that period was, of course, American. In the current situation, the foreign threat perceived by the developing countries embraces not only the industrialized market economies that make up the Organization for Economic Cooperation and Development, but also the industrialized countries of the centrally planned economies. Most Western European countries and Japan succeeded in coming to terms with the role of multinationals in their technological development. Are there lessons from their experiences that could be useful to the situation perceived today by the developing third world countries? Like that earlier period, the multinational role is being viewed by these countries not simply in the context of the technical question of the most efficient way of allocating resources.

Rather it is perceived in the political context of the extent to which the countries see themselves in control of their own destiny.

What Were the European and Japanese Strategies?

In the European case, the response was partly to place some restrictions, nationally and through the European Communities, on the entrance or expansion of the U.S.-based multinationals in certain sectors judged to be critical to the future of their industrial economies. However, the main strategy was not to cut off the direct investment activities of the American firms. Rather, it was to seek to maximize the benefits from their participation while reducing dependence through better use of the considerable European resources of scientific and technological skills to improve domestic industries. Specific tactics included the encouragement of industrial research and development, tax subsidies for investments that used major industrial innovations, preference to national firms in government purchases, and, especially, encouragement of mergers to form larger companies capable of better competing with the American-based multinationals. Thus, the centerpiece was the development of national, or pan-European, "champions" to improve their capability of dealing on equal terms with the United States in the Atlantic "partnership."

The Japanese strategy was initially quite different. Lacking the industrial base, scientific experience and strengths in technological innovation of the Western European countries, Japan chose in the immediate postwar period to obtain the modern technology needed from abroad to meet its national goals for economic development largely through licensing and other technology agreements. By strict controls on foreign direct investment, it deliberately avoided the potential for dominance of the

domestic economy by the U.S.-based multinationals seeking entrance.

It is now widely agreed that no single factor can explain the remarkably successful growth and transformation of the Japanese economy. Within the span of a decade or so, it changed from a country on the margin between the developing and the industrialized world to being probably the leading challenger of United States' economic and competitive strength. In just 25 years, it moved from the extensive destruction in World War II of its existing industrial fabric to being the third largest industrial power. In one five-year period alone (1965-70), it doubled its industrial capital stock; something which no other country has achieved before. Its pattern of trade shifted from the prewar interest in labor intensive textiles, ceramics, toys and "Christmas tree ornaments" to being one of the world's leading producers and competitive exporters of steel, ships, optical equipment, consumer electronics, and business machines. A variety of factors were at work in determining this success over the period up to the early 1970's. Some of these were internal and some external, some were planned and some were fortuitous, but all were integrated through a remarkably perceptive public policy process that could, and did most of the time, harness these factors to the national purpose. The domestic factors included capital formation and investment, private entrepreneurship, technical progress and education. Here is not the place to review the full variety, but the organization and adoption of modern imported technology was also one of the key factors.

In the period to 1960, extensive government controls directed technology imports (usually of vintage technology) to the immediate goal of making Japan more self-sufficient in basic industrial chemicals and metals. The

process technologies sought were large scale and capital intensive, and given few foreign sources, the royalty rates were largely set by the sellers. In the early 1960's, more current technologies were imported for consumer goods and to enhance the potential for exports. Nevertheless, technology prices declined. Competition among sellers increased as sellers saw a potential for substantial royalty incomes, and Japanese firms deliberately sought to widen the range of alternative sources for technology -- as from Europe and the smaller American firms. In the latter half of the 1960's and the early 1970's, the consumer export emphasis continued, but with increasing emphasis also on improvements of technology previously imported, and also on "duplicate imports." The latter appears to have been an important contributing factor to the efficiency of the Japanese industrial economy. They occurred in part because of restrictive terms on sublicensing in the initial agreements, but also because of the competition among domestic firms that favored getting the technology from abroad.

Only in the latter stages of this sequence of shifts in imported technologies (from basic industrial goods to consumer goods, from basic technology to improved technology, and from new to duplicate technology) did Japanese firms and the government shift from their initial position of avoiding foreign direct investment. Only as part of the bargaining necessary to gain access to some of the most advanced technology -- for example, in computers -- and then only when the country's economic development and internal technological capabilities were well advanced -- did this earlier policy become relaxed.

Lessons for Developing Countries?

The above outlines some of the main features of the European and Jap-

anese efforts to apply technology to achieve national economic growth. It is clear that neither the European or Japanese strategies are feasible per se for the present circumstances of most developing countries. However, the experiences do suggest some constructive directions which such countries might explore in seeking mutually satisfactory arrangements for the involvement of multinational corporations in their technological development. In particular, the experiences emphasize the fundamental requirement of the existence of adequate numbers of nationals sufficiently skilled and experienced in modern technology in its broadest sense. Without priority to creating such a domestic manpower capability, a country's ability to select, adapt, and organize imported technology to its development purposes or to deal with the issues arising from its role as host to foreign multinational corporations is severely constrained. Furthermore, in the early stages of industrial development, as the Japanese experience clearly shows, the most fruitful focus of limited technical manpower is on harnessing, adopting, and improving existing technologies to the national circumstances and purposes. Research and development efforts towards unique innovation, however seemingly attractive in terms of professional prestige or political appeal, are much less likely to provide the main driving force towards an efficient modern economy that is in keeping with the patterns of economic and social objectives sought by most developing countries.

The Outlook

Many developing countries have introduced measures over the past decade intended to increase their control over aspects of the activities of multinational corporations. There have also been strong pressures through the

international agencies for agreement on an international code of conduct for the transfer of technology, and efforts to revise the existing International Convention for the Protection of Industrial Property (commonly known as the Paris Convention on patents).

Despite this evidence of national and international efforts by developing countries to increase control over the multinationals so as to minimize perceived disbenefits, there are also signs that working experience has given some countries a better insight into a potentially more constructive use of the intrinsic driving forces and constraints that condition the strategies and business decisions of the corporations with respect to technology flows and foreign investment. At the very least, some developing countries no longer automatically stereotype any multinational corporation activities in their economies in the same terms as only a few years ago.* There is likewise greater awareness that movement towards the increase in self-reliance and control of interdependence sought in the context of a new international economic order will require more inflows of capital and technological "know-how" in the future, not less. In this respect, multinational corporations are increasingly perceived as a key potential source of such inflows for certain major areas important to development.

On the part of the many multinational corporations themselves, more now see value in increased flexibility in their initial negotiations on specific projects in individual developing countries, and in willingness to consider renegotiation should circumstances change. This approach contrasts to the earlier insistence on pressing the concept of freedom of activity as essential

*The creation of domestically based multinationals in some of the most advanced developing countries has not been unimportant in bringing about such modifications in point of view.

to business effectiveness, against developing country contentions that specific controls on equity or non-equity agreements must be set to ensure increased benefits to them as host countries. Indeed, the fact that such ideological differences are not the main cause of friction has been shown by the successful growth of durable and mutually rewarding technology agreements between multinational corporations and several of the centrally planned economies among the COMECON countries, and the possibility of analogous ones with the People's Republic of China.

Despite these indications of some modest improvements in the mutual perceptions of multinational corporations and developing countries, the fundamental differences remaining suggest that future relationships will, at best, be ones of manageable tension. These differences will lie in perceptions as to the appropriate cost and effectiveness of items in technology trade, or in how well or badly specific foreign direct investments affect the host country's development, or in conflicts between country efforts to maximize social benefits from the investment versus the intrinsic constraints to which the multinational is subject by its nature as a business enterprise. They will also arise from the existence of limits, whether from willingness or the constraints of business criteria, to the flexibility of multinational corporations to adjust to seemingly arbitrary alterations in country requirements after investment is in place. In fact, some such alterations in policy are inescapable as developing country governments become forced, by changing circumstances or earlier misjudgments, to alter development priorities (as exemplified by current changes in China). Others will arise from the very success of economic growth itself with concomitant

changes occurring in the country's bargaining powers, or from inevitable inconsistencies in trying to match multinational activities to multipurpose national goals, or from a change in government, or simply from a need for a momentary political advantage by the government in power.

The above view is not intended to be pessimistic. It simply identifies some operating uncertainties that appear especially prominent in developing countries, but are by no means absent elsewhere. It is true that the market for international technology flows is undergoing changes in form, structure, and participants. Nevertheless, the multinational corporations appear likely to expand rather than shrink their role in transmitting certain key types of modern industrial technologies to developing countries through both technology agreements and direct investment activities. It is true that new exporters of technology from market economies, and some from the socialist countries, are inducing competition on the supply side. However, at the same time, the demand side is expanding as more developing countries seek to move into activities requiring modern technology. Consequently, direct investment activities in developing countries that comprise business opportunities for multinational corporations competitive with investment alternatives elsewhere appear likely to remain prominent. Alongside such activities, continuing expansion of non-equity technology agreements and other forms of international flows of technology to developing countries can be expected.

Table 1
World Distribution of Real Gross Domestic Product: 1978*

Country Income Group	GDP per cap. (dollars)+	Numbers of Countries	Population (millions)	Annual Population Increase	
				(%)	(millions)
I. High	1. 5,000-15,000	32	645	0.7	4.5
	2. 3,200-5,000	16	480	0.95	4.5
II. Middle	1. 2,500-3,200	16	330	2.4	7.5
	2. 1,375-2,500	29	235	2.25	5.0
III. Low	1. 275-1,375	31	1,190	1.9	21.0
	2. 500-875	23	1,015	2.2	21.0
	3. 275-500	20	260	2.5	6.0

*Adapted from data in G. Fitzgerald, Unequal Partners, United Nations, New York.

+Based on purchasing power parity currency conversions derived from Kravis et al. "Real GDP Per Capita for More than 100 Countries," Economic Journal, June 1978; extended by Fitzgerald.

Table 2

World Regional Distribution of Country Income Groups*

Country Income Group	North America	Europe	Middle East	Latin America	Caribbean	Oceania	Asia	Africa & Indian Ocean
I. High								
1.	2	14	8		2	4	2	
2.		10		2	2		1	1
II. Middle								
1.		4	2	6	2		1	1
2.		2	2	7	8	2	3	5
III. Low								
1.				5	2	4	5	13
2.					1		9	13
3.							7	13

*Adapted from data in G. Fitzgerald, Unequal Partners, United Nations, New York.

Table 3
Payments* and Receipts for Technology, Industrialized Countries
1961-1971 (billions of dollars)

<u>Country</u>	<u>1961</u>	<u>1967</u>	<u>1971</u>	<u>1975</u>
United States				
Payments	0.008	0.171	0.218	0.480
Receipts	0.711	1.567	2.465	4.302
United Kingdom				
Payments	n.a.	0.165	0.265	0.530
Receipts	n.a.	0.176	0.283	0.612
West Germany				
Payments	n.a.	0.192	0.405	0.834
Receipts	n.a.	0.090	0.149	0.324
Japan				
Payments	0.112	0.239	0.488	0.712
Receipts	0.003	0.027	0.060	0.161

*Imports of technology -- sum of payments by indicated country companies to foreign companies for patents, licenses, know-how, and associated expenses -- in the balance-of-payments statistics. Data from Annual Report of the Import of Foreign Technology, Japanese Science and Technology Agency, 1972 and Commission on Transnational Corporations, United Nations, 1978.

Table 4

Stock of Foreign Direct Investment of Developed Market Economies*

A. Total and Share of Stock by Home Country

	<u>Billions of Dollars (year's end)</u>			<u>Percent Distribution</u>		
	<u>1967</u>	<u>1975</u>	<u>1976</u>	<u>1967</u>	<u>1975</u>	<u>1976</u>
United States	56.6	124.2	137.2	53.8	47.8	47.6
United Kingdom	17.5	30.8	32.1	16.6	11.9	11.2
West Germany	3.0	16.0	19.9	2.8	6.2	6.9
Japan	1.5	15.9	19.4	1.4	6.1	6.7
Others	26.7	72.0	78.6	25.4	28.0	27.6
Total	105.3	258.9	287.2	100.0	100.0	100.0

B. Percentage Distribution of Stock by Host Country

	<u>1967</u>	<u>1975</u>
Developed Market Economies	69	74
Of Which:		
Canada	18	15
United States	9	11
United Kingdom	8	9
Germany	3	6
Other	30	33
Developing Countries	31	26
Of Which:		
OPEC countries	9	6
Others	22	20
Total	100	100

*Derived from data in Transnational Corporations in World Development: A Re-examination, United Nations, New York, 1978.

Table 5
 Stock of United States Private Foreign Direct
 Investment by Major Industrial Sectors.
 Total and In Developing Countries in 1973 and 1976.*

A. Total				
<u>Sector</u>	<u>1973</u>		<u>1976</u>	
	<u>\$ Billion</u>	<u>Distribution</u>	<u>\$ Billion</u>	<u>Distribution</u>
Extractive	31.0	30.6%	36.8	26.8%
Manufacturing	44.4	43.8	61.1	44.5
Services	25.9	25.6	39.4	28.7
Total	<u>101.3</u>	<u>100.0%</u>	<u>137.2</u>	<u>100.0%</u>
B. In Developing Countries Only				
<u>Sector</u>	<u>1973</u>		<u>1976</u>	
	<u>Share of Total Stock in Sector</u>	<u>Distribution</u>	<u>Share of Total Stock in Sector</u>	<u>Distribution</u>
Extractive	26.9%	36.4%	14.1%	17.9%
Manufacturing	17.6	34.1	18.6	39.1
Services	26.0	29.5	31.7	43.0
Total	<u>22.6%</u>	<u>100.0%</u>	<u>21.2%</u>	<u>100.0%</u>

*Based on data in Transnational Corporations in World Development: A Re-examination, Commission on Transnational Corporations, United Nations, New York, 1978.

Table 6
 Distribution of Foreign Direct Investment Stock in Manufacturing
 in Developing Countries in 1972, by Manufacturing Branch*

Branch	Total (\$ Billions)	United States (\$ Billions)	U.S. Share of Branch Total (%)
Food products	1.0	0.71	71
Chemicals	2.50	1.60	64
Primary metals	1.08	0.36	33
Machinery	3.85	2.05	53
Transport equipment	4.24	2.15	51
Others	2.5	0.96	38
Total Manufacturing	15.2	7.84	52

*Derived from data in Transnational Corporations in World Development: A Re-examination, United Nations, New York, 1978.

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APPENDIX E

**U.S. Domestic Impact of Foreign Direct
Investment in LDCs: Labor's Concerns and
the Enterprise Environment in the Decade Ahead**

U.S. DOMESTIC IMPACT OF FOREIGN DIRECT
INVESTMENT IN LDCs: LABOR'S CONCERNS AND
THE ENTERPRISE ENVIRONMENT IN THE DECADE AHEAD

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The assigned topics to be addressed in this paper are (1) the degree of job destruction when U.S. multinational corporations' (MNCs') investments in the less developed countries (LDCs) displace U.S. exports or result in imports; (2) the job creation when the MNCs' LDC investments induce U.S. exports of capital goods, component parts, managerial, technical and professional services, etc.; and (3) the effects of these investments on domestic income, income distribution and industrial structure. These topics are each to be reviewed with due consideration of organized labor's concerns and interests, and with a special focus on critical changes which the next decade is likely to produce.

This is an ambitious assignment for a paper limited to twenty or so pages. But, there are certain commodities related to the employment and income issues which allow for reasonable expedience in dealing with them. These will be discussed first. Subsequently, the distinctive, conceptual foundation underlying organized labor's response to the MNC will be characterized, and the future environment substantially influencing key investment and technology decisions by the multinational enterprise will be discussed. Following this, an attempt will be made to identify critical incidents in which enterprise, labor and social interests need to be merged.

As a preliminary note, however, some perspective on the economic magnitude and character of U.S. direct foreign investment in the LDCs appears useful.

U.S. Multinationals' Investments in the LDCs

U.S. direct investment in LDCs was approximately \$29 billion at the end of 1976, and \$11.4 billion (nearly 40 percent of the total) was invested in manufacturing. This latter figure represents about 8.3 percent of all U.S. MNC foreign investment in manufacturing worldwide.¹ The Multinational Enterprise Project at the Harvard Business School reports approximately 41 percent of the subsidiaries of its famed 187 multinational enterprises² which were established prior to 1975 were located in developing countries.³ Comparisons of the above data, where 8.3 percent of total dollar investment provides for 41 percent of total subsidiaries, indicates U.S. MNCs' operations in the LDCs are about one-fifth the world average in terms of plant (investment) size.

They appear to be quite sales intensive, however. To illustrate, 1975 sales by size of LDC subsidiary, as reported by the Harvard project, are:⁴

<u>Sales Volume Reported by Subsidiary</u>	<u>Percent of Worldwide Subsidiaries Located in LDCs</u>
under \$1 million	48
\$ 1 - \$ 10 million	47
\$10 - \$ 25 million	38
\$25 - \$100 million	34
over \$100 million	29

These data show that subsidiaries in LDCs are evidenced more in the lower sales categories of all such subsidiaries, and that on average (for the five sales increments) they are positioned at the 39 percent level. With estimates of about one-fifth of total investment (in 1976) and nearly two fifths of total sales (in 1975), subsidiaries in LDCs

appear to be nearly twice as sales intensive per dollar invested as the average.

One final set of data appears especially interesting at this point. The Harvard project reports a distinctive bi-modal pattern in the distribution of manufacturing subsidiaries in LDCs by level of exports and intra-system⁵ sales. Regarding exports, 51 percent of the subsidiaries exporting 0 to 9 percent of sales are in LDCs, 30 percent exporting 10 to 50 percent of sales are in LDCs, and 36 percent exporting 51 to 100 percent are in LDCs. For intra-system sales, 48 percent of those involved with such sales totalling between 0 to 9 percent of all sales are in LDCs, 28 percent with such sales from 10 to 50 percent of all sales are in LDCs, and 47 percent from 51 to 100 percent of all sales are in LDCs.⁶

Apparently, manufacturing subsidiaries in LDCs export (within or outside of their "MNC systems") either very little or very much. This in turn implies U.S. enterprises design foreign plant location strategies to serve local markets almost exclusively, or export markets (from the foreign production base) almost exclusively. The latter situation, which likely relates to U.S. direct foreign investments in offshore manufacturing industries in LDCs where subsidiary sales include substantial amounts of purchased (i.e., imported by the subsidiary) components, may help explain the aforementioned high "sales intensity" of LDC subsidiaries in general.

This bimodal pattern, implying differences in foreign investment strategies, in competitive responses to competitive pressures, and in the alternatives likely available to the firm, also implies studies

on the domestic economic effects of MNCs' investments in LDCs should disaggregate conceptually and empirically between foreign investments to serve local markets and those to serve other markets within the "MNC system."

Research on Employment Effects

Studies on the employment effects of U.S. direct foreign investment (including that in LDCs) offer a range of conclusions depending on assumptions and orientations.

Some researchers, such as Dewald, imply that the MNC-job issue is really a "non-issue." Using aggregated data for the U.S. economy as a whole, Dewald reports⁷

...a strong positive association between imports, employment and income and a lack of association between the employment rate and imports, contrary to the neo-mercantilist hypothesis that exports gain jobs and imports cost jobs.

Magee acknowledges the job issue exists but contends workers who lose jobs from MNCs are no different from those losing jobs from non-MNCs and deserve no special treatment. Moreover, he notes⁸

...the magnitudes involved must be kept in perspective. The most favorable estimates of the job effects of MNCs (+600,000) is only 0.7 percent of the U.S. labor force (86.0 million) and 12 percent of those unemployed (4.99 million) in 1971; the most unfavorable estimate doubles these numbers.

Hawkins acknowledges the job issue conceptually, but then proceeds to demonstrate (and with very careful assumptions) that the positive and negative job effects of MNCs total zero, or are a "washout."⁹ Similarly, Bergsten, Horst and Moran conclude¹⁰

...one should look at factors like macroeconomic policy rather than foreign investment to explain the high rates of domestic unemployment experienced in the 1970s.

Aside from those who consider the MNC job question as a "non-issue," some feel it is nearly an "impossible issue." Mitchell concludes, for instance, considerable caution must be exercised in interpreting "job counting" studies "...applied to multinationals since multinational trade and trade conducted through other institutional arrangements can be substitutes for each other."¹¹

Other studies, however, did result in numerical estimates on MNC-job effects and offered other valuable insights into the problem. These ranged from Ruttenberg Associates' estimate of half-million net job losses between 1966 and 1969,¹² to the Tariff Commission's alternative scenarios that employment effects ranged from a negative 1.3 million to a positive 0.5 million jobs depending on one's assumptions,¹³ Stobaugh's conclusions that 600,000 U.S. jobs resulted from U.S. foreign direct investment in manufacturing and that jobs thus created were at higher skill and income levels than those lost,¹⁴ and Frank and Freeman's estimates that foreign direct investment by U.S. MNCs resulted in 150,000 job opportunities lost in 1970, and that workers who lost their jobs because of such investment could be expected to find new jobs within a few months.¹⁵

To this author's knowledge, no studies have been reported which specifically relate U.S. direct investment in LDCs and U.S. employment effects. Depending on one's perspective, however, on the assumptions and methodologies of the aforementioned studies, inferences on the

MNC/LDC situation may certainly be made. Also, Grinols and Thorbecke have researched U.S. job losses and LDC imports into the U.S. Their conclusion was that 126, 000 jobs were lost during 1963-1975.¹⁶ Countering this, however, Jager notes that 83,000 Mexicans were working in U.S.-Mexico border plants by mid-1974 alone--an estimate which makes the Grinols and Thorbecke estimate questionable.¹⁷

There appears to be considerable evidence on both sides of the jobs lost/jobs gained issue, with the balance in any one case reflecting substantial assumptions. There does seem to be agreement, however, that some jobs are created and others destroyed as MNCs invest abroad, including in LDCs. This acknowledges that there exists, as a minimum, an adjustment problem for U.S. workers. A healthy, expanding economy is the best "adjustment assistance" known. Apparently, the "non-issue" researchers leave the job question at this point--with implicit assumptions denying the appropriateness of social issues attendant to the social costs of adjustment. But even new job opportunities do not deny the often painful burden borne by U.S. workers as they seek (and find) new employment. The (alleged) benefits to society of decreased product prices and subsequent favorable income effects resulting from MNC investment in and trade with LDCs must be measured against the cost to (a smaller portion of) society as workers surrender job security and (possibly) fringe benefits and endure periods of reduced income, non-productive activity and possible retraining and relocation. This is a broad, political question which cannot be answered by economic considerations alone.

Research on Income Effects

Studies on MNCs' domestic income effects are concerned with questions such as income growth and income distribution. In its 1973 report to the U.S. Senate Committee on Finance, the U.S. Tariff Commission compared the economic performance of U.S. "high multinationals" (firms that were leading investors in manufacturing) to the performance of other U.S. manufacturers. The "high multinationals" were found to account for 88 percent of total research and development (R + D) expenditures in U.S. industry (1970) and 35 percent of total employment (1969), while the other firms accounted for 12 percent of R + D and 65 percent of employment. The multinationals had a value of shipment per worker 14 percent higher than other firms, and increased employment during 1961-1969 at an 88 percent higher annual rate.¹⁸

Countering this rather favorable view of the income growth effects of the U.S. (manufacturing) MNCs, Bergsten, Horst and Moran report that while the foreign share of total earnings in manufacturing by U.S. corporations increased nearly fourfold from 4.6 percent to 17.4 percent from 1966 to 1974, total earnings (i.e. both the domestic and foreign components) actually declined during this period.¹⁹ Declining profitability implies declining growth. This raises the question whether growth abroad erodes growth at home. Jager examined this question in 1975 and observed U.S. multinationals, which are dominant employers in the United States, were partly responsible for the decline in manufacturing employment between 1969 and 1973 of 1.7 percent.²⁰

Sharman, in a more recent observation, provides a rationale for Jager's conclusion. The American labor movement, he notes, benefits from the ability of U.S. technical innovators (the MNCs) to secure a competitive advantage and the extra profits (and eventually higher wages) that result. Since U.S. firms have become multinational in terms of production potential, they may license foreign subsidiaries to produce technically advanced products in LDCs for export to the U.S. market, and thus shorten the time period (or eliminate it all together) during which U.S. labor benefits. He concludes this practice results in labor unemployment and undermines the U.S. industrial base -- the effects of which are hardly conducive to domestic economic growth.²¹

Clearly, the data and other information on the income growth effects of U.S. MNCs are inconclusive at best. The subject is perhaps best left with the admonition by Bergsten, Horst and Moran that, regarding MNCs' growth and job-creation effects at both home and abroad:²²

If account is taken of the greater technical sophistication of the multinationals compared to the nonmultinationals, the multinationals performance might appear worse than that of the nonmultinationals.

Domestic income distribution effects of U.S. direct investment abroad are of special concern to labor. Traditional economic theory views foreign investment of capital as a substitute for international trade, with the capital transfer responding to market imperfections (i.e., the immobility of labor resulting in the inability for wage rates to be harmonized internationally) and seeking lower labor cost locations. Foreign investment thus motivated definitionally results

in a shift in U.S. income shares away from U.S. workers. Musgrave's 1975 research supports this perspective with the conclusion that if the \$80 billion of U.S. direct investment abroad at the end of 1966 had all been invested in the United States, labor's share of national income would have been increased by \$25 million.²³

An alternative view is offered by Bergsten, Horst and Moran who use longitudinal data on the distributive shares of labor and capital in total U.S. national income during the 1946-1976 period. They conclude:²⁴

The statistics lend little support to the notion that the surge in foreign direct investment over the last decades significantly affected income shares. These aggregate statistics..could be masking important shifts at a lower level of aggregation. The better-compensated employees of multinational firms--managers, scientists, and other professionals -- may have gained as ordinary laborers lost.

The case studies by de la Torre, Stobaugh and Telesio, which conclude MNC's investment ultimately creates expanded job opportunities for more highly skilled workers at the parent, further support the view expressed above on the income distribution effects within labor as a general class -- i.e., away from laborers towards more highly skilled employees.²⁵ Thus, MNCs shift income not so much between labor and capital, but within labor according to the level of human capital.

As before, these statistics and studies provide mixed results. Perhaps one explanation is that the traditional theory leaves significant gaps in explaining the income distribution effects of MNCs.

Maybe trade and investment are not ubiquitously "either/or" propositions. The product-life-cycle theory of foreign trade and investment explains U.S. foreign direct investment in other advanced industrial societies as a defensive response to competitive pressures generated early in the cycle. The alternative is lost exports regardless of the U.S. MNC's response. In this model, direct investment is not a substitute for international trade, but is a mandated vehicle for maintaining a foreign market presence. As products mature in their life-cycle, comparative costs of production and distribution become more decisive in the production location decision -- a situation more consistent with the aforementioned traditional theory. Thus studies which focus on "U.S. direct foreign investment" are immediately too aggregated. Defensive investment and "market imperfection" investment are differently motivated and result in different situations regarding location, subsidiary exports and imports, etc. As the earlier Harvard data indicate, the bimodal character of U.S. MNCs' investments in LDCs regarding exports and intra-system transfers suggests the different types of investment are significantly in evidence and should be researched separately.

Research on Industrial Structure

Numerous studies attest to the R + D intensiveness of MNCs and their presence in oligopolistic markets. Multinationals believe in product innovation and/or market control via large-scale distribution or advertising as the necessary ingredients in the competitive environment. If market power is measured by abilities to secure

higher-than-average returns on investment, then multinationals, especially those in manufacturing, are definitionally administering higher prices in product markets than are non-MNCs. Coupling these observations with the empirical evidence gathered by Polk, Meister and Viet²⁶ that direct foreign investment is "organic" (i.e., has diverse and favorable intra-firm system effects), it is not surprising then to see a conclusion such as that presented by Bergsten, Horst and Moran that²⁷

...foreign investment by U.S. manufacturers
has significantly increased their isolation
from effective competition in the United States.

Acknowledging, however, that product price-reducing competitive effects are not necessarily characteristic of the MNCs does not answer the question as to the suitability or social desirability of such effects. This is a broader, and perhaps more important issue. Economic growth requires innovations in both products and processes. Our society values these innovations and rewards the innovators via patents which grant in law a monopoly status for a fixed period of time. Innovations invariably lead to imitation and the presence of competition. The growth process thus requires innovation and imitation, or concentration and competition. Concentration then, for an advanced industrial society, becomes a pre-requisite for competition, if growth is desired. This leads back to the question of the U.S. domestic income growth effects of U.S. MNCs -- a question already examined with mixed conclusions.

A Note on the Research Controversies on U.S. MNCs

To this observer, the most interesting feature of the continuing and controversial dialogue between organized labor and the advocates of the multinationals, and many of the economists who research the MNCs, has been that a complex phenomenon like U.S. direct foreign investment can be so consistently criticized by labor in nearly all of its varied effects. The above review of the research and observations on the jobs and incomes issues certainly support this viewpoint.

With the objective of better understanding the positions of the parties on these issues, it seems important to characterize organized labor's interests within some logical and consistent conceptualization explaining why labor behaves as it does. This, then, will provide a basis for evaluating the anticipated future environment affecting the MNCs, and how MNCs' reactions will in turn interact with organized labor's concerns.

The Rationale of Labor's Response

Conflict between organized labor and the MNC reflects (1) unions' identification with labor, or workers, as a social movement reflecting more than just the institutional interests of trade unions, and (2) class interests within society implemented over the concern over who is to make key decisions on, inter-alice, enterprise investment locations and patterns. Corporate management, making decisions for the capitalist class (the shareholders and themselves) or, in a broadened view, all the social elements dependent on the enterprise (including workers), is of necessity profit-oriented, and in seeking to sustain and

enhance the viability of the enterprise, responds to economic forces and objectives, such as competition, long-run staying power, profit levels consistent with risks, or cash inflows required to service needed resource inputs (including labor).

Organized labor, with its social movement viewpoint, sees society's interest as superceding, or hierarchically superior to those of the enterprise, and therefore favors social controls over onerous social effects generated by MNCs and over the practices which cause these effects.

Studies which quantify jobs destroyed and jobs lost by MNCs reacting to market forces do not reflect labor's interests. But why then does labor itself look at (allegedly) market-generated statistics to "prove" job losses and thus support its position favoring more control? Losses must be shown to exist so that the issue becomes one of the balance question (between losses and gains) that society must address within a broader decision - making context (hierarchy) than just allowing the actor (i.e., the firm) causing the problem to continue unconstrained.

Similarly, social decisions favoring adjustment assistance are viewed by labor as leaving the major complaint unanswered -- that is, firms should not be making key decisions on social issues and should not be deciding on the key variables on which these decisions turn (the classic impersonal market considerations versus human considerations dichotomy). Labor is not enthused about adjustment assistance, but accepts it as beneficial to workers' interest in the short-term.

It will deny adjustment assistance, however, if such assistance is promoted as an ultimate or final response.

Exchange rate changes which restore the competitiveness of U.S. products in U.S. and foreign markets are also viewed by labor as transitory, and not responsive to the broader issue of social control. Exchange rate changes act to offset recent internal price variation differentials among different national currency markets. They leave the MNCs unaffected in their interests to respond to the market.

Because it identifies with a hierarchy of social interests and actors superior to the MNCs, labor feels justified in pointing to broader issues to support its contention that other interests than MNC success in the market place need to be accommodated. Hence, equity in taxation becomes an issue, as does tax subsidization of R + D which does not directly benefit U.S. workers. The need for the United States to maintain a diversified industrial base for defense and balanced growth purposes also becomes a relevant issue, as does the need to sustain the viability of other policy decisions on, for example, minimum wages and occupational safety and health against the cost disincentives these present to MNCs in maintaining U.S. production locations.

Government, which labor identifies as one of the most important vehicles through which society shares decision-making, is viewed with disdain when it makes policies which favor or subsidize the international activities of MNCs. This is based on two considerations: (1) government policy should integrate market-oriented questions into broader

areas of social concern, not subjugate social values to underwrite success for the firms; and (2) success by MNCs in securing government support (for example, tax exemptions) pre-empts organized labor, representing a social movement and "people" needs, from the primary influential role and puts the capitalist class in control of social policy, which it then defines to support its market needs.

Workers are a social class and also employees of a firm. The firm's success often equates with workers' success. To the extent labor succeeds in constraining the market power of the firm, it may cause injury to its constituents as employees. The social class identity of workers is seen by labor though as superior to employment identity. Thus, studies which show public policy options -- such as tariffs, quotas and control over technology transfers -- as detrimental to jobs and employment growth are not accepted as decisive by organized labor. Likewise, studies which show job losses by trade or other MNC-related activities as being inconsequential to total jobs generated in the U.S. economy over the longer run are not seen as decisive. Indeed, these studies can be seen as supportive of organized labor's more fundamental contention that proposals over control of MNCs be balanced or positive as to their effects on economic activity, including employment.

Organized labor looks too at other governments and how they subsidize trade and their international commercial competitiveness, including the attractiveness of domestic sites for plant locations. These practices favor capitalist classes in other societies, or

worker-repressive totalitarian governments, at the cost of market competitiveness (domestically and abroad) of U.S. firms and American labor. Foreign governments' tax holidays, tariff protection, export subsidies, etc. are various ways of undermining U.S. workers interest and past success. The U.S. government is failing in meeting its obligations when it does not act to offset or eliminate these "beggar-my-neighbor" foreign social interests which in turn are destabilizing U.S. social interest. Labor sees U.S. MNCs as just being greedy and irresponsible in these cases by internalizing gains and externalizing costs. Viewed in this perspective, the foreign retaliation argument used so often against proposals for U.S. government intervention in these cases makes little sense.

Given these perspectives, the rationale of the AFL-CIO on various public policy issues before the Congress in 1978 is more understandable. For example, the AFL-CIO:²⁸

- supports the proposed "Buy American" act to prevent states using federal money from buying foreign-made products, when the savings are only a small part of the lost wages and taxes (since U.S. made products are not bought).
- supports legislation to prohibit lowering of import duties on textiles and textile products during international trade negotiations.
- supports legislation to prevent the U.S. Government from providing waivers on countervailing duties imposed to offset foreign subsidies.
- opposes extension of the Overseas Private Investment Corporation (which insures U.S. private investment in LDCs).

- opposes increasing the Export-Import Bank's loan authority from \$25 billion to \$40 billion and supports prohibitions on the bank's lending to the USSR, Communist China and South Africa.
- supports legislation to regulate imports made under unfair conditions where fair labor standards do not exist.

Changes in the Enterprise Environment over the Next Decade and Organized Labor's Concerns

A prospective view such as this is always risky. Many powerful forces are at work affecting MNCs in the future. There are, however, two distinctive trends which the author feels are especially relevant and noteworthy. These are increasing resource scarcity and declining innovation.²⁹

During the past several decades worldwide demands for capital and physical resources have accelerated and resulted in increased prices in world financial, commodity and energy markets. Coupled with the continued effectiveness of (some) producers' cartels, this trend implies tremendous shifts of purchasing power away from U.S. workers, and results in severe employment dislocation effects. To mitigate these, U.S. government economic policy will continue to be fiscally and monetarily expansive, but at the cost of contributing to comparatively high inflation. Additionally, firms will be increasingly motivated to use previously marginal resources in terms of extraction and production costs, or adverse environmental effects. For U.S. workers, these trends mean higher (real) resources costs which force up product prices, and further deterioration in real

incomes as inflation spreads the real burden of adjustment to the external transfer of purchasing power throughout U.S. society.

In periods of considerable public concern over income maintenance, labor's influence over public policy formulation (which is more concerned with income distribution) can be expected to decline. The situation is analogous to that facing the individual worker whose firm is laying off employees. Concern over a job overshadows (within limits) concern over compensation and employment conditions. Also, as real costs of production increase in the United States, U.S. producers will become less competitive in both domestic and foreign markets -- implying less expansive or maybe even declining job opportunities in certain sectors and reduced political and collective bargaining power for U.S. labor.

Resource scarcity also changes international industrial competitive structures in more fundamental ways. In the United States, product and production technologies were historically related to factor cost proportions reflecting comparatively inexpensive energy resources. As oil costs have increased some six or eight times their 1973-74 prices and oil imports into the United States have accelerated, energy costs per unit of production have increased sharply. Physical capital in the United States, which reflected earlier cost patterns and was energy intensive, is becoming less competitive internationally. This puts U.S. exports at a competitive disadvantage, and favors expanded direct foreign investment in the United States since foreign firms with technologies designed around comparatively higher energy and material costs now become more cost competitive.³⁰

The labor inference here is again one of declining union influence with declining or less rapidly expanding employment in export and domestic import-competing sectors. Also, U.S. labor must learn to deal more frequently with foreign direct investors in the United States.

Increasing resource scarcity implies enhanced bargaining power (and purchasing power) for some developing countries in their relations with MNCs, especially the oil-producing countries. The MNCs can be expected to sell as much technical sophistication as these host countries can absorb within the framework of extremely ambitious development programs.

In these instances, labor's interests in controlling technology transfers to support U.S. employment and incomes will be readily overridden by compelling social concerns more sensitive to the need for securing continuity in resource supplies.

A second, equally important anticipated change is declining innovation or the maturing of products and industries previously identified as the domain of the MNCs. The rapid international growth of U.S. MNCs in the 1960s and early 1970s was largely based on the transfer and adaptation of existing product and production technologies to foreign markets. Today, new technological innovations are needed to sustain the competitiveness of overseas subsidiaries. However, innovation has never been easy or routinely realized. Concurrently, the U.S. domestic environment, especially regarding taxation, is becoming increasingly characterized as stifling innovation, while foreign firms are increasingly imitating technologies which

were once exclusively implemented by U.S. MNCs. One resultant phenomenon of this situation has been an increasing sensitivity to comparative costs of production locations by MNCs and a growing tendency towards disinvestment from foreign markets.³¹

Declining innovation thus implies a global environment more consistent with the traditional economic theory that foreign trade and foreign investment are substitutes, and that comparative costs among alternative production locations will become increasingly relevant in locating production facilities. This implies a market pressure or cap on the gains which workers in any one country can expect without creating the incentive for capital export.

As with resource scarcity, declining innovation affects the power relationship among foreign societies, the MNCs and U.S. society. Regarding LDCs, where political control over market access is predominant the maturing of MNCs combined with increasing competition from non-U.S. multinationals clearly shift the power balance towards the host country. As firms hold fewer and fewer unique proprietary advantages, the host's ability to define MNCs' market access and staying power is obviously enhanced. A more ominous trend in this direction is the increasing tendency for foreign governments to expropriate MNCs' subsidiaries.³² Bidding by MNCs from different countries for access to foreign markets invariably results in expanded host-country benefits and less generous benefits (including control over the release of technology) for U.S. MNCs.

These pressures imply problems for workers and unions. The

technology edge of U.S. MNCs, which traditionally benefits U.S. workers, is narrowing and becoming increasingly difficult to keep at home. Also, as access to the U.S. market for foreign produced products can be considered a final line of defense for the MNCs in their bargaining with host governments, can labor not expect an increasing tendency by MNCs to trade off the promise of exports from the foreign market to the United States for concessions regarding the firms' access to the foreign market itself? This too spells trouble for U.S. labor.

To summarize, increased resource costs and declining innovation mean future problems for U.S. labor. They also mean a less responsive (U.S.) government attitude towards labor's goals, and reticence in supporting policy options favoring workers' interests. Labor's success in the future in dealing with MNCs must therefore be more related to collective bargaining than to government action. Given the nature of MNCs and their negative effects on unions' bargaining power, this approach will also entail considerable difficulties.³³ But it is going to be the only approach available.

ENDNOTES

1. Survey of Current Business, August 1977, p. 33. Note that manufacturing investment is singled out as being the most relevant to questions regarding the situs of production, employment effects, etc., as compared to foreign direct investment in transportation and extractive industries (for instance).
2. The original sample used in the Harvard study was 187 U.S. parent companies. Mergers and acquisitions reduced this to 180 by 1976. The Harvard sample accounted for nearly 81 percent of the total sales of foreign manufacturing affiliates of U.S. firms used by the U.S. Department of Commerce in its Survey of Current Business reports. Joan P. Curhan, William H. Davidson and Rajan Suri, Tracing the Multinationals (Cambridge, MA: Ballinger Publishing Company, 1977), p. 15.
3. The 41 percent figure was calculated by the author from data presented in Ibid, p. 34. The LDCs were defined in this process as consisting of countries other than Canada, Japan and those in Europe.
4. Ibid, pp 194-95. (Calculations by the author. "LDCs" used as defined in note #3 above.)
5. "Intra-system" are intra-MNC sales, or sales among subsidiaries and/or the parent. ("LDCs" used as defined above.)
6. Curhan, Davidson and Suri, Tracing, pp. 398-99. (Calculations by the author. "LDCs" used as defined above.)
7. W. G. Dewald, "Do Imports and Exports Affect the Number of Jobs?" Bulletin of Business Research (Ohio State University, Center for Business and Economic Research), June 1975, p. 6.
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17. Elizabeth Jager, "U.S. Labor and Multinationals," in International Labor and the Multinational Enterprise, ed. by Duane Kufawa (New York: Praeger Publishers, Inc., 1975), p. 34.
18. U.S. Senate, Committee on Finance, Implications, pp. 160-61. (Percentage calculated by the author.)
19. Bergsten, Horst and Moran, American Multinationals, p. 10. Table 1-3.
20. Jager, "U.S. Labor," p. 32.
21. Ben Sharman, "The Transfer of Science and Technology to the Less Developed Countries," a paper prepared for the Congressional Seminar on U.N. Conference on Science and Technology for Development (UNCSTD), Washington, D.C., February 13-15, 1979, pp. 1-2.
22. Bergsten, Horst and Moran, American Multinationals, p. 66.

23. Peggy B. Musgrave, "Direct Investment Abroad and the Multinationals: Effects on the United States Economy," a report prepared for the United States Senate, Committee on Foreign Relations, Subcommittee on Multinational Corporations (Washington, D.C.: U.S. Government Printing Office, 1975), p. 97.
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APPENDIX F

**The Impact of LDC Trade on U.S. Workers:
Demographic and Occupational Characteristics of
Workers in Trade-Sensitive Industries**

THE IMPACT OF LDC TRADE ON U.S. WORKERS:
DEMOGRAPHIC AND OCCUPATIONAL CHARACTERISTICS OF
WORKERS IN TRADE-SENSITIVE INDUSTRIES

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Introduction

Trade with less developed countries (LDCs)¹ has been growing rapidly in recent years. Of particular concern has been the growth of manufacturing imports from LDCs. For example, over the period from 1972 to 1976 these imports grew more than twice as fast as domestic GNP. Several studies have estimated the effects of this trade on domestic employment in the United States. (See, for example, Krueger [1979], Grinols and Thorbecke [1978] and Frank [1977].) These studies have generally concluded that trade with LDCs has a small positive effect on aggregate domestic employment.

Although the aggregate employment consequences of LDC trade are an important consideration, aggregate employment goals should properly be managed by domestic monetary and fiscal policies rather than trade policies. More importantly, LDC trade may have systematic effects on the structure of domestic employment and income distribution, and these effects usually cannot be erased by aggregate demand policies. In particular, reduced employment opportunities among import-competing industries may cause adjustment burdens for workers in these industries, who may be subjected to long periods of unemployment (with high job search, relocation or retraining costs), or who may even drop out of the labor force. Furthermore, workers in these industries are likely to share certain

demographic and occupational characteristics which differ from the average characteristics for overall manufacturing. To the extent this is true, LDC trade may have important distributional consequences for different classes of workers which are not disclosed by examination of aggregate employment effects.

The purpose of this paper is to provide a detailed description of the demographic and occupational characteristics of workers in those manufacturing industries which experience the largest changes in employment opportunities² as a result of trade with LDCs. Characteristics of workers in these industries are compared with those of workers in industries most affected by total trade and the average worker characteristics for overall manufacturing.

The paper is organized as follows. The next section presents the methodology used to identify the manufacturing industries most affected by LDC trade and to determine the demographic and occupational characteristics of workers in those industries. The second section describes the characteristics of workers in manufacturing industries most strongly affected by LDC trade and compares them with the average characteristics for all manufacturing workers. A comparison is also provided between characteristics of manufacturing workers most strongly affected by LDC trade and those most strongly affected by total trade. The third section presents a summary and conclusions.

I. Methodology

Manufacturing industries most negatively affected by LDC trade are defined as those industries which would gain the most employment opportunities on net if all trade with LDCs were stopped and imports from LDCs were produced domestically. Manufacturing industries most positively affected by LDC trade are defined as those industries which would lose the most employment opportunities on net if this trade were stopped.

Table 1 lists the twenty industries most positively affected by LDC trade in 1976. Column (1) lists the value of net exports (total exports minus total imports) to LDCs in each industry, column (2) gives the ratio of net exports to LDCs as a percent of domestic production in each industry and column (3) gives total exports to LDCs as a percent of total exports of the industry. Column (4) gives employment levels for each industry in 1976. Table 2 lists the twenty industries most negatively affected by LDC trade in 1976. Columns (1) through (4) give the value of net imports from LDCs in each industry, the net imports from LDCs as a percent of domestic production in each industry, total imports from LDCs as a percent of total imports of the industry, and employment levels for each industry, respectively.

The data in these tables indicate that exports to LDCs are 50 percent or more of total exports for 14 of the 20 industries favorably affected by trade with LDCs, while imports from LDCs are less than 50 percent of total

imports for 16 of the 20 industries adversely affected by trade with LDCs. This suggests that the composition of our exports to LDCs is more concentrated than our imports from these countries.

The 20 most negatively affected industries had a total employment of 2.4 million in 1976, or about 13 percent of the total for manufacturing. For 14 of these industries, net imports from LDCs were one tenth or more as great as domestic production, and for seven of these industries net imports from LDCs were one fifth or more as great as domestic production. Many of these industries, such as apparel, furniture and fixtures, non-rubber footwear and radio and TV receiving sets frequently appear in studies of trade-impacted industries.

The 20 most positively affected industries had a total employment of 3.3 million, or about 19 percent of the total for manufacturing. For ten of these industries, net exports to LDCs were one tenth or more of domestic production, and for five of these industries, net exports to LDCs were one fifth or more of domestic production. Almost all of the positively affected industries are capital goods and machinery producing industries.

Table 1¹

Twenty Industries Most Positively Affected by Trade with LDCs

I/O Sector Industry	Net Exports ² (\$ millions)	Ratio: Net Exports to LDCs ² Domestic Production (Percent)	Ratio: Total Exports to LDCs ² Total Exports (Percent)	Industry Employment ¹ (thousands)
2701 Ind. inorg. & org. chem.	832	4	42	329
4006 Fabricated plate work (boiler shops)	179	5	65	141
4301 Steam eng. & turbines	315	19	74	44
4302 Int. comb. engines, n.e.c.	296	9	50	77
4400 Farm machinery	259	4	30	156
4501 Construction machinery	1206	22	59	148
4503 Oil field machinery	485	25	66	66
4704 Metal working mach., n.e.c.	215	17	64	53
4806 Special ind. mach., n.e.c.	378	24	55	49
4901 Pumps & compressors	331	12	56	88
5101 Completing & related mach.	508	5	22	237
5203 Refrigeration machinery	396	8	59	103
5304 Motors & generators	195	45	64	20
5604 Radio & TV commun. equip.	215	3	60	308
5703 Electronic comp., n.e.c.	207	4	50	196
5903 Motor vehicles & parts	1635	3	29	815
6001 Aircraft	1704	16	77	281
6002 Aircraft engines & parts	206	5	42	128
6004 Aircraft equipment, n.e.c.	834	38	67	15
6202 Mech. measuring devices	176	10	34	73
Total	10,572			3,327

*These sectors account for 19 percent of total employment in manufacturing.

¹These data were generated as part of an ongoing project at the Bureau of International Labor Affairs.
See U.S. Department of Labor (1978).

²All data are for 1976.

Table 2¹

Twenty Industries Most Negatively Affected by Trade with LDCs

I/O Sector Industry	Net Imports ² from LDCs ¹ (\$ millions)	Ratio: Net Imports from LDCs ² Domestic Production (Percent)	Ratio: Total Imports from LDCs ² Total Imports (Percent)	Industry Employment ² (thousands)
1409 Canned fruits & veg.	189	5	27	105
1420 Confect. & related prods.	716	29	29	74
1709 Cordage & twine	44	36	44	8
1710 Textile goods, n.e.c.	112	42	17	13
1804 Apparel made from purchased materials	2214	10	64	1165
2006 Veneer & plywood	179	10	8	68
2009 Wood products, n.e.c.	112	6	27	89
2307 Furniture & fixtures	119	45	39	14
3101 Petroleum refining & related products	1973	6	43	172
3202 Rubber footwear	311	71	46	23
3402 Footwear except rubber	469	19	39	164
3403 Other leather products	238	23	69	65
3801 Primary copper	230	11	5	18
3805 Primary nonferrous metals, n.e.c.	265	46	14	13
5601 Radio & TV receiving sets	745	12	51	75
6207 Watches, clocks & parts	117	14	56	31
6401 Jewelry, including costume & silverware	218	12	39	91
6403 Games, toys, etc.	185	9	38	60
6404 Sporting & athletic goods, n.e.c.	108	6	25	61
6412 Misc. manufactures, n.e.c.	56	6	36	55
Total	8,600			2,364

*These sectors account for 13 percent of total employment in manufacturing.

^{1/2}See footnotes on the bottom of Table 1.

II. Demographic and Occupational Characteristics of Industries Most Affected by Trade with LDCs

The demographic characteristics used in this study are: sex, minority status, age, income (both worker earnings and family income), and education. The occupational characteristics used are: skill (measured as a percentage of the average wage in manufacturing), skilled workers as a percentage of the labor force, and white collar workers as a percentage of the labor force.³

Table 3 presents the demographic and occupational characteristics of the 40 industries most affected by trade with LDCs.⁴ Column (1) gives the average for each characteristic for the 20 industries most favorably affected by this trade. Column (2) gives the average for each characteristic for overall manufacturing and column (3) gives the average for the 20 industries most adversely affected by trade with LDCs.

Demographic Characteristics

Sex. Females comprised an average of 57.2 percent of the work force in the adversely affected industries compared with an average of 20 percent for the favorably affected industries and 28.6 percent for overall manufacturing. The percentage of females was highest in "apparel made from purchased materials" (79.2 percent), "footwear except rubber" (61.2 percent), "watches clocks and parts" (56.9 percent) and "confectionary and related products" (50.9 percent). These industries are all among

those most negatively affected by LDC trade. The percentage of female workers was lowest in "construction machinery" (10.2 percent), "oil field machinery" (10.6 percent) and "internal combustion engines, n.e.c." (10.4 percent). These last three industries are all among those most positively affected by LDC trade. Only 25 percent of the positively affected industries had a greater percentage of female workers than the overall average for manufacturing, whereas 65 percent of the negatively affected industries exceeded this average.

Minority Workers. Minority workers were defined as all non-white workers. The industries negatively affected by LDC trade employed a higher percentage of minority workers (10.9 percent) than the overall manufacturing average (9.9 percent). Further, 15 of the most positively affected industries employed less than 7 percent minority workers while only two of the negatively affected industries had less than 7 percent minority workers. On the other hand, only one of the positively affected industries employed more than 10 percent minority workers, while nine of the negatively affected industries had 10 percent or more minority workers. The highest percentages of minority workers were in "wood products, n.e.c." (18.6 percent) and "veneer and plywood" (16.3 percent). The lowest percentages of minority workers were in "farm machinery" (3.2 percent) and "mechanical measuring devices" (3.5 percent).

Age. The percentage of workers below age 25 was slightly higher in the negatively affected industries than in the positively affected industries (16.3 percent compared to 14.8 percent). More detailed data show that the negatively affected industries had an average of 4.6 percent of

Table 3

Demographic and Occupational Characteristics of Industries
Most Affected by Trade With LDCs

Demographic Characteristic ¹ (Percentage)	Average of the Twenty Industries in Which LDC Trade Had the Most Favorable Impact on Employment Opportunities	Overall Manufacturing Average	Average of the Twenty Industries in Which LDC Trade Had the Least Favorable Impact on Employment Opportunities
Female	20.0	28.6	57.2
Minority	8.2	9.9	10.9
Under 25 years old	14.8	16.4	16.3
Over 50 years old	23.7	19.8	30.4
Family income below the poverty level	2.4	4.2	7.6
Annual earnings over \$10,000	30.7	22.1	12.3
Annual earnings over \$12,000	17.9	12.4	7.3
High School education (4 years)	41.0	36.6	31.5
College education (4 years)	6.8	5.1	3.1
<u>Skill or Occupational Characteristic</u>			
Skill measured as a percentage of the average wage in manufacturing ²	117	100.0	78
Skilled workers as a percentage of the labor force, 1970 (on an occupational basis) ³	55.9	50.2	33.5
White collar workers as a percentage of the labor force, 1970 ⁴	35.5	30.4	21.4

¹Source: Census of Population, 1970, Subject Reports: Industrial Characteristics, U.S. Dept. of Commerce, 1972 (Washington, D.C.: U.S. GPO).

²Source: Employment and Earnings, U.S. Dept. of Labor. Index is the average wage in the industry divided by the average wage in manufacturing.

³Source: Census of Population, 1970, Subject Reports: Occupations by Industry, U.S. Dept. of Commerce, 1973 (Washington, D.C.: GPO). Skilled workers are defined to include professionals, managers, sales, clerical and craftsmen.

⁴Same as 3. White collar workers include all defined as skilled except craftsmen.

its workers below age 19, while the positively affected industries had only 3.2 percent of its work force below this age.

The two industry groups differ more significantly with respect to the percentage of workers over 50 years old, with the negatively affected industries having an average of 30.4 percent as opposed to 23.7 percent for the positively affected industries. Again, a look at more detailed data show that the negatively affected industries had 9.1 percent of their work force above 60 years of age, while the positively affected industries had only 5.8 percent of their work force above this age. These data indicate that industries impacted by LDC trade have a lower percentage of prime-age workers than industries positively affected by LDC trade.

Income and Earnings. Three different measures were used to compare the income and earnings experience of workers in the two groups of industries. They were: 1) The percentage of the work force which had a total family income below the poverty level in 1969, 2) the percentage of those working in the industry making more than \$10,000 in 1969, and 3) the percentage of those in the industry making over \$12,000 in 1969. The median income in manufacturing was \$8,813 in 1969.

The percentage of families with incomes below the poverty level was about three times as great for the negatively affected industries as for the positively affected industries (7.6 percent as opposed to 2.4 percent). None of the positively affected industries and half of the negatively affected industries had poverty rates above the national average. The highest poverty rates were in "veneer and plywood" (12.6 percent) and "wood products, n.e.c." (15.7 percent). The lowest poverty rates were in

"aircraft engines and parts," "aircraft equipment, n.e.c.," and "mechanical measuring devices," each of these industries having only 1.4 percent poverty levels.

An examination of worker earnings above \$10,000 and \$12,000 reveals a similar pattern. In 1969, only 12.3 percent of the work force in the negatively affected industries earned more than \$10,000 and only 7.3 percent earned more than \$12,000. On the other hand, 30.7 percent of the work force in the positively affected industries earned more than \$10,000 and 17.9 percent earned more than \$12,000 in 1969. For overall manufacturing, 22.1 percent of the work force earned over \$10,000 and 12.4 percent earned over \$12,000 in 1969.

Our data thus indicate that workers in industries which are negatively affected by LDC trade have a larger percentage of workers living below the poverty level than the manufacturing average. These industries also have a larger percentage of workers with incomes below the median for all manufacturing. On the other hand, industries which are positively affected by LDC trade were characterized by a smaller percentage of workers living below the poverty level than the manufacturing average, and a larger percentage of workers with earnings above \$10,000 and \$12,000 per year in 1969.

Education. Two variables were used to characterize the level of formal education embodied in the labor force: the percentage of the labor force that had completed four years of high school and the percentage that had completed four years of college. In 1970, 36.6 percent of the work force in manufacturing had completed four years of high school. This compares with 41.0 percent in the positively affected industries and 31.5

percent in the negatively affected industries. The results were similar for those completing four or more years of college. Only 3.1 percent of workers in the adversely affected industries had completed college, as opposed to 6.8 percent in the positively affected industries.

Summary of the Results for Demographic Characteristics

A systematic pattern appears in all the demographic characteristics between the two sets of industries. Those industries positively affected by LDC trade had relatively fewer female, minority, and non-prime-age workers and their workers were relatively more educated and had higher earnings. Although many of these characteristics are jointly determined, for example, education and earnings, the systematic differences in all characteristics help provide a more comprehensive picture of the type of workers being positively and adversely affected by LDC trade.

The differences in worker characteristics between the positively and negatively affected industries suggest that those workers who have to bear the burden of both the short-run adjustment costs caused by changes in trade, and of potential declines in their long-run earnings capacity, are those least able to afford it.

Skill or Occupational Characteristics

The skill and occupational characteristics of the labor force were measured in three different ways. In the first, an index was constructed using the wage in an industry as a percentage of the average wage in manufacturing as an indication of the skill or human capital embodied in the labor force.⁵ Our second measure updates a similar measure used by Waehrer (1968). Waehrer constructed an occupational index for 1960 by

classifying professional, managers, sales, clerical, craftsmen and service workers as skilled and operatives and other laborers as unskilled. Waeherer's index was the percentage of the total labor force classified as skilled. Our measure uses a similar index for 1970, except that we have decided to classify service workers as unskilled after reviewing the detailed list of service occupations.

Our third measure is the percentage of white collar workers in the labor force. Our definition of white collar workers includes all workers classified as skilled except craftsmen.

Both the indexes for skill were below the manufacturing average for the negatively affected industries. On a wage basis, the index for the negatively affected industries was 78 as opposed to 100 for the manufacturing average. This compares with skill indexes on wage and occupational bases of 117 and 55.9 respectively for the positively affected industries.

The results were fairly consistent among industries within each group. For example, only two of the negatively affected industries had more than 50 percent of their labor force classified as skilled according to the occupational index, whereas 18 of the positively affected industries had more than 50 percent skilled according to this same measure.

An examination of the percentage of the work force classified as white collar reveals similar results. Only 21.4 percent of the work force was classified as white collar among the negatively affected industries, compared to 30.4 percent for the manufacturing average and 35.5 percent for the positively affected industries.

Our results show that the negatively affected industries have larger

percentages of unskilled workers than the manufacturing average while the positively affected industries have smaller percentages of unskilled workers than this average. Hence, as a result of LDC trade, the demand for skilled labor will be increased while the demand for unskilled labor will fall.

Comparison of Industries Most Affected by LDC Trade With Industries Most Affected by Recent Changes in Total Trade

Table 4 presents the demographic and occupational characteristics of the 40 industries most affected by changes in total trade from 1964 to 1975 taken from the recent study by Aho and Orr (1979). The results for changes in total trade are similar to the results for LDC trade. In both cases the workers in trade-impacted industries were more often female, members of minorities, less educated, unskilled and economically disadvantaged. On the other hand, workers in trade-enhanced industries had higher skills, more education and earned more income.

A comparison of the results in Tables 3 and 4 reveals no systematic differences between the impact of LDC trade and the impact of recent changes in total trade on demographic or occupational groups of workers. For example, the industries most negatively affected by LDC trade had larger percentages of female workers and non-prime-age workers than the industries most impacted by changes in total trade, but a slightly smaller percentage of minority workers. For the income and earnings characteristics, the industries negatively affected by LDC trade had a lower percentage of workers living below the poverty level but also had lower percentages of workers earning above \$10,000 and \$12,000 in 1969 than was the

case for the industries most negatively affected by changes in total trade. The results are also ambiguous for education and skill or occupational characteristics, although the one significant difference was for skill measured as a percentage of the average wage in manufacturing. For LDC trade, the difference between the positively and negatively impacted industries was 39 percentage points (117 vs. 78). For total trade the difference was much smaller, 105 vs. 98. This can be due, in part, to the inclusion of steel and motor vehicles among the negatively impacted industries for the total trade comparison. In addition, the positively impacted industries for LDC trade are a more homogeneous group, consisting mostly of the capital-intensive machinery industries.

In part, the lack of systematic differences in results between changes in total trade and LDC trade may be due to the fact that LDC trade is a component of total trade, and LDC trade has been growing more rapidly than total trade in recent years. LDC trade may thus have played an important role in determining those industries most affected by changes in total trade. Therefore it is difficult to speculate on the differences between the effects of LDC trade and trade with developed countries on the various classes of workers by comparing the results in Tables 3 and 4. Industries most affected by LDC trade and those most affected by trade with developed countries might indeed have different demographic and occupational characteristics. For example, we might expect workers adversely affected by LDC trade to have lower skills and lower earnings than those negatively affected by trade with developed countries. This question needs to be researched more fully.

Table 4

Characteristics of the Industries in Which Trade Had the Largest
Positive and Negative Impact Upon Job Opportunities, 1964-75

<u>Demographic Characteristic¹</u> (Percentage)	<u>Average of the Twenty Industries in Which Trade Had the Most Favorable Impact on Employment Opportunities</u>	<u>Overall Manufacturing Average</u>	<u>Average of the Twenty Industries in Which Trade Had the Least Favorable Impact on Employment Opportunities</u>
Female	21.5	28.6	41.1
Minority	7.4	9.9	11.5
Under 25 years old	15.4	16.4	15.8
Over 50 years old	24.4	19.8	28.0
Family income below the poverty level	5.8	4.2	9.8
Annual earnings over \$10,000	27.9	22.1	18.3
Annual earnings over \$12,000	16.5	12.4	10.3
High School education (4 years)	39.1	36.6	34.0
College education (4 years)	6.9	5.1	3.1
<u>Skill or Occupational Characteristic</u>			
Skill measured as a percentage of the average wage in manufacturing ²	104.0	100	97.8
Skilled workers as a percentage of the labor force, 1970 (on an occupational basis) ³	55.8	50.2	38.8
White collar workers as a percentage of the labor force, 1970 ⁴	36.3	30.4	21.1

^{1/2/3/4} See footnotes at the bottom of Table 3.

III. Summary and Conclusions

This analysis identified those U.S. manufacturing industries which gained or lost the most job opportunities because of trade with LDCs in 1976. Both the direct and the indirect effects of this trade were taken into account through use of input-output analysis. The purpose of this paper was to compare the demographic and occupational characteristics of workers in industries most negatively affected by LDC trade with the average characteristics for overall manufacturing and with the worker characteristics of those industries most favorably affected by LDC trade.

Compared to the manufacturing average, the manufacturing industries which experienced the largest negative impact on job opportunities because of LDC trade employed relatively more females, members of minorities, and non-prime-age workers. They also had lower percentages of educated and skilled workers. Workers in these industries had lower earnings and were more likely to have a family income below the poverty level.

On the other hand, those industries which were most favorably affected by LDC trade employed higher percentages of skilled and educated workers, more prime-age workers, but lower percentages of female workers and minorities than the manufacturing average. Workers in these industries also had higher earnings and a lower percentage of family incomes below the poverty level.

Our analysis indicates that workers displaced by LDC trade are likely

to be less educated and skilled than the manufacturing average. By reducing demand for workers with these characteristics, LDC trade will have the effect of reducing their earnings as well as increasing their adjustment costs should they become unemployed. Since these workers are already more likely to have earnings below the manufacturing average than workers in the positively affected industries, LDC trade is likely to have negative consequences for income distribution among manufacturing workers.

Our results thus indicate that micro-economic policy measures, such as import relief or trade adjustment assistance, may be necessary in order to combat the adverse effects of LDC trade on certain classes of workers, regardless of the calculated effects of this trade on aggregate job opportunities.

Notes

*The authors are economists in the Office of Foreign Economic Research of the Bureau of International Labor Affairs at the Department of Labor. This analysis grew out of a larger project investigating the impact of trade on employment opportunities which has been an ongoing project in the Bureau. David Kreda, also in the Office of Foreign Economic Research, provided diligent and able assistance in performing the calculations used in this study.

¹LDCs, for the purpose of this study, are defined as all countries except the United States, Canada, Japan, members of the EEC, New Zealand, Austria, Finland, Norway, Sweden, Australia and Switzerland.

²The impact of LDC trade on employment opportunities is calculated by multiplying the average labor/output ratio for the industry by the value of output gained or lost because of LDC trade. The effects of LDC trade on the value of output in each industry include both the direct and indirect effects. The indirect effects arise because exports and imports of goods produced in one industry require intermediate inputs from other industries. For example, the indirect effect of automobile imports on the domestic production of steel is included in the estimates of the impact of trade on employment in the steel industry. Direct and indirect effects were estimated using the 367 sector U.S. input-output table constructed by the Bureau of Economic Analysis of the Department of Commerce for 1967, updated for price and productivity changes. The estimates were obtained by allocating imports, on a tariff line (TSUSA) basis, and exports, classified according to Schedule B, to the appropriate input-output sectors and then deflating by sector to express them in 1967 dollars. Imports were adjusted by cost-insurance-and-freight (CIF) margins to obtain the dollar values actually spent on imports by U.S. residents. Data on trade, domestic output and domestic employment are for 1976. The value of domestic output lost to imports was assumed to correspond dollar-for-dollar to the value of imports.

Changes in employment opportunities should not be equated with changes in employment. For example, among other factors, actual job losses (lay-offs) depend upon general economic conditions. It must be stressed that the estimation technique is not a general equilibrium analysis but rather a set of demand or impact estimates made under the restrictive set of assumptions central to all input-output analyses.

³Data on demographic characteristics are from the 1970 Census of Population. Data for occupational characteristics are from this same source and from Employment and Earnings.

⁴Weighted by actual employment in each industry in 1976. Since the input-output table was more disaggregated than the corresponding Census data, roughly to the three and four digit level of the Standard Industrial Classification, the demographic characteristics of the industries are usually the characteristics of a broader industrial grouping. For this reason, the demographic data are not a completely accurate representation of the sectors affected positively or negatively. Another limitation of the data is that they are data covering the labor force as a whole for the year 1969. For policy purposes it would be preferable to have data on the changes in the work force, those hired or laid off. Nonetheless, these data provide a snapshot of the characteristics of the labor force in those industries in 1969, isolate the impact of changes in trade and provide a useful basis for policy analysis.

This measure of skills, after discounting to obtain a stock measure, has been used in several empirical investigations of the structure of trade. See, for example, W. Baranson and N. Monoyias (1977).

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APPENDIX G

Are Trade Impacted Workers
Adequately Compensated?

**ARE TRADE IMPACTED WORKERS
ADEQUATELY COMPENSATED?**

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Under most conditions relaxation of trade barriers is financially beneficial to a nation. That is, the dollar gains stemming from reduced prices of imported items exceed the losses due to reduced domestic production of the same item. But those who lose from lowered trade barriers are usually not the same ones who gain, and, in principle, one cannot say that a society has been made "better off" if some individuals have been made worse off. What is called the "compensation principle" can be used to evaluate proposed changes in trading rules: If a change would permit the gainers to compensate the losers with something left over, then society can be better off if the change is implemented. This method of evaluation does not depend on whether the losers are compensated; the issue is simply whether or not compensation would be possible.

Actual provision of compensation is important, however. Those who are hurt by reducing trade barriers often lose a great deal, and, in the absence of an actual compensation system, each individual who fears that he may be hurt feels compelled to reduce the risk that harm may come to him by attempting to block change. In fact, the perceived risk may greatly exceed the actual harm and even exceed the potential gains. Thus providing compensation by reducing the riskiness of reducing trade barriers is likely to facilitate change and be highly beneficial to society at large.

Plans to reduce the adverse effects of freer trade have been an

integral part of U.S. trade legislation since the early sixties. Although the Trade Expansion Act of 1962 mandated trade adjustment assistance, no payments to workers were made until the late sixties. As should become apparent from this talk, the generally prosperous period following enactment of the Trade Expansion Act greatly reduced the need for compensation. The adjustment problem and the need for compensation to reduce opposition to trade expansion increased during the recession in the early seventies.

As with most new programs, the Trade Adjustment Assistance took some time to evolve into its present form. It currently includes the following major provisions:

1. To be eligible for benefits, the worker's establishment must be certified as trade impacted.*
2. An eligible worker can receive benefits only if he is unemployed. Benefits equal 70 percent of prior average weekly earnings up to a maximum equal to the average wage in manufacturing. Benefits are paid for any involuntary unemployment within a year of initial job loss.
3. Benefits are paid by the Unemployment Insurance System as a supplement to regular UI.

The key question about the program to which I will devote most of the remainder of this paper is -- does the program provide fair compensation?

*Under the 1962 Act, the program certified establishments where changes in trade policy were judged responsible for permanent layoffs. The Act was liberalized in 1974 so that certification is now given to establishments affected by increases in imports, even if there have been no tariff reductions and only temporary layoffs occur.

By fair compensation I mean compensation that makes the recipient indifferent about whether a government action, such as reduction in trade barriers, occurs. A hypothetical example of compensation which is fair by the above definition is the following: Suppose that an employer announces that he wants to reduce his work force by 25 workers. He asks all of his employees to name a lump sum payment that they would accept to quit, and then selects 25 bids that he is willing to accept. (A scheme of this type was recently used in order to reduce the number of printers employed by the Washington Star newspaper.)

Two characteristics of this scheme are of particular importance:

1. The amount of compensation paid to any worker is acceptable to both the recipient and the payer.
2. Workers with identical jobs can receive different amounts of compensation.

One of the most common forms of government compensation -- payments made to individuals whose property is taken under eminent domain proceedings -- does not have either characteristic. Property owners must sell at the price deemed fair by the government (either an operating agency or the courts), no matter how they personally value the property, and individuals with identical houses receive the same compensation. Two individuals often attach far different value to identical property. For instance, one individual may have recently received a major job promotion and is planning to relocate anyway, while a second individual is retired and has strong neighborhood ties.

Although it does not insure that compensation will be fair, eminent

domain does exhibit two other characteristics that are critical in providing compensation:

1. It makes sure that compensation goes to injured parties and does not go to those not hurt. Clearly, government must pay for property before it can be taken and when the government takes property, the owner must vacate it.
2. It sets out a clear-cut, workable process for establishing the amount of compensation to be paid. Government pays a fixed premium above "fair market value" and generally provides other relocation assistance which approximately matches actual cost.

We will put aside, for the moment, the issue of whether TAA insures that compensation will go only to those who are hurt, and consider whether TAA provides fair compensation, given that a worker is hurt and receives TAA.

Measuring the cost (utility loss) to workers of a change in trade rules is extremely difficult. For the present purpose, I will assume that earnings loss is a good measure of the cost.* (This is similar to the use of fair market prices in eminent domain procedures.) The fairness of TAA will be assessed on the basis of how well it replaces lost earnings.

*A detailed explanation for why earnings losses, when properly measured, reflect utility loss is made in "Earnings Loss Due to Displacement," Louis Jacobson and Janet Thomason, The Public Research Institute CRC 385, April 1979.

The key problem is to measure the earnings losses of workers adversely affected by reduction in trade barriers. Once the size of the loss is known it is not too difficult to determine the amount of compensation which would be paid.

The largest per capita loss stems from being forced to change jobs. This will be called displacement. I have completed a number of studies measuring losses due to displacement. The basic conclusion is that workers will experience large losses in industries where the rate of normal labor turnover is low, in industries where a high proportion of the work force is male, and in heavily unionized industries. The steel and auto industries are typical of industries where displacement losses are large. In these industries workers will likely lose over their entire work life an amount equal to about twice their average annual earnings -- \$30,000. Considerably more than half of the loss is probably due to unemployment. Much of the unemployment occurs in the first year while the worker searches for a new job. Some of it occurs later when he shifts from job to job while looking for what will ultimately be his permanent position, or when the loss of seniority causes temporary unemployment to be more frequent and longer than it otherwise would be.

Recall that a major provision of TAA is that it supplements regular UI benefits for one year. For many displaced workers who suffer high losses, only about 25 percent of the total loss occurs during this period. Thus, TAA does not fully compensate displaced workers in high loss industries.

Although the evidence is less clear, it suggests that displaced

workers have relatively small losses -- less than 25 percent of average annual earnings over the worker's lifetime -- in industries that have high rates of normal turnover, predominantly female work forces, and low levels of unionization. The evidence is less clear because it is more difficult to assess earnings losses in these industries, where many workers who are displaced drop out of the work force. Although the earnings of a labor force dropout fall to zero, that is not a valid indicator of the amount of the loss since they probably could earn considerably more than zero if they continued to look for jobs. In most cases dropping out is an indicator that the individual has an alternative activity that he or she considers preferable to working at available jobs. Most economists therefore agree that using earnings loss as a measure of loss is appropriate only if the worker continues to seek work.

This point is extremely important and can be illustrated with a case study. In the early seventies a plant producing television sets was closed by a major U.S. manufacturer, largely because of foreign competition. It was found that the average earnings of the workers displaced from the plant fell far below the amount that they had earned during the plant's operation. Further research, however, showed that prior to the opening of the plant -- only about five years earlier -- most of the workers had not been employed, and, after the plant closed, most of the workers dropped out of the labor force. It is likely that the particularly attractive opportunity offered by this one plant drew the predominantly female work force into the labor market. When the plant closed, the women preferred to drop out of the labor force rather than take the

best available jobs. The point here is not that these losses were zero -- a particularly attractive opportunity to work was lost -- but that the loss was not equal to 100 percent of the drop in earnings either.

A more appropriate measure is the difference between actual earnings before displacement and the earnings opportunity represented by the next best job. If this measure of earnings loss is used, the losses are small in high turnover, predominantly female, ununionized industries, such as textiles. Displaced workers in these industries probably receive adequate compensation. Most of their loss is concentrated in the first year and the amount of payment -- generally about 70 percent of average pre-displacement earnings, tax free -- is about equal to foregone after-tax earnings.

Although displaced workers experience the largest losses, displacement is relatively rare and generally a result of a plant shutdown. Most workers adversely affected by import competition are likely to experience increased unemployment through temporary layoffs but not permanent job loss. TAA compensates trade impacted workers for all unemployment in a given year, not just that portion caused by trade competition. This would lead to over-compensation except that unemployment is probably not the only adverse effect of import competition -- wage rates may grow more slowly than they otherwise would. Thus, on balance, the compensation provided is reasonably fair.

The link between TAA and UI is an outstanding feature of the TAA program.

1. First, use of an already existing benefit system

greatly reduces the administrative cost of distributing benefits.

2. Second, since benefits are linked to the duration of each person's unemployment, benefits are likely to be in proportion to the worker's loss. That is, two identical workers with identical jobs will receive different amounts of compensation if one has more difficulty locating a suitable job than the other.

In summary, most workers hurt by import competition are likely to be adequately compensated if they actually receive TAA. One important exception is that workers displaced in low turnover industries will likely receive too little because most of their losses do not occur in the first year. While it seems that workers who are hurt by imports and receive TAA are fairly compensated, it is far more difficult to insure that benefits are given only to those actually hurt. The reason is that many workers would lose jobs and experience unemployment even if trade barriers were not removed. When trade barriers are removed, any worker who is displaced will feel that he is one of those injured by increased import competition, and, in practice, there will be no way to determine whether the displacement would have occurred anyway.

For example, a study of displacement in the steel industry showed that every steel plant can absorb an employment reduction of 5 percent or more through attrition -- voluntary quits and retirements. In prosperous times, when employment in the industry is growing, few plants in

the steel industry will reduce employment by more than 5 percent. Even if import competition were to reduce employment growth in the industry as a whole, say from 5 percent to 4 percent, very few firms would displace any workers. In recessionary periods, however, many plants will reduce employment by more than can be accommodated by attrition. If import competition were to cause aggregate employment reduction, many workers would have to be displaced. About 2 percent of the work force would be displaced if employment were reduced by 4 percent because of adverse business conditions. If trade barriers were eliminated at the same time, leading to a 5 percent as opposed to a 4 percent employment reduction, the effect would be to displace an additional one-half of one percent of the work force in the industry.

Adverse business conditions affect workers' losses in other ways as well. The rate of voluntary turnover is sensitive to the business cycle. In a general recession, few workers leave voluntarily, limiting a firm's ability to reduce employment without resorting to displacement. Moreover, workers who lose their jobs in a recession have much more trouble locating a suitable job than do workers displaced when times are good. They thus experience losses that may be as much as twice as large.

There is no question that the need for compensation is far greater in a recession but it should be equally clear that fully compensating every worker who is financially hurt in a trade impacted industry will lead to far more compensation being paid than is the magnitude of the harm actually done by increased trade.

Initially, TAA restricted benefits to displaced workers and to

instances where the connection between the change in trade legislation and the loss of a job was particularly clear. Recent changes have tended to make the benefits available to workers temporarily laid off as well as those displaced and to workers in industries affected by import competition, not just increased competition due to changes in trading rules.

Expansion of the TAA program in this way is necessary to insure that workers actually hurt are compensated. One could argue that the TAA program does not go far enough. For benefits to be made available, a petition must be filed and evaluated for each plant claimed to be adversely affected. Many workers are unaware of the program. Others are in plants where no petition is filed because, although there are adverse effects, the effects are small and the probability of receiving benefits is low. An automatic trigger system would greatly improve the prospects that injured workers receive benefits. One way to do this would be for the Department of Labor to certify a product or industry as impacted. If it did so, workers in all firms in the industry where employment falls would automatically qualify. Although such a system would pay "too much" to workers as a whole, it may not be too high a price to pay to secure the benefits of trade expansion.