



The effectiveness of trade adjustment assistance : a case study
by Diane Pauline Carlson Miller

A thesis submitted in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE
in Applied Economics
Montana State University
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Abstract:

The objective of this study is to determine the effects of the timing of receipt of trade adjustment assistance upon worker adjustment. The specific hypothesis tested is that an adjustment assistance program with an efficient and expeditious system for delivering benefits will be of greater assistance to workers than will be one where long delivery delays occur.

A group of workers who received adjustment assistance within one month of layoff was chosen as the experimental group. Another group of workers in similar circumstances who received adjustment assistance more than one - year after layoff was selected as the control group.

Two multiple regression models were formulated to compare worker adjustment. The first uses present wage as the dependent variable.

The independent variables are age, age squared, sex, education, number of years with the original firm, timing of receipt of benefits and training. Significant results are that present wage is higher for men, wage increases with education and that wages are higher among workers who received assistance shortly after layoff.

The second model uses length of unemployment as the dependent variable. The independent variables are age, age squared, sex, education, wage-earner status, timing of receipt of adjustment assistance, training, and imputed wealth. Significant results are that men and younger workers experience shorter periods of unemployment than do women and older workers. Workers with greater relative wealth positions incur shorter periods of unemployment. Recipients of adjustment assistance shortly after layoff experience longer periods of unemployment while workers who receive adjustment assistance more than one year after layoff incur shorter periods of unemployment.

The primary conclusion of this research is that receipt of trade adjustment assistance shortly after layoff does result in a higher wage upon reemployment than does receipt of trade adjustment assistance as a lump sum or than does receipt of no benefits. However, it must also be concluded that receipt of trade adjustment assistance shortly after layoff does not decrease the length of unemployment but rather increases it. Apparently recipients view the opportunity cost of reemployment as high compared to the benefit although they utilize the benefit to maximize their job search.

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A CASE STUDY

by

DIANE PAULINE MILLER

A thesis submitted in partial fulfillment
of the requirements for the degree

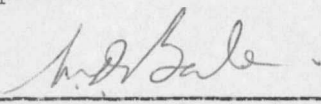
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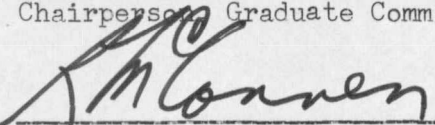
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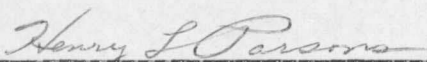
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ABSTRACT

The objective of this study is to determine the effects of the timing of receipt of trade adjustment assistance upon worker adjustment. The specific hypothesis tested is that an adjustment assistance program with an efficient and expeditious system for delivering benefits will be of greater assistance to workers than will be one where long delivery delays occur.

A group of workers who received adjustment assistance within one month of layoff was chosen as the experimental group. Another group of workers in similar circumstances who received adjustment assistance more than one year after layoff was selected as the control group.

Two multiple regression models were formulated to compare worker adjustment. The first uses present wage as the dependent variable. The independent variables are age, age squared, sex, education, number of years with the original firm, timing of receipt of benefits and training. Significant results are that present wage is higher for men; wage increases with education and that wages are higher among workers who received assistance shortly after layoff.

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The primary conclusion of this research is that receipt of trade adjustment assistance shortly after layoff does result in a higher wage upon reemployment than does receipt of trade adjustment assistance as a lump sum or than does receipt of no benefits. However, it must also be concluded that receipt of trade adjustment assistance shortly after layoff does not decrease the length of unemployment but rather increases it. Apparently recipients view the opportunity cost of reemployment as high compared to the benefit although they utilize the benefit to maximize their job search.

CHAPTER 1

Introduction

Background to International Trade

The theory of comparative advantage, originally formulated by David Ricardo in 1815, is one of the oldest economic theories still intact. Applied to international trade, the theory of comparative advantage states that countries will gain by trade as long as the ratios of their production costs differ. This can be seen by examining the labor costs of producing fuel and food in countries A and B with the following labor costs:

	1 unit of fuel	1 unit of food
Country A	60 man-hours	90 man-hours
Country B	120 man-hours	100 man-hours

It can be seen that Country A has an absolute advantage in the production of both goods: it costs less for Country A to produce one unit of fuel or one unit of food than it costs for Country B to produce them.

To produce one unit of fuel, Country A gives up $60/90 = .67$ units of food. It costs Country B $120/100 = 1.2$ units of food to produce one unit of fuel. Country A is the lower cost producer of fuel and is said to have a comparative advantage in its production.

Country A gives up $90/60 = 1.5$ units of fuel to produce one unit of food. On the other hand, Country B gives up $100/120 = .83$ units of fuel to produce one unit of food. Country B gives up less units of fuel to produce one unit of food than Country A does. Country B thus has a comparative advantage in the production of food even though Country A has the absolute advantage.

If Country A can import one unit of food for less than 1.5 units of fuel, it will gain by trading. If Country B can import one unit of fuel for less than 1.2 units of food, it too will gain from it. By pursuing their respective comparative advantages, both countries can gain by trading. As long as the labor costs of production remain constant, the final result will be that Country A produces only fuel while Country B produces only food provided that each country has sufficient production capacity to supply the other's needs.

The widespread acceptance of the theory in this application has led a majority of economists to advocate freer trade as a desirable goal. It should be noted that the theory concerns itself with the economic welfare of the nation as a whole: it says nothing about the distributional effects of freer trade upon segments of the society.

The western world and many developing countries have been moving in the direction of freer trade since World War II. In 1944 an organization called the International Trade Organization was envisioned as a vehicle for bringing about a world of free trade. A charter was drawn

up but was never ratified by any country so the organization was never established. Instead several nations banded together in 1947 to form the General Agreement on Tariffs and Trade (GATT), an organization designed for group negotiations by member nations on trade policy. There are now more than seventy nations in GATT, two-thirds of which are developing nations. Negotiations sponsored by GATT to reduce tariffs were held in 1947, 1949, 1951, 1956, 1963 and another round is currently under way in Geneva.¹

In 1953 the U.S. Congress passed a one year extension of the Reciprocal Trade Agreements Act. President Eisenhower appointed a presidential commission to study aspects of foreign trade and to make policy recommendations to Congress. Among the staff papers published by the commission, was a proposal by David J. McDonald, the only labor representative on the commission. His proposal presented a novel approach to the problem of firms, communities and workers injured by tariff reductions and the subsequent increase in imports which he called adjustment assistance. He preferred technical assistance to affected firms to increase efficiency or to help them adjust by expanding into different product lines. Realizing that this would not always be feasible, he suggested community assistance. As a last resort, he advocated direct assistance to the impacted workers. Although

¹Bo Södersten, International Economics, Harper & Row, New York, Evanston, London, 1970, pp. 398-402.

his position was the minority one on the commission, the publication of his paper brought the idea of adjustment assistance to the attention of the public. His paper recognized the distributional effects of trade liberalization and offered proposals to rectify them.¹

These proposals were later incorporated into the trade bill proposed by President Kennedy in 1962. The purposes of the Trade Expansion Act (TEA) were: 1) to stimulate the economic growth of the U.S. and maintain and enlarge foreign markets for the products of U.S. agriculture, industry, mining and commerce; 2) to strengthen economic relations with foreign countries through the development of open and non-discriminatory trading in the free world; and 3) to prevent Communist economic penetration.² The Act granted the president the power to: 1) reduce tariffs on all commodities by up to 50%; 2) reduce tariffs by up to 100% on commodities which the U.S. and Common Market countries account for 80% of the world trade; and 3) eliminate tariffs of less than 5% on tropical goods if the Common Market countries did likewise. The passage of the TEA initiated a round of tariff negotiations under GATT auspices called the Kennedy Round. It was in progress from 1963-1967. The end result was an arithmetic average tariff reduction of

¹J. E. McCarthy, "Trade Adjustment Assistance: A Case Study of the Shoe Industry in Massachusetts," unpublished Ph.D. dissertation, Fletcher School of Law and Diplomacy, Tufts University, 1974.

²U.S. Congress, House, Trade Expansion Act of 1962, Pub. L. 87-794, 87th Congress, 1962, H.R. 11970, p. 1.

about 30% for GATT members.¹

Background to "Adjustment Assistance"

Protectionist strength in the U.S. was strong in 1962 before President Kennedy proposed the TEA. Labor leaders, concerned with the employment of their union members and aware of the distributional effects of freer trade, tended to be against the liberalization of trade. The subsequent passage of the bill was partly due to Kennedy's incorporation of trade adjustment assistance in the bill--an inclusion which gained labor support for the bill. As Kennedy explained it, the emphasis was to be on adjustment rather than on assistance. The bill provided for both firm and worker assistance. Worker assistance was of three types. 1) weekly cash allowances: the worker was to be paid an amount equal to 65% of his average weekly wage or 65% of the average manufacturing wage, whichever was less, for any week that he was unemployed. This allowance made up the difference between any weekly state unemployment security benefit and the guarantee. Benefits were paid for fifty-two weeks with a possible twenty-six week extension for workers enrolled in training courses before the end of the fifty-two week period or a thirteen week extension for workers who were sixty years of age before the date of total or partial separation. 2) training, counseling, testing and placement services: any of these services

¹Södersten, op. cit., pp. 402-409.

available under any other act were to be made available to trade impacted workers. 3) relocation allowances: heads of families who could not find suitable employment within a reasonable distance of their residence and who had secured a job or offer of a job in another area could receive assistance in moving. The actual benefit was the reasonable and necessary moving expenses as defined by the Secretary of Labor and a lump sum benefit equal to two and one-half times the average weekly manufacturing wage.¹

In order to qualify for assistance, the union or other worker representative filed an application with the Tariff Commission. The commission then determined "whether, as a result in major part of concessions granted under trade agreements, an article is being imported into the United States in such increased quantities as to cause, or threaten to cause, serious injury to the domestic industry producing an article which is like or directly competitive with the imported article."² The Tariff Commission then submitted its findings to the President. If the findings were affirmative or if there was a tie, the president could refer the report to the Department of Labor who determined individual worker eligibility. Workers were then notified by their state employment security office to apply for adjustment assistance.³

¹Ibid., pp. 21-25.

²Ibid., p. 13.

³Ibid., pp. 12-15.

The Rationale for Adjustment Assistance

The theoretical bases for adjustment assistance are based upon human capital theory and equity considerations.

Human capital theorists^{1,2} argue that unemployment causes human capital in the form of skills and productive abilities to be removed from the society's total productive capabilities. This causes society to operate inside its production possibilities frontier. In addition, unemployment causes a deterioration in skills and productive abilities. Adjustment assistance on this basis is given to reduce the costs to the worker of seeking reemployment on the assumption that the benefits to society of utilizing his full productive capabilities will outweigh the costs of the assistance program.

A second basis for assistance concerns the distributional aspects of trade liberalization and the equity considerations of the distribution. The Hecksher-Ohlin theorem states that a country will export those goods which use the country's relatively abundant factor of production intensively and import those goods which are produced primarily by the country's scarce factor of production. Stolper and Samuelson have shown that a reduction of a tariff results in a redistribution of national income in favor of the owners of the abundant factor of

¹Theodore W. Schultz, Investment in Human Capital: The Role of Education and of Research, the Free Press, New York, 1971, p. 43.

²Gary S. Becker, "Investment in Human Capital: A Theoretical Analysis," Journal of Political Economy, 70 (October 1962):9-49.

production. Owners of the relatively scarce factor of production receive absolutely as well as relatively less income expressed in terms of any good.¹ Thus trade liberalization results in a redistribution of income among factors of the economy and the scarce factor of production receives a smaller piece of an enlarged pie. Generally labor is thought to be the scarce factor of production in the U.S. while capital is considered the abundant factor. Cheh² indicated that unskilled labor can be considered the scarce factor while skilled labor the abundant factor. Adjustment assistance on these grounds is summed up by Stolper and Samuelson as follows:

" . . . it has been shown that the harm which free trade inflicts upon one factor of production is necessarily less than the gain to the other. Hence, it is always possible to bribe the suffering factor by subsidy or other redistribution devices so as to have all factors better off as a result of trade."³

Freer trade increases the economic well-being of society as a whole. The federal government then collects taxes from all segments of the economy and then transfers some funds to the injured factors in the form of adjustment assistance. If the compensation is sufficient, all

¹Wolfgang F. Stolper and Paul A. Samuelson, "Protection and Real Wages," Readings in the Theory of International Trade, ed., Howard S. Ellis, Lloyd A. Metzler, The Blakston Co., Philadelphia & Toronto, 1949, pp. 333-345. Reprinted from Review of Economic Studies, 9 (Nov. 1941).

²John H. Cheh, "United States Concessions in the Kennedy Round and Short-Run Labor Adjustment Costs," Journal of International Economics, 4 (1974):323-340.

³Stolper and Samuelson, op. cit., p. 357.

members of society will be as well or better off than they were before.

Proper redistribution can become a Pareto-optimal move.

CHAPTER 2

Survey of the Literature

Since the enactment of the Manpower Development and Training Act of 1965, there have been numerous studies dealing with the effectiveness of government retraining programs and manpower policy. Two sources which survey the literature are Cost Benefit Analysis: Theory and Applications to Manpower Training Programs¹ and "Benefit Cost Analysis of Occupational Training Programs: A Comparison of Recent Studies."² More recently contributions have discussed the theoretical backbone and methodological issues.³

Research on trade adjustment assistance is scarce. Although the TEA was passed in 1962, the first petition accepted by the Tariff Commission was in November 1969, seven years after the passage of the Act. Thus 1973 was about the earliest that meaningful effects could be observed. Interest in adjustment assistance grew with the introduction

¹U.S. Dept. of Labor, Cost Benefit Analysis: Theory and Application to Manpower Training Programs, May 1971.

²Einar Hardin, "Benefit Cost Analysis of Occupational Training Programs: A Comparison of Recent Studies," in Cost Benefit Analysis of Manpower Policies, G.G. Somers and W.D. Wood, Eds., University of Wisconsin, 1969.

³Glen G. Cain, "The Challenge of Dual and Radical Theories of Labor Market to Orthodox Theory," American Economic Review, 65 (May 1975): 16-22.

of a new trade bill, the Trade Act of 1974, which made it easier for workers to receive adjustment benefits.

The first comprehensive study on trade adjustment assistance was completed by Bale¹ in 1973. In that study a sample of 350 trade displaced workers from twelve firms in five industries were studied. Bale postulated four models to quantify the adjustment/re-employment process. The four dependent variables in his regression models are: 1) change in wage; 2) present wage; 3) number of days unemployed; and 4) percentage of days unemployed between impact and interview. These variables were regressed on several independent variables including past wage, sex, age, education, race, wage-earner status, number of years with the old firm, the unemployment rate in the town of residence and the available adjustment assistance programs offered.

The study produced several interesting findings. The socio-economic characteristics of trade-displaced workers were identified and found to be different from those obtained from national data. A higher proportion of workers were women, the duration of unemployment was longer, displaced workers were older and employed in traditional "old technology" industries than are similar workers in the national labor force. Perhaps the most significant finding of the study was that adjustment assistance had not been effective in rehabilitating displaced

¹Malcolm D. Bale, "Adjustment to Freer Trade: An Analysis of the Adjustment Assistance Provisions of the Trade Expansion Act of 1962," unpublished Ph.D. dissertation, University of Wisconsin, 1973.

workers. The explanation advanced for this finding was the long delay (averaging 54.5 weeks) between workers being laid off and receiving adjustment benefits. It was thought that most workers except those least able to adjust had found alternate employment before they were found eligible for adjustment assistance.

Pursell, Schriver and Bowley¹ studied the effects of trade adjustment assistance upon 397 workers laid off from an RCA electronics plant in Memphis in 1970. They formulated ordinary least squares regression models for the very short run, short run and long run. The very short run model used employed or unemployed as the dependent variable and age, sex, education, skill, previous work experience, race, and employment status of other members of the household as the independent variables. The short run model was the same as the very short run model except that training was added as an extra independent variable. The two long run models used information from approximately two years after the closing date of the firm. The first used duration of unemployment as the dependent variable. The second model used weeks of economic activity (employed or actively seeking work) as the dependent variable. Impacted workers were compared to a group of workers unemployed in the same area at the same time but who did not receive any

¹Donald F. Pursell, William R. Schriver, Robert Bowlby, Trade Adjustment Assistance: An Analysis of Impacted Worker Benefits on Displaced Workers in the Electronics Industry, Contract No. ILAB 73-7, United States Dept. of Labor, undated.

adjustment assistance benefits.

Among the major findings of this study were that long run adjustment of workers receiving benefits was not as satisfactory as those not receiving benefits. The workers receiving assistance tended to be unemployed longer than workers in the control group although part of this time could be attributed to unemployment during training. Training aided occupational mobility but had little influence upon earnings. Nothing was found to confirm that adjustment assistance aided a worker's job search procedure. Significant factors in reemployment tended to be sex, race, skill level and education rather than the variables associated with adjustment assistance. The workers in this study received benefits six months after layoff: twenty percent of the sample were reemployed at that time.

McCarthy¹ studied the effects of trade adjustment assistance on 101 workers displaced from twelve Massachusetts shoe firms. His four regression models used the following dependent variables: 1) number of weeks of unemployment; 2) number of weeks of benefits collected; 3) change in wage between pre-impact wage and wage of the first job; and 4) change in wage between pre-impact wage and the current wage.

McCarthy's results show that men adjusted more easily than women while older workers suffered more difficulty in adjustment. Training, especially on-the-job training, had positive effects upon wage level in

¹McCarthy, op. cit.

this study. Workers given advance notice of an impending layoff were better able to adjust because they had time to think about future plans.

These three studies are the major ones completed on the effects of trade adjustment assistance on workers. A related paper by Bale and Mutti¹ presents a four equation simultaneous model of trade adjustment under various conditions. Their estimates show that under pessimistic conditions in the domestic and foreign markets, unemployment in the affected domestic industry will decrease. Under normal or optimistic conditions, employment in the affected industry will increase. Using two averages for duration of unemployment, they then estimated the costs of providing adjustment assistance to the shoe industry over a ten year period to be between 29 and 164 million dollars depending on economic conditions. Mutti's² work also presents a theoretical analysis of the impacts (both positive and negative) of foreign trade on employment and welfare. His analysis indicated that even when unemployment costs are netted out, trade liberalization is beneficial to society.

¹Malcolm D. Bale and John H. Mutti, "Predicting Labor Market Adjustments to International Shocks," unpublished staff paper, Montana State University, 1975.

²J. H. Mutti, "The Employment and Welfare Effects of Foreign Trade Policy," unpublished Ph.D. dissertation, University of Wisconsin, 1974.

CHAPTER 3

Statement of the Problem

One of the severest deterrents to freer trade has been considerations of the domestic disruption that results during the adjustment to a new equilibrium. A decrease in protection generally results in a fall in the price of the imported good with resulting cutbacks, closures and unemployment among domestic import-competing producers and workers. Even in the United States where imports account for only 5% of national product, this has been a politically sensitive issue. Businessmen in the industries involved and labor leaders who are understandably more interested in their members' production opportunities than they are with possible benefits of freer trade to their members as consumers¹ have opposed measures to liberalize trade. The costs to affected producers and workers of freer trade may well be large and concentrated while the benefits to individual consumers are small and diffuse. This has historically resulted in an asymmetry in lobbying efforts for and against freer trade: producers and labor groups are far better organized to lobby for protection than consumer groups are for freer trade.

Due partially to these considerations, trade adjustment assistance

¹George H. Hildebrand, "Excerpts from Papers Presented to the Twenty-fourth Annual Meeting of the Industrial Relations Research Association, December 27-28, 1971," Monthly Labor Review, April 1972, p. 707.

provisions were included in the TEA. These provisions were regarded by politicians, businessmen and labor leaders as an efficient method of dealing with domestic disruptions resulting from freer trade.

The previous work on the trade adjustment assistance provisions cited in the survey of the literature has indicated that trade adjustment assistance has not been effective in worker adjustment. One of the possible reasons advanced for this finding was that workers became eligible for adjustment assistance so long after layoff that most had already found alternate employment. Those who received assistance were those who were least able to secure another job and the implication is that even with assistance they did not adjust as well as those who adjusted on their own.

The question this study attempts to deal with is whether prompt receipt of adjustment assistance upon layoff results in better adjustment than receipt of adjustment assistance after a long delay. The effectiveness of the adjustment assistance provisions upon workers who received assistance promptly, workers who received assistance after a long delay, and workers who did not receive assistance will be compared. The specific hypothesis to be tested is that an adjustment assistance program with an efficient and expeditious delivery system for allocating benefits will be of greater benefit to workers than will be one where long delivery delays occur.

CHAPTER 4

Characteristics of the Sample Workers and Survey Method

The Sample Case

An atypical experience with adjustment assistance was that of workers formerly employed by Uniroyal, Inc., a rubber footwear plant located in Woonsocket, R.I., a town of 46,820 in 1970. The workers are atypical in that they received adjustment assistance shortly after lay-off. Several factors combined to make their case different. First, hints that the plant was considering closure began in early 1967. The official announcement that the plant would close the following year came on August 18, 1969.¹ Actual layoffs began on April 3, 1970.

Secondly, the union representing the workers (United Rubber, Cork, Linoleum, and Plastic Workers of America, AFL-CIO) acted quickly to submit a petition to the Tariff Commission on February 19, 1970. This early action resulted in the petition being approved on April 20, 1970, very shortly after initial layoffs.^{2,3}

¹Jane Mayerson, "The Trade Expansion Act: An Untapped Resource for Middle-Aged and Older Workers," Industrial Gerontology, Spring 1972, pp. 36-38.

²Ibid., p. 39.

³U.S. Congress, House, "Statement of John H. Campbell, Associate General Counsel, United Rubber, Cork, Linoleum, and Plastic Workers of America, AFL-CIO," Hearings before the Subcommittee on Foreign Economic Policy, Committee on Foreign Affairs, 92nd Congress, 2nd session, 1972, pp. 370-1.

Thirdly, the Rhode Island State Department of Employment Security, aware of the impending influx of unemployed persons in Woonsocket, familiarized themselves with the provisions of the TEA. Three staff members were transferred to Woonsocket to assist in the reemployment process for the workers. Ms. Mary C. Hackett, Director of Employment Security in Rhode Island reported that of the 906 former employees of Uniroyal who filed for adjustment assistance, 738 received individual counseling. Training programs were begun by 287 workers with 207 workers completing their training. Thirty-five workers were still in training at the time of the report and only forty-five had dropped out.^{1,2}

The workers were laid off five years ago. This allows sufficient time for the longer-range effects of trade adjustment assistance to be detected.

The Control Group

Six months prior to the closing of the Uniroyal plant in Woonsocket, Maine Shoe in Brunswick, Maine closed laying off 367 workers. These workers received more typical trade adjustment assistance. Due to delays, receipt of benefits was more than one year after layoff and the workers received their trade readjustment allowance (TRA) as a lump

¹Mayerson, op. cit., pp. 43-45.

²U.S. Congress, House, "Statement of John H. Campbell. . .", op. Cit., pp. 372-3.

sum payment. No training programs were offered. This seemed to be an appropriate control group because the product produced was similar, the plants closed at about the same time, the employment structures in the two towns are similar, the plants were located in the same geographic area (New England), and the population of the Brunswick-Bath area was 22,225 in 1970.

The Survey Method

A ten percent random sample of workers at Uniroyal, Woonsocket, was obtained from Ms. Mary Hackett, Director of Employment Security for the state of Rhode Island. A twenty percent random sample was taken of a list of 367 workers employed and working on the impact date at Maine. The twenty percent sample was taken to make the samples from the two firms of similar size. The sample size for Uniroyal workers was seventy while that for Maine Shoe workers was seventy-six.

A preliminary letter explaining that a telephone interview would be conducted and the nature of the questions to be asked was sent to each person in the sample at the address given in the lists. Prior to mailing, the names were checked in local phone books and a postcard was included in letters addressed to persons without a phone number at the address given in the lists. These postcards were stamped and provided a place for the respondent to indicate his or her phone number or whether they would be willing to answer a questionnaire mailed to them.

Those workers who had phones listed in the phone books were

surveyed. The survey form used was a modified version of the form used by the Bureau of International Labor Affairs, United States Department of Labor in a field survey conducted in February 1972. The form included in Appendix A. Of the sixty-six persons contacted by phone, forty-six completed the survey, six completed the survey but had retired or were no longer in the labor force, two were deceased, one couldn't remember, one had joined the service after impact but before layoff and ten refused the survey. Five others were sick, out of town for the summer, had moved, or were not contacted after repeated tries. These workers were sent mailed questionnaires.

In addition to workers who returned their postcards responding that they would answer a mailed questionnaire, all workers who did not return their postcards but whose letters were not returned indicating a correct address were mailed questionnaires. In total, forty-seven questionnaires were mailed and twelve were returned. Of these twelve, two had retired and one was excluded from the sample because adjustment assistance had been received in 1974 rather than in 1970-1 as had the other workers in the sample.

Either by phone or by mail, 77.4% of the sample was contacted with 69.0% of these responding. After excluding retired workers and others as explained above, the sample consisted of fifty-five workers.

Four female respondents not currently employed but considering themselves part of the labor force are in the sample. They have been

assigned an imputed average wage to housewives as derived by Gronau¹ and adjusted to June 1975 by the manufacturing hourly compensation index.

Notes on the Survey Method

Complete reliance upon telephone and mailed surveys was necessitated by the destruction of all employment service records in the state of Rhode Island after a two year period and the reluctance of the U.S. Department of Labor to release information concerning workers receiving trade adjustment assistance even though they have funded this research. It should be noted at the outset that the surveys are subject to response error--the questionnaire called for information on events which occurred five years ago. For this reason the analysis will not use the dollar amounts or the length of time benefits were received given by the respondents but simply whether or not they received trade adjustment assistance in the form of weekly payments, a lump sum payment or training.

It should also be noted that 22.6% of the sample were never contacted. Their initial letters were returned and their names did not appear in local phone books. Presumably many of these have relocated. This will produce a bias in the results of this research. The workers could have been unable to find any employment in the community of their

¹Reuben Gronau, "The Intrafamily Allocation of Time: The Value of the Housewives' Time," American Economic Review, 62 (Sept. 1973): 634-651.

residence and had to accept employment elsewhere at a wage below what they had received prior to layoff. On the other hand, workers could have received offers of higher pay in other communities that enticed them to leave their pre-layoff communities. In either case, a bias will be present. A high proportion of the sample was women and many of the workers unlocated may have been women who relocated following their spouses. No workers were located who had received the relocation allowances provided under the TEA so it is not known if any of these workers were able to take advantage of it.

Characteristics of the Sample

Of the fifty-five workers in the sample, the majority are women as has been the case in other studies of shoe workers. Women comprise 60% of this sample. The average age of the sample members is 44.4 years. Thirty-three persons (60%) are over the age of forty-five.

TABLE 4.1
Age and Sex Characteristics of the Sample

Age	Male	Female	% of total
26-35	7	3	18.2
36-45	6	7	23.6
46-55	8	20	50.9
56-65	1	3	7.3

Breaking the sample down into experimental group and control group reveals that the composition by sex is essentially the same as

for the entire sample: 57.1% are female among Maine Shoe workers while 63.0% of former Uniroyal workers are women. The age distributions are different for the two firms with the average age for Maine Shoe workers being 42.3 years and that for Uniroyal workers being 46.7 years.

TABLE 4.2
Age and Sex Distributions for Maine Shoe

Age	Male	Female	% of Maine Shoe Workers
26-35	7	1	28.6
36-45	4	5	32.1
46-55	1	8	32.1
56-65	0	2	7.1

TABLE 4.3
Age and Sex Distributions for Uniroyal

Age	Male	Female	% of Uniroyal Workers
26-35	0	2	7.4
36-45	2	2	14.8
46-55	7	12	70.4
56-65	1	1	7.4

The average education level for the sample was 10.8 years. Formal education only was measured in this study. Maine Shoe workers averaged 10.1 years while Uniroyal workers averaged 11.6 years. About half the sample have completed high school. As can be seen in Table 4.4, the majority of the Uniroyal workers have completed high school while the education level of Maine Shoe workers is dispersed.

Respondents were asked whether they were the primary or secondary

wage-earner in their households while employed by the impacted firm. It was found that 52.7% of the sample had been the primary wage-earner. Of the males in the sample, 77.3% were primary wage-earners while 33.3% of the females were. The proportion of primary wage-earners in both firms was the same: fourteen of twenty-seven workers at Maine Shoe were primary wage-earners while fourteen of twenty-eight workers at Uniroyal were.

TABLE 4.4
Education Level of the Sample

Years of Formal Education	Maine Shoe Workers	Uniroyal Workers	% of Sample
5	1		.02
6			.00
7	1		.02
8	4	3	.13
9	3		.05
10	7	2	.16
11	3	2	.09
12	9	18	.49
14		1	.02
18		1	.02

TABLE 4.5
Wage-Earner Status and Sex of the Sample

Wage-Earner Status	Male	Female	% of Sample
Primary	17	11	50.9
Secondary	5	22	49.1

The number of years with the impacted employer averaged 10.7 years. The average for Uniroyal workers was higher than that for Maine Shoe workers (17.3 and 4.9, respectively) because the Uniroyal plant was open longer.

Respondents were asked a number of questions related to their relative wealth positions. Questions concerned ownership and equity of cars and houses as well as ownership of other property, stocks, bonds, or savings accounts. Due to the sensitivity of the questions, a great deal of reliability cannot be attached to this data. Some respondents were hesitant to answer the question about the value of their home either due to not knowing or not wishing the researcher to know. Some failed to answer the question about the amount still owed on their homes and other didn't answer the questions about the annual interest on savings accounts or dividends on stocks or bonds. Workers who indicated that they owned other property had an arbitrary value of \$1000 attached to it. The actual value of any other property is probably greater than this amount but no question were asked about the actual value or about the equity. Workers who did not answer the questions about the amount still owed on their home or car were assumed to still owe one third of the value. Most workers tended to either not own a home or to have it completely paid for, but most of the workers who didn't answer this question were at or below the average age of the sample and it was thought that the one-third figure was appropriate. These arbitrary

assumptions do further decrease the reliability of the estimates.

The estimates obtained in this manner were then divided into four classes. These classes were assigned values between one and four with relative wealth position increasing from one to four. More confidence can be attached to this ordering of wealth positions than can be given to the actual number values obtained from the raw data. The variable was then entered into the model as an ordinal variable and appears to have been a useful addition to the regression.

The sample consists of workers who received trade readjustment allowances (TRA) shortly after layoff, those who received them more than one year after layoff as a lump sum, and those who did not receive assistance because they were not eligible or because they were employed. Those who received it shortly after layoff were former employees of Uniroyal. Those who received lump sum payments had worked for Maine Shoe. Non-receipts came from both firms. Those who received TRA as a lump sum comprised 29.1% of the sample. Those who received TRA shortly after layoff made up 30.9%. Those who received no benefit made up 40.0%.

TABLE 4.6
Receipt of TRA by Sex

TRA Receipt	Male	Female
late	4 (7.3%)	12 (21.8%)
early	2 (3.6%)	15 (27.3%)
none	16 (29.1%)	6 (10.9%)

Of the females in the sample, 81.8% received TRA. TRA was received by 27.3% of the males in the sample. Training was received by just 16.3% of the sample. Of these only one was male and the other eight were female.

Most of the workers at Uniroyal and Maine Shoe were operatives with skills specific to the shoe industry.¹ Although several Maine Shoe workers were able to secure jobs in other shoe firms in the area after the closure of Maine Shoe, most of these firms have now closed and the workers have had to find jobs in other industries. There were no other shoe firms in the Woonsocket area so Uniroyal workers had to find other occupations at the outset.

Current occupations of workers include hospital housekeeper, sheet metal worker, construction worker, state government employee, medical secretary, fire fighter, truck driver, truck loader, hand presser, fish factory worker, food processor, commercial sewing, maintenance mechanic, nurse, electronics worker, plastics worker, and college instructor.

Several training options were available to Uniroyal workers.² These included: LPN; clerical, secretarial and bookkeeping; maintenance mechanic; cosmetologist; medical secretary; auto body mechanic; tractor trailer mechanic; medical technologist; air conditioner mechanic and

¹For a differentiation of specific and general skills and the employability of each, see Becker, op. cit.

²U.S. Congress, House, "Statement of John H. Campbell . . .", op. cit., p. 377.

repair; and computer programmer.

Training received by workers contacted in the survey included LPN, business school, medical secretary, hairdresser and maintenance mechanic. Most workers who received training are employed in training related occupations.

CHAPTER 5

Specification of the Models

The objective of this research is to measure the effectiveness of trade adjustment assistance on groups of workers in three different situations: those who received it shortly after layoff, those who received it more than one year after layoff, and those who did not receive any. The two measures of adjustment used in this research are present wage and length of unemployment. A third measure, change in wage, was tried but it did not give meaningful results. Since the data was taken five years after impact, longer-range effects of trade adjustment assistance can be observed.

The Present Wage Model

The present wage is postulated to depend upon age, sex, education, wage-earner status, number of years with the original firm, timing of receipt of trade adjustment benefits, and training.¹

1. Age and age squared: these variables are entered as continuous in the model. It is expected that the sample will conform to the

¹The unemployment rate in the two areas can also be a contributing factor in the success of employment adjustment. The 1970 census of population gives unemployment rates for men and for women in Brunswick and Woonsocket for the year 1970. This year is relevant in this study. An average unemployment rate weighted by the proportion of men and women in the sample groups was computed. The resulting unemployment rate was 4.7 for Brunswick and 4.6 for Woonsocket. This difference is not considered significant and is not included in the analysis.

common finding that wages increase with age but at a decreasing rate. Several reasons have been advanced for this result. One is that earnings increase as workers gain experience and maturity and then fall as workers experience a decline in physical health and mental agility with increasing age.¹ Another is that wages increase with age because younger workers are still investing in education and skill development which doesn't pay back dividends until later in life while older workers tend to not invest in further education because their payoff time is too short.² If this is true for the sample, the coefficient on the age variable will be positive while that for age squared will be negative.

2. Sex: this variable is entered as a dummy with a zero value for female workers and a one for males. There is much theoretical and empirical discussion of wage differentials on the basis of sex.^{3,4} It is hypothesized that the differential exists in this sample and that the sign of the coefficient will be positive.

3. Education: the number of years of formal education is entered as a continuous variable. Although education is a qualitative

¹Albert Rees, The Economics of Work and Pay, Harper and Row, New York, N.Y., 1973, p. 37.

²Gary S. Becker, op. cit., p. 48.

³Sidney R. Finkel and Vincent J. Tarascio, Theory of Wages and of Employment, Ronald Press, New York, 1971, p. 196.

⁴Rees, op. cit., pp. 178-190.

as well as a quantitative variable, it is beyond the scope of this study to attempt to measure quality of education. It is expected that increasing amounts of education will result in higher wages and a positive sign on the regression coefficient.

4. Wage-Earner Status: this variable is entered as a dummy with a value of one for primary wage-earners and a zero for all others. It is expected that a primary wage-earner will command a higher wage. This can be due to actions on the part of employers who favor primary wage-earner in their hiring practices or it can be due to greater ambition in job search and skill achievement on the part of the primary wage-earner. In either case, it is hypothesized that the sign on the coefficient will be positive.

5. Number of Years with the Original Firm: this is entered as a continuous variable. It is expected that increasing number of years with the original firm indicates worker dependability. Assuming this is a desirable trait, there should be a positive sign on the coefficient. However, other researchers^{1,2} have found the sign to be negative and have attributed it to less job finding ability after a long period of employment or to the difficulty of retraining a worker who has learned the routine of another company. If this second effect dominated in this sample, it will result in a negative sign on the coefficient.

¹Bale, op. cit., p. 163

²McCarthy, ip. cit., p. 120.

6. Receipt of TRA Soon After Layoff (Receipt of TRA early): this is a dummy variable with a value of one entered for those who received TRA early and zero for all others. It is expected that the sign on the coefficient for this variable will be positive.

7. Receipt of TRA More Than One Year After Layoff (Receipt of TRA late): this dummy variable is assigned a value of one for all workers who received TRA more than one year after layoff and received it as a lump sum. A zero is entered for all others. Given the hypothesis that early receipt of benefits is more beneficial than late receipt of benefits, it is not expected that this variable will have much effect upon the regression. That is, those who received benefits late should have about the same adjustment experiences as workers who received no benefits.

8. Training: workers who received training under the TEA are assigned a value of one for the dummy variable while all others are assigned a zero.

It should be noted that the variable for non-receipt of adjustment assistance is omitted from the analysis. These workers will have a zero value entered for both the variable receipt of TRA early and for the variable receipt of TRA late so the effect of no benefits is in the analysis.

The Length of Unemployment Model

The length of time a worker is unemployed is assumed to be a

function of age sex, wage-earner status, education, timing of receipt of TRA, training, and imputed wealth.¹

1. Age and Age Squared: these again are entered as continuous variables. The coefficient on the age variable is expected to be negative while that on the age squared variable is expected to be positive. This would indicate that workers with more experience have less difficulty acquiring a new job.

2. Sex: this is entered as a dummy variable. Assuming that a sex differential exists, it is expected that males will experience shorter lengths of unemployment resulting in a negative sign on the regression coefficient.

3. Wage-earner Status: it is expected that the primary wage-earner will be unemployed for a shorter length of time than other wage-earners. It is hypothesized that the sign on the regression coefficient will be negative.

4. Education: this continuous variable is expected to have a negative sign on the regression coefficient indicating that length of unemployment decreases with increasing educational level.

5. Receipt of TRA early: receipt of the benefit shortly after layoff would allow workers to optimize their employment search. They would be able to look for the best job available without having to accept the first job offered. The sign on the coefficient is expected

¹See the footnote on page 29.

to be positive.

6. Receipt of TRA Late: Receipt of TRA more than one year after layoff should have little effect upon the length of unemployment.

7. Training: the stated purpose of the training provisions under the TEA are "To assure that the readjustment of adversely affected workers shall occur as quickly and effectively as possible, with minimum reliance upon trade readjustment allowances . . ."¹ Workers who have been retrained can be expected to incur less unemployment over a long run. For this reason and to conform with the stated objective of the Act, the hypothesized sign of the regression coefficient is negative.

8. Imputed Wealth: this is an ordinal variable with values from one to four. Increasing relative wealth position is reflected by increasing value of the variable. It is expected that people with a higher value of assets will be able to be unemployed longer in order to locate the best job available. The expected sign on the coefficient is positive.

¹U.S. Congress, House, "Trade Expansion Act of 1962," op. cit., p. 24.

CHAPTER 6

Results

The Present Wage Model

Present wage was regressed on the independent variables: age, age squared, sex, education, wage-earner status, timing of receipt of TRA, and training. This model serves both predictive purposes and as a measure of the effectiveness of adjustment assistance upon worker adjustment. The results of the regression are presented below with the corresponding regression coefficient. Further statistical information including t values and levels of significance are included in Table 6.1.

$$Y = -6.053 + .2250 A - .001955 A^2 + 1.558 S + .2900 Ed + .2482 St \\ (.1600) \quad (.001803) \quad (.3928) \quad (.08485) \quad (.3306) \\ - .04621 N + .03755 TRAL + 1.027 TRAE + .3543 TR \\ (.02999) \quad (.4133) \quad (.5821) \quad (.5212)$$

$$R^2 = .4604 \quad F = 4.26618$$

where:

Present wage (Y) is an hourly wage

A = age

A² = age squared

S = sex

Ed = education level

St = wage-earner status

N = number of years with the original firm

TRAL = receipt of TRA late (more than one year after layoff with weekly benefits paid as a lump sum)

TRAE = receipt of TRA early (within a month of layoff)

TR = training

TABLE 6.1
Present Wage Model

Independent Variable	Regression Coefficient	Standard Error	t-Value	Level of Significance
Age	.2250	.1600	1.406	.167
Age squared	-.001955	.001803	-1.084	.284
Sex	1.558	.3928	3.966	.000
Education	.2900	.08485	3.418	.001
Wage-earner Status	.2482	.3306	.7509	.457
Years with Original Firm	.04621	.02999	-1.541	.130
Receipt of TRA late	.03755	.4132	.09087	.928
Receipt of TRA early	1.027	.5821	1.765	.084
Training	.3543	.5212	.6797	.500

Analysis of Variance

	Df	Sum of squares	Mean square
Due to regression	9	42.10	4.68
Residual	45	49.34	1.10
Total	54	91.43	

F Value = 4.266

$R^2 = .4604$

Std. Error = 1.047

Intercept = -6.053

Gronau¹ has developed imputed wages for housewives under alternate assumptions. The first assumption was that working women are those women who are least efficient in the production of goods at home. This assumption implies that all women who work can expect to receive the same wage. Under this assumption, working women are those who give up the least "home goods." The second assumption was that working women are those best suited to working and can obtain the best wage. This assumption implies that all women produce an equal amount of home goods and those who work are the ones who can obtain the highest wage. The estimates of imputed wage thus obtained constitute the extreme limits for the mean value of a housewife's time.

Four women respondents in the sample are not currently employed but consider themselves part of the labor force. They have been assigned a wage equal to the mean value of housewives' time as derived by Gronau and adjusted to 1975 by the hourly compensation index. Two other regressions omitting these women and including them at zero wage were run and are included in Appendix B.

Those variables found to be significant at the .10 level are sex, education and receipt of TRA soon after lay-off. The coefficients of each of these variables has the sign hypothesized earlier. The levels of significance for the other variables are presented in Table 5.1.

The R^2 value of .4604 for this regression indicates that 46% of

¹Gronau, op. cit.

the variation of the dependent variable is explained by the independent variables included in the model. This R^2 is roughly comparable to the higher R^2 s obtained in previous studies done on trade adjustment assistance.^{1,2,3} Low valued R^2 s are common in cross sectional data, often because of the omission of a relevant independent variable from the regression. Several unquantifiable variables such as ambition, drive and strength of the attachment to the work force are likely to affect wage rate. A low valued R^2 may also indicate that the independent variables do influence the dependent variable but that their effect is weak compared to that of random disturbances.⁴

The critical value for F with nine degrees of freedom in the numerator and forty-five degrees of freedom in the denominator at the .01 level ($F_{0.01,9,45}$) is 2.85. The F value of 4.266 clearly exceeds this value. That is, the independent variables in the model have an influence upon the mean of Y.

The model predicts a wage of \$4.26 for a forty-five year old woman with a twelfth grade education who was a secondary wage-earner with eight years of experience with the original firm and who received

¹Bale, op. cit., pp. 155-158.

²McCarthy, op. cit., pp. 104-5, 109-10, 113-4, 117.

³Pursell, Schriver, Bowlby, op. cit., pp. 195, 202, 216.

⁴Jan Kmenta, Elements of Econometrics, the Macmillan Company, New York, 1971, p. 234.

TRA within a month after layoff but received no training.

$$Y = -6.053 + .2250 (45) - .001955 (2025) + .2900 (12) - .04621 (8) \\ + 1.027 = 4.26$$

Further Tests

It is observed that the regression coefficient for sex in this model is 1.558. This indicates that a male will on average have an hourly wage that is \$1.56 higher than will a female holding constant all other socio-economic characteristics considered in the analysis. This coefficient seems high both compared to a mean hourly wage for the sample of \$3.70 and to a regression coefficient of 0.38 obtained by Bale¹ using a similar model and sample. This prompted a decision to run the regressions separately for men and women to determine if these two subgroups are from the same population.

The test used is one given by Kmenta² to test the equality of two regression equations. The null hypothesis to be tested is that each of the regression coefficients in the first equation equals the corresponding regression coefficient in the second. The test itself is:

$$\frac{(SSE_c - SSE_1 - SSE_2) / K}{(SSE_1 + SSE_2) / (n + m - 2K)} \sim F_{K, n+m-2K}$$

¹Bale, op. cit., p. 156

²Kmenta, op. cit., p. 373.

where

SSE_c = sum of squares of the least squares residuals of the regression including both groups

SSE_1 = sum of squares of the least square residuals for the regression of the first group

SSE_2 = sum of squares of the least squares residuals for the regression of the second group

K = the number of coefficients estimated, including the constant term

n = the sample size of the first group

m = the sample size of the second group

The results of running the present wage model regression with only women included follow. More complete statistical information is included in Table 6.2.

$$\begin{aligned}
 Y = & - 4.396 + .1611 A - .00152 A^2 + .336 Ed + .07080 St \\
 & \quad (.2272) \quad (.002562) \quad (.1137) \quad (.4803) \\
 & - .06262 N + .1418 TRAL + 1.263 TRAE + .2452 TR \\
 & \quad (.04487) \quad (.6001) \quad (.9264) \quad (.5963) \\
 R^2 = & .4286 \quad F = 1.21865
 \end{aligned}$$

The results of running the present wage model regression with only men included follow. Statistical information including t values and levels of significance of the variables is included in Table 6.3.

$$\begin{aligned}
 Y = & - 4.885 + .2503 A - .001618 A^2 + .1832 Ed + .3897 St \\
 & \quad (.4019) \quad (.004706) \quad (.1746) \quad (.7668) \\
 & - .06013 N + .2140 TRAL + .3823 TRAE + .5613 TR \\
 & \quad (.04748) \quad (.8649) \quad (1.261) \quad (1.862)
 \end{aligned}$$

TABLE 6.2
Present Wage Model: Women Only

Independent Variable	Regression Coefficient	Standard Error	t-Value	Level of Significance
Age	.1611	.2272	.7090	.435
Age squared	-.001520	.002565	-.5924	.559
Education	.3336	.1137	2.933	.007
Wage-earner status	.07989	.4893	.1474	.884
Years with the original firm	-.06261	.04487	-1.396	.176
Receipt of TRA late	.1418	.6001	.2363	.815
Receipt of TRA early	1.263	.9264	1.363	.186
Training	.2452	.5963	.4112	.685

Analysis of Variance

	Df	Sum of squares	Mean square
Due to regression	8	26.70	3.34
Residual	24	27.86	1.16
Total	32	54.55	

F Value = 2.875

$R^2 = .4894$

Std. Error = 1.077

Intercept = -4.396

TABLE 6.3
Present Wage Model: Men Only

Independent Variable	Regression Coefficient	Standard Error	t-Value	Level of Significance
Age	.2503	.4019	.6228	.544
Age squared	-.001618	.004706	-.3437	.737
Education	.1832	.1746	1.049	.313
Wage-earner status	.3897	.7668	.5082	.620
Years with the original firm	-.06013	.04748	-1.266	.228
Receipt of TRA late	-.2140	.8649	-.2474	.808
Receipt of TRA early	.3823	1.261	.3032	.767
Training	.5613	1.862	.3015	.768

Analysis of Variance

	Df	Sum of squares	Mean square
Due to regression	8	10.83	1.35
Residual	13	14.44	1.11
Total	21	25.26	

F Value = 1.219

$R^2 = .4286$

Std. Error = 1.054

Intercept = -4.885

$$R^2 = .4286 \quad F = 1.21865$$

Education becomes the only significant variable in the regression for women. There are no significant variables in the regression for men at the .10 level. The F value is significant at the .05 level for women but it is not significant at that level for men.

The results of the test to determine if the two regressions are the same is given below.

$$\frac{(49.3372 - 27.8565 - 14.4371) / 10}{(27.8565 + 14.4371) / 35} = .583 \quad F(.05, 10, 35) = 2.12$$

The hypothesis that the regression for women is the same as the regression for men cannot be rejected at the .05 level. That is, the men and women in the sample are indicated to be from the same population.

The same test is appropriate for determining if Uniroyal workers and Maine Shoe workers are from the same population. The results of this test will reveal whether Maine Shoe workers were an appropriate control group or whether they form a comparison group for this analysis.

The results of running the present wage model regression with only Uniroyal workers included is given below. More complete statistical information is given in Table 6.4. It should be noted that the variable indicating receipt of TRA more than one year after layoff had to be omitted from this regression to prevent singularity in the raw

TABLE 6.4
Present Wage Model: Uniroyal

<u>Independent Variable</u>	<u>Regression Coefficient</u>	<u>Standard Error</u>	<u>t-Value</u>	<u>Level of Significance</u>
Age	-.05184	.2696	-.1923	.850
Age squared	.001554	.003125	.4972	.625
Sex	2.537	.7299	3.476	.003
Education	.4789	.1484	3.227	.004
Wage-earner status	.3090	.5546	.5571	.584
Years with the original firm	-.08730	.04141	-2.108	.049
Receipt of TRA early	1.674	.7090	2.361	.029

Analysis of Variance

	<u>Df</u>	<u>Sum of squares</u>	<u>Mean square</u>
Due to regrssion	7	27.26	3.89
Residual	19	22.79	1.20
Total	26	50.05	

F Value = 3.247

$R^2 = .5447$

Std. Error = 1.095

Intercept = -3.001

moment matrix because all Uniroyal workers who received TRA received it shortly after layoff. The variable for training also had to be omitted because no Maine Shoe workers received it and the number of regression coefficients estimated in each regression must be the same to run the test.

$$\begin{aligned}
 Y = & -3.001 - .05184 A + .001554 A^2 + 2.537 S + .4789 Ed \\
 & \quad (.2696) \quad (.003125) \quad (.7299) \quad (.1484) \\
 & + .3090 St - .08730 N + 1.674 TRAE \\
 & \quad (.5545) \quad (.04141) \quad (.7090) \\
 R^2 = & .5447 \quad F = 3.24733
 \end{aligned}$$

The variables significant at the .10 level for this regression are sex, education, number of years with the original firm and receipt of TRA soon after layoff. The F value is significant at the .05 level.

The results of running the present wage model regression with only Maine Shoe workers included is given below. The t values and levels of significance are given in Table 6.5. The variables TRA received early and training were omitted from this regression because no Maine Shoe worker received TRA early or training.

$$\begin{aligned}
 Y = & -6.325 + .3483 A - .003692 A^2 + 1.104 S + .1241 Ed \\
 & \quad (.1713) \quad (.001932) \quad (.4320) \quad (.09792) \\
 & + .02547 St - .002561 N - .04426 TRAL \\
 & \quad (.3944) \quad (.09504) \quad (.6494) \\
 R^2 = & .4314 \quad F = 2.16742
 \end{aligned}$$

TABLE 6.5
Present Wage Model: Maine Shoe

Independent Variable	Regression Coefficient	Standard Error	t-Value	Level of Significance
Age	.3483	.1713	2.033	.056
Age squared	-.003692	.001932	-1.911	.070
Sex	1.104	.4320	2.555	.019
Education	.1241	.09792	1.267	.220
Wage-earner status	.02547	.3944	.06458	.949
Years with original firm	-.002561	.09504	-.2694	.979
Receipt of TRA lata	-.04426	.6494	-.06815	.946

Analysis of Variance

	Df	Sum of squares	Mean square
Due to regression	7	11.24	1.61
Residual	20	14.81	.74
Total	27	26.05	

F Value = 2.167

$R^2 = .4314$

Std. Error = .8606

Intercept = -6.325

The variables significant at the .10 level for this regression are age, age squared and sex. The F statistic is not significant at the .05 level.

The test results are given below.

$$\frac{(49.3372 - 22.7893 - 14.8110) / 8}{(22.7893 + 14.8110) / 39} = 1.522 \quad F(8.39) = 2.18$$

The hypothesis that workers from Uniroyal are from the same population as workers from Maine Shoe cannot be rejected at the .05 level. This indicates that Maine Shoe workers constitute an appropriate control group.

The Length of Unemployment Model

The model was formulated to measure the effects of age, age squared, sex, education, wage-earner status, timing of TRA receipt, training and imputed wealth position on the length of unemployment measured in days. The length of unemployment is another measure of the success of worker adjustment. The results of the regression are given below.

$$Y = - 810.1 + 46.66 A - .4898 A^2 - 103.2 S + 9.435 Ed + 10.19 St \\ \quad \quad \quad (24.41) \quad (1.2822) \quad (55.53) \quad (12.89) \quad (51.75) \\ - 109.8 TRAL + 213.5 TRAE + 31.15 TR - 60.01 W \\ \quad \quad \quad (65.80) \quad (82.09) \quad (82.54) \quad (25.76)$$

$$R^2 = .5878 \quad F = 7.12917$$

where

Length of unemployment (Y) is in days

A = age

A² = age squared

S = sex

Ed = education

St = wage-earner status

TRAL = receipt of TRA more than one year after layoff

TRAE = receipt of TRA within a month after layoff

Tr = training

W = imputed wealth

Those variables which are significant at the .10 level for this model are age, age squared, sex, receipt of TRA more than one year after layoff, receipt of TRA within a month after layoff, and imputed wealth. Information about t values and significance levels of the other regression coefficients are included in Table 6.6. The signs on the age variables are not as hypothesized. Apparently older workers are unemployed longer than younger workers: increasing age results in increasing difficulty in becoming reemployed. This can be partially explained by the widespread use of pension plans in industry: employers prefer workers who will produce longer before retirement.

The sign on the sex coefficient was as hypothesized. Although receipt of TRA more than one year after layoff was not expected to have much effect, it is significant in this model with a negative sign. This could be partially explained by comments made during the telephone survey. Several Maine Shoe respondents said that they received a letter presumably informing them of their eligibility for TRA but were unable to understand the letter and so they did not bother to apply. Perhaps

TABLE 6.6
Length of Unemployment Model

<u>Independent Variable</u>	<u>Regression Coefficient</u>	<u>Standard Error</u>	<u>t-Value</u>	<u>Level of Significance</u>
Age	46.66	24.41	1.912	.062
Age squared	-.49	.28	-1.735	.090
Sex	-103.2	55.53	-1.858	.070
Education	9.44	12.89	.7320	.468
Wage-earner status	10.19	51.75	.1969	.845
Receipt of TRA late	-109.8	65.80	-1.668	.102
Receipt of TRA early	213.5	82.09	2.601	.013
Training	31.15	82.54	.3773	.708
Imputed Wealth	-60.01	25.76	-2.329	.024

Analysis of Variance

	Df	Sum of squares	Mean square
Due to regression	9	1759540	195504
Residual	45	1234040	27423.2
Total	54	2993580	

F Value = 7.12917

$R^2 = .5878$

Std. Error = 165.6

Intercept = -810.1

this letter and application procedure effectively sorted out those persons with more highly developed communication skills and the amount of assertiveness necessary to apply and that these are the same qualities that lead to successful reemployment.

The sign on the coefficient for receipt of TRA within a month after layoff is not as hypothesized. Apparently workers who receive this benefit immediately take longer to find another job. The opportunity costs to workers of accepting a job are high: the loss of their adjustment assistance benefits. The increased length of unemployment for these workers can be attributed either to the high opportunity cost or workers can be regarding their allowances as security in their job search procedure. Referral to the present wage model would suggest that these displaced workers were successful in optimizing their job search.

The sign on the coefficient for imputed wealth is opposite to that hypothesized. A possible explanation is that workers in a more favorable wealth position wish to maintain that position and will accept employment sooner than other workers in not so favorable a position. It had been expected that workers in a more favorable wealth position would be able to look longer for a job. Apparently maintaining an asset position is more predominate than "living on" assets.

The R^2 value of .5878 is a high one for this type of study. It indicates that about 59% of the variation in the length of unemployment

can be explained by the variables included in the model. The critical value for F with nine degrees of freedom in the numerator and forty-five degrees of freedom in the denominator at the .01 level ($F(.01,9,45)$) is 2.85. The F value of 7.129 clearly exceeds this value indicating that the regression is statistically significant.

Other Regressions

Previous studies have found past wage to be a highly significant variable.^{1,2} The variable was included as a proxy for skill and ability in these former models. The present wage model was rerun with past wage adjusted to June 1975 by the consumer price index. The variable was found to be insignificant. Its inclusion did not appreciably increase the R^2 value: the addition of past wage to the present wage model did not increase the explanatory power of the model. The results of this regression are not included in this study.

A change in wage model was also tried with the difference between pre-impact wage and current wage as the dependent variable. independent variables were age, age squared, sex, education, wage-earner status, years with the original firm, length of unemployment, imputed wealth, timing of receipt of TRA and training. This model did not behave as well as the present wage model and the length of unemployment

¹Bale, op. cit., p. 156.

²McCarthy, op. cit., p. 112.

model in terms of its F test and R^2 values and is not included in this paper.

CHAPTER 7

Conclusions and Recommendations

Conclusions

Although the receipt of adjustment assistance shortly after layoff undoubtedly reduces the trauma of dislocation and the cost of job search to the individual worker, the costs and benefits to society are not as clear. Workers who received adjustment assistance shortly after layoff also experienced longer periods of unemployment. This result can be understood by observing that workers face at least a 100% tax on their adjustment assistance benefits as well as the loss of leisure time by finding alternate employment. That is, the opportunity costs (what the worker must give up) of finding employment are high compared to the expected wage. Workers approach the end of the benefit period before actively seeking reemployment.

The costs to society of having part of its productive capacity unemployed for an increased length of time with a rapid delivery system can still be outweighed on economic grounds if the workers were able to secure higher paying jobs than were workers who received no benefits or who received them retroactively. This would imply that workers who received adjustment assistance shortly after layoff were able to maximize their social marginal product. The workers who received assistance shortly after layoff do have higher present wages than do other

workers. Apparently the rapid delivery system enables workers to be successful in maximizing their job search.

Other socio-economic characteristics found to have a significant effect upon present wage or length of unemployment in this study are sex, education, age, receipt of TRA more than one year after layoff, and imputed wealth. Men in this study adjusted more easily than did women: men earn a higher present wage and also incurred shorter periods of unemployment than did women with the same characteristics. As expected, wage level increases with education level. Older workers experienced longer periods of unemployment but any difference in wage level was not statistically significant. Surprisingly, workers who received TRA as a lump sum more than one year after layoff experienced shorter periods of unemployment than did other workers. A possible explanation is that those workers who understood the application procedure and made the effort to apply would utilize these same abilities in securing employment.

The relationship between the imputed wealth variable and length of unemployment was not as expected. Workers with relatively greater asset positions had shorter periods of unemployment. One would expect that these workers would be best able to take the time necessary to secure the best job available. Perhaps these workers feel the stigma of receiving transfer payments more than do others. On the other hand, they may have greater financial obligations and wish to maintain their

asset position or they could simply be more ambitious and give up some payments in order to get back to work.

Policy Recommendations

Efforts to expedite the delivery of benefits to impacted workers should continue even though it results in increased lengths of unemployment because the labor market is moved closer to perfection by the reduced cost to the individual worker of job search. Consequently, there is a social payoff in that receipt of trade adjustment assistance shortly after layoff enables workers to find employment where their value to society as measured by the wage rate is highest.

An interesting possible way of dealing with the extended length of unemployment incurred by recipients of TRA shortly after layoff is alternate tax rates on the benefits. Currently, recipients become ineligible for benefits when they become reemployed. If the purpose of the benefits is to compensate workers for injuries caused by the reduction of a tariff then benefits could be paid as a lump sum or for a specified number of weeks regardless of employment status. Since the TEA itself seems to be more concerned with the rapid adjustment of workers than with the equity considerations of compensating injured workers, some optimal tax between 0% and the current 100% could be found by experimentation. Information on alternate tax rates is being processed by the Institute for Research on Poverty at the University of Wisconsin which is experimenting with the negative income tax.

APPENDIX A

APPENDIX A

Letters and Questionnaire

The initial letter mailed to the sample group which explained the nature of the research being done and prepared workers for the telephone survey to be conducted is included first in this appendix. The second letter is the cover letter which accompanied questionnaires sent to respondents who returned post cards indicating they would answer a mailed survey. The third letter is another cover letter which was sent with questionnaires mailed to workers who did not return post cards, whose initial letters were not returned and who did not have phones. The last inclusion in this appendix is the questionnaire used in the survey.



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COLLEGE OF AGRICULTURE
AND
COLLEGE OF LETTERS & SCIENCE

MONTANA STATE UNIVERSITY
Bozeman, MT 59715
July 29, 1975

We are currently conducting a study for the U.S. Department of Labor on the experience of workers who were laid off from shoe firms and who may have received "adjustment assistance" benefits as given under the Trade Expansion Act. We have selected some workers from two firms - Maine Shoe Co., and Uniroyal, Woonsocket. We understand that you became eligible for trade adjustment assistance and we would like to ask you a few questions in a telephone interview which we plan to conduct in early August. Your cooperation and answers are very important to us. That is why we are writing to let you know that we will be calling. The information you give us will be kept confidential and will be added to information that we get from other persons so that your identity will not be known.

Some of the questions we would like to ask you are what you were paid per hour in the shoe firm, what you are now earning, how long you were out of work after the shoe firm laid you off, and what allowance you were paid by the Employment Service.

We look forward to talking with you.

Sincerely yours,

Malcolm D. Bale Diane Miller
Assistant Professor Research Assistant

P.S. If there is a card enclosed with this letter, then we cannot find your phone number. Would you please jot it down and mail the card to us. If you do not have a phone we will mail you the questions.



MDB/DM/vs
TELEPHONE (406) 994 1701

-59-



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& ECONOMICS

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AND
COLLEGE OF LETTERS & SCIENCE

MONTANA STATE UNIVERSITY
Bozeman, MT 59715

August 12, 1975

Thank you for returning the postcard that we sent you concerning the adjustment assistance benefits given displaced shoe workers.

We are enclosing a copy of a questionnaire and a reply paid envelope. We would appreciate it if you would complete the questionnaire and return it to us.

Our survey of displaced workers is proceeding well. We are trying to find out whether the trade readjustment allowances helped displaced workers and whether the program can be made more effective. Your cooperation is important to us.

Thank you.

Sincerely yours,

A handwritten signature in cursive script, appearing to read 'M. D. Bale'.

Malcolm D. Bale
Assistant Professor

Diane Miller
Research Assistant

MDB/DM/vs



TELEPHONE (406) 994 3701



DEPARTMENT OF AGRICULTURAL ECONOMICS
& ECONOMICS

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AND
COLLEGE OF LETTERS & SCIENCE

MONTANA STATE UNIVERSITY
Bozeman, Montana 59715

September 11, 1975

On July 29, 1975, we wrote you explaining that we were conducting a study on the experience of workers who were laid off from shoe firms and who may have received "adjustment assistance" benefits given under the Trade Expansion Act.

We have not received a reply from you and we do not have your telephone number. Consequently we are taking the liberty of enclosing a copy of our questionnaire in the hope that you will complete it and return it to us in the enclosed envelope.

Our survey of displaced workers is proceeding well and we are getting good cooperation. We are trying to find out whether the trade adjustment allowances helped displaced workers and whether the program can be made more effective. Your cooperation is important to us, and as we mentioned in our first letter, the information you send us will be held in strictest confidence.

Thank you.

Sincerely yours,

Handwritten signatures of Malcolm D. Bale and Diane Miller.

Malcolm D. Bale
Assistant Professor

Diane Miller
Research Assistant

MDB:ejr

Enc.



TELEPHONE (406)994 1701

Trade Adjustment Assistance

Survey Questionnaire for Workers
of Maine Shoe and Uniroyal, Woonsocket Plant

Workers name _____ Phone No. _____

Age _____ Sex _____

Education 1 2 3 4 5 6 7 8 9 10 11 12/ 1 2 3 4
(including vocational) (circle highest grade completed)

Were you the primary wage earner in your family when you
worked in (Name of Firm) _____ Yes ___ No ___

I. When you last worked at (Name of Firm):

- A. What was your pay per hour before deductions? \$ _____
- B. Did you work full-time (35 hours or more)? Yes ___ No ___
- C. How long were you employed at (Name of Firm)? _____
- D. When did you leave (Name of Firm)? Month _____ Year _____
- E. Why did you leave? Laid off ___ Quit in anticipation of
layoff ___ Other quit ___ Other ___ (explain)

II. Employment experience since last employed at (Name of Firm)?

- A. Did you have a job last week? Yes ___ No ___
- B. How many jobs have you had since you left (Name of Firm)? _____

(Note to interviewer -- indicate if worker has become a
handyman, part-time domestic or self-employed and go to IV.)

- C. Date current job began _____; date job ended _____
 - 1. What is your pay per hour (before deductions)? _____
 - 2. Do you work full time? Yes ___ No ___
How many hours per week? _____
 - 3. How long were you out of work between jobs? less than 1 week ___;
between 1 week and 1 month ___; 1 month to 3 months ___;
3 months to 6 months ___; 6 months to 1 year ___;
more than 1 year ___.

(Repeat questions C1 and 2 for all jobs lasting four or more
weeks since worker left the impacted Firm)

III. Questions for persons not currently working

- A. Do you have a job or business from which you were temporarily absent or on layoff last week? Yes, on layoff _____
Yes, on vacation, illness, labor dispute, etc. _____ No _____
- B. Have you looked for work in the past four weeks? Yes _____ No _____
- C. Was there any reason why you could not take a job last week?
Yes, already has a job _____; Yes, because of illness _____;
Yes, other reasons (specify) _____ No _____
- D. Have you retired? Yes _____ No _____
If so, when? month _____ year _____
Would you have retired if you could have found a job nearby as good as the one you had in (Name of Firm)? Yes _____ No _____

IV. Questions concerning Unemployment Insurance and Trade Readjustment Allowance experience of respondents

A. UI payments

- 1. Did you apply for Unemployment Insurance payments? Yes _____ No _____
When _____
- 2. Did you receive any UI payments? Yes _____ No _____
- 3. Date UI payments began _____; ^{AMOUNT ?} less than \$50/week _____;
\$50-\$60/wk. _____; \$60-\$70/wk. _____; \$70-\$80/wk. _____;
\$80-\$90/wk. _____; \$90-\$100/wk. _____; over \$100/wk. _____
Number of weeks UI payment received _____
- 4. Are you receiving UI payments now? Yes _____ No _____

B. TRA payments

- 1. Did you apply for Trade Readjustment Allowance payments?
Yes _____ No _____ When _____
- 2. Were you found eligible to receive TRA payments?
Yes _____ Date _____ No _____ Date _____
(If no, go to C below)
- 3. When did you get your first TRA check _____
^{AMOUNT} less than \$50/wk. _____; \$50-\$60/wk. _____; \$60-\$70/wk. _____;
\$70-\$80/wk. _____; \$80-\$90/wk. _____; \$90-\$100/wk. _____;
over \$100/wk. _____
Number of weekly TRA payments received _____
- 4. Did you receive one lump sum TRA payment? Yes _____ No _____
Amount \$ _____

C. Employment Services Received

1. Did the Employment Service help you find any of your jobs since being laid off from (Name of Firm)?
Yes ___ No ___ Which job? First _____
Other (specify) _____
2. Did you receive any other help?
 - a. Did someone give you a test? Yes ___ No ___
 - b. Were you sent to a training course? Yes ___ No ___
When _____
 - c. Did you talk to someone at the Employment Service in detail about possible jobs you could do or training you could take? Yes ___ No ___
 - d. Did you attend a training program in which the government paid all or part of the cost? Yes ___ No ___; if yes, provide:
 - (1) Date
 - (2) Occupation
 - (3) Duration
 - (4) hours per week
 - (5) Are you currently employed in work related to the training you received? Yes ___ No ___
 - e. Did you take any training that was not provided or paid for by the government? Yes ___ No ___; if yes, describe:
 - (1) on the job training at the firm _____
 - (2) night classes paid by firm _____
 - (3) night classes paid by you _____
 - (4) other
3. Did you get any services from the Employment Service after you received your first TRA check? Yes ___ No ___
What types: (specify) _____
4. Did you get any offers of help in moving to a new job and city after you left (Name of Firm)? Yes ___ No ___
If yes, what sort: _____

V. Knowledge of adjustment program

A. Did you find out about this special program: before you were laid off ___; before (date of certification) ___; after (date of certification) ___. When? _____

B. Who told you about the program?
Union ___, ES office ___, fellow worker ___, newspaper, radio or television ___.

C. Did you know that the program provided numerous benefits such as weekly payments, training, placement services, relocation?
Yes ___ No ___

IV. A. Do you own a house? Yes ___ No ___
How much is it worth? less than \$15,000 ___;
\$15,000-\$25,000 ___; \$25,000-\$35,000 ___; over \$35,000 ___.
Do you owe money on it? Yes ___ No ___ How much? _____

B. Do you own a car? Yes ___ No ___ How much is it worth?
less than \$500 ___; \$500-\$2500 ___; \$2500-\$4000 ___; over \$4000 ___.
Do you owe money on it? Yes ___ No ___ How much? _____

C. Do you own any other property? Yes ___ No ___

D. 1) Do you have any non-worker income such as dividends from stocks and bonds or interest on savings accounts? Yes ___ No ___

2) How much money per year do these sources bring? \$ _____

APPENDIX B

TABLE B.1
Present Wage Model: Currently Unemployed at Zero Wage

Independent Variable	Regression Coefficient	Standard Error	t-Value	Level of Significance
Age	.1169	.1982	.5897	.558
Age squared	-.0009075	.002230	-.4070	.686
Sex	.277	.4835	4.710	.000
Education	.2603	.1059	2.459	.018
Wage-earner status	.7285	.3993	1.824	.075
Years with the original firm	-.03260	.03590	-.9081	.369
Receipt of TRA late	.5732	.5191	1.104	.275
Receipt of TRA early	1.516	.7006	2.164	.036
Training	.9074	.6269	1.447	.155

Analysis of Variance

	Df	Sum of squares	Mean square
Due to regression	9	75.72	8.41
Residual	45	71.39	1.59
Total	54	147.12	

F Value = 5.303

$R^2 = .5147$

Std. Error = 1.260

Intercept = -4.523

TABLE B.2
Present Wage Model: Currently Unemployed Excluded

<u>Independent Variable</u>	<u>Regression Coefficient</u>	<u>Standard Error</u>	<u>t-Value</u>	<u>Level of Significance</u>
Age	.1302	.1700	.7657	.448
Age squared	-.06524	-.0007903	-.4135	.681
Sex	1.884	.3892	4.842	.000
Education	.3329	.08821	3.774	.001
Wage-earner status	.4648	.3189	1.458	.153
Years with the original firm	.04542	.03008	-1.510	.139
Receipt of TRA late	.3125	.4602	.6790	.501
Receipt of TRA early	1.306	.5524	2.364	.023
Training	.4986	.5021	.9929	.327

Analysis of Variance

	<u>Df</u>	<u>Sum of squares</u>	<u>Mean square</u>
Due to regression	9	48.25	5.36
Residual	40	37.40	.94
Total	49	85.65	

F Value = 5.733

$R^2 = .5633$

Std. Error = .9670

Intercept = -5.247

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