The Economic Impact from the Extension of Unemployment Insurance to Texas Agriculture

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Acknowledgments

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Summary

The economic impact from the extension of unemployment insurance to Texas agriculture was examined using universal coverage and four other plans that would provide increasingly restricted coverage. The results of these alternatives are presented in this report and summarized here.

1) Agricultural employers with agricultural product sales of $40,000 or more in 1969, paid out two-thirds of the total agricultural wages. These employers were less than one-third of the total agricultural employers in the state and about 6 percent of all farmers.

2) Livestock operations paid out 30 percent of total agricultural wages in 1969, cash grain operations 27 percent and cotton operations 19 percent.

3) Legislation bringing agricultural employers with 4 or more workers for 20 or more weeks or meeting a high quarter payroll of at least $5,000 under the provisions of the Texas Unemployment Compensation Act would have included less than 3 percent of all Texas farmers in 1969. These farmers paid out over 60 percent of total wages and hired 92 percent of total workers.

4) Including agriculture under provisions of the Texas Unemployment Compensation Act in 1969 would have had only a moderate impact on the state unemployment insurance system. Taxable covered payroll would have increased by less than 2.5 percent, total benefits paid out by 14 percent and eligible workers receiving benefits by about 25 percent.

5) Estimated benefits which would have been paid out to beneficiaries as a result of extending unemployment insurance to agriculture would have been about 3.5 percent of total taxable wages paid by agricultural employers. (Taxable wages include only the first $4,200 of annual wages paid to an employee).

6) About one-third of the employees working for subject Texas agricultural employers would have been eligible to receive benefits. Average weekly benefits received would have been about $35. These workers would have received about $300 over a duration of 8 to 9 weeks. By comparison, actual beneficiaries employed for subject non-agricultural employers received average weekly benefits of $39.52 over a period of 11.2 weeks for an average total of $443 each.

7) Costs to subject agricultural employers would range from a minimum of $6 per thousand dollars taxable payroll to a maximum of $45 per thousand dollars taxable payroll. The maximum increase in hourly labor costs assuming a base wage of $1.75 per hour would be about 8 cents.

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INTRODUCTION

Unemployment insurance programs are used by Western industrialized nations to maintain the income stream of workers who are temporarily unemployed as a result of industry induced employment interruptions. In the United States, Federal-State Unemployment Insurance programs have been enacted to include all major economic sectors except agriculture.

Under an amendment to the 1970 Federal Unemployment Tax Act, research funds were allocated for a study of the economic feasibility of extending coverage to the agricultural sector. This report is a partial analysis of the results of the study as applied to Texas agriculture. Special reference is made to the aggregated employer costs and extent of participation under alternative coverage provisions, to the effects on the cost structure of the Texas Unemployment Insurance Trust Fund and to the amount of income transferred to eligible workers.

Two special surveys were conducted as part of the total study: 1) A random sample of agricultural employers selected to obtain income and employment data for calendar year 1969; and 2) Workers selected for interviews on a subsample of these farms. Detailed employment, unemployment and income data were obtained from these workers for the period June 29, 1969 to June 27, 1970.[1]

[1]See Appendix A for a more detailed description of the survey design.

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Texas Agriculture

Agriculture is a dynamic and expanding industry in Texas (4). Although the total number of farms has declined from 1939 to 1969, the reduction has occurred in farms with total sales less than $2,500. Over the same period, farms with sales in excess of $10,000 per year have increased in both absolute and relative terms (Table 1).

Gross returns to Texas agriculture, including government payments and value of home food consumption and property rental, was $3.7 billion in 1969 with estimated net returns of $1.2 billion. The Texas Agricultural Extension Service and The Texas Agricultural Experiment Station have estimated that cash receipts from all commodities in Texas during 1969 were $3.1 billion, with livestock product receipts totaling $1.9 billion and crops making up the remainder of $1.2 billion. Table 2 gives the estimated receipts from major commodity groups in Texas in 1969.

In 1970 Texas ranked third in the nation in total crop and livestock receipts. It is the leading producer of cotton, grain sorghum, beef cattle, sheep and wool, and goats and mohair. It produces 31.6 percent of the total cotton in the United States.

An estimated $203,363,207 in wages was paid by farm employers in Texas in 1969. The three largest income producing commodities, livestock, grains and cotton, also paid out the largest amount of wages.

Comparison of Tables 2 and 3 illustrates that meat and livestock accounted for 45 percent of total Texas cash receipts in 1969 and paid approximately 30 percent of Texas agricultural wages. Cash grain and other field crops accounted for 21 percent of Texas

TABLE 1. COMPARISON OF THE SIZE OF TEXAS FARMS IN 1939 AND 1969 BY VALUE OF PRODUCTS SOLD

Value of products sold	1939[a]		1969[b]	
	Number of farms	Percent	Number of farms	Percent
$10,000 or more	4,728	1	51,227	37
$ 2,500-$9,999	28,820	7	69,391	51
Less than $2,500	383,112	92	16,223	12
Total	416,660	100	136,841	100

a. U. S. Census of Agriculture, 1940. Washington, D. C.: U. S. Bureau of the Census, 1940. Volume II, Part 2, p. 818.

b. U. S. Census of Agriculture, Texas, 1969. Washington, D. C.: U. S. Bureau of the Census, 1970.

agricultural cash receipts and paid 27 percent of agricultural wages. Cotton, which received 12 percent of total cash receipts, paid 19 percent of agricultural wages. Together these products accounted for 78 percent of Texas agricultural cash receipts and paid out 76 percent of Texas agricultural wages in 1969.

The Lower Rio Grande Valley of Texas is the home base of many migrant workers (41 percent of Texas interstate seasonal workers in 1968 (6). Analysis of survey data indicates that fruit and nut[2] and vegetable farms, which are located primarily in the Lower Rio Grande Valley, paid only 8.5 percent of total Texas agricultural gross payroll in 1969.[3] The 1969 Census of Agriculture also indicated that the

TABLE 2. ESTIMATED 1969 CASH RECEIPTS FROM TEXAS COMMODITIES AND PERCENT OF TOTAL CASH RECEIPTS

Commodity	1969 Estimated[a] cash receipts	Percent of total
	(thousands of dollars)	
Livestock	$1,385,087	45.4%
Cash grain and other field crops	644,844	21.1
Cotton	362,131	11.9
Poultry and eggs	227,563	7.4
Dairy products	195,924	6.4
Vegetables	127,460	4.2
Other	83,187	2.7
Fruit and nuts	27,340	.9
All commodities	$3,053,536	100.0%

a. Texas Food and Fiber Facts, 1972. College Station: Texas A&M University, Texas Agricultural Extension Service and Texas Agricultural Experiment Station, 1972.

[2]Although nuts are not produced in the Lower Rio Grande Valley, they cannot be separated from the total fruit and nut classification. The discrepancy introduced is not felt to alter the conclusions drawn.

[3]This figure can be compared to 1969 Census of Agriculture figures showing dollar expenditures for agricultural labor in the Lower Rio Grande Valley (Starr, Hidalgo, Willacy and Cameron Counties) to be $16,865,789 or 8.3 percent of total wages paid to agricultural employees in Texas.

TABLE 3. TOTAL WAGES PAID BY TEXAS AGRICULTURAL EMPLOYERS BY COMMODITY GROUP

Commodity	1969 Wages paid by[a] agricultural employers	
	Amount	Percent
Livestock	$ 60,490,415	29.7%
Cash grain and other field crops	54,526,188	26.8
Cotton	39,171,552	19.3
Poultry and eggs	5,630,657	2.8
Dairy products	15,088,333	7.4
Vegetables	10,317,236	5.1
Other	11,155,132	5.5
Fruit and nuts	6,983,694	3.4
All commodities	$203,363,207	100.0%

a. Figures are from employer portion of the Farm Labor survey.

four Lower Rio Grande counties (Starr, Hidalgo, Willacy and Cameron) hired only 6 percent of the total seasonal hirings in the State.

Table 4 indicates that most of the Texas seasonal labor force is composed of local residents. In 1969, the monthly percentages of local seasonal workers ranged from 83.7 percent to 99.8 percent of all seasonal workers. Intrastate seasonal workers made up from 0.2 percent to 15.7 percent of all seasonal workers, while interstate seasonal workers represented from 0 to only .5 percent. The Lower Rio Grande Valley, however, is not able to completely absorb its resident labor force.

The lack of alternative employment opportunities for seasonal agricultural workers residing in the Lower Rio Grande Valley is emphasized by the Texas Employment Commission: "Needless to say, the employability problems brought on by poor education, language barriers and cultural deprivation which burden the seasonal farm worker are intensified by the weak economic environment in which most of them reside. The intensity of the employment problems of seasonal workers is better understood in light of these facts:

1. The rate of decline in the number of seasonal farm jobs in the heavily agriculture-oriented Lower Rio Grande Valley area since 1962 is 63 percent compared to a statewide rate of decline of 58.5 percent.

2. More surprising, regular year-round farm jobs have declined at the rate of 2.9 percent in that area while increasing statewide by 37 percent as farm units have increased in size.

3. Rather than taking up slack caused by abnormally rapid decline in farm job opportunities, nonfarm jobs increased by only 24 percent since 1962 in the Lower Rio Grande Valley area compared to 42.6 percent statewide, or at slightly one-half the statewide rate" (3).

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TABLE 4. DISTRIBUTION OF 1969 SEASONAL TEXAS AGRI-
CULTURAL EMPLOYMENT BY LOCAL, INTRASTATE AND
INTERSTATE BY MONTH[a]

Month	Total	Local[b]	Intrastate[b]	Interstate[b]
Jan.	100%	99.8%	.2%	0 %
Feb.	100	99.8	.2	0
Mar.	100	99.6	.4	0
Apr.	100	98.4	1.6	0
May	100	97.6	2.4	0
June	100	92.7	6.9	.4
July	100	84.0	15.8	.2
Aug.	100	87.0	12.8	.2
Sep.	100	95.1	4.8	0
Oct.	100	94.0	5.6	.4
Nov.	100	94.1	5.4	.5
Dec.	100	90.6	9.2	.1

a. Texas Employment Commission, *Texas Farm Labor Annual Report*. Austin, Texas: TEC, 1970, p. 7. It should be noted that worker status in this table is referenced from the point of origin relative to the employer. A worker hired by an employer in his home base is considered a local worker in this table even though over the course of a season he may be employed by an out of state employer. Likewise if he is hired by a Texas agricultural employer whose operation is outside of the worker's home base, the worker is then counted as an intrastate worker. Only if an employee is not a resident of Texas is he considered an interstate worker on this table.

b. Local seasonal workers do not "leave home overnight to do temporary work." Intrastate workers take up temporary residence in at least one county other than their home county while engaged in seasonal agricultural employment. Interstate seasonal workers take up temporary residence in a state other than their home state while employed as seasonal farm workers.

Unemployment Insurance Legislation

Unemployment insurance in the United States was first instituted in the 1830's on a voluntary basis by trade unions to maintain the income of unemployed workers. Between 1916 and 1932 some 38 firms experimented with company plans (1). At that time the increase in unemployment and the great depression evinced industry's inability to deal with the problem and stimulated the need for some form of compulsory unemployment insurance.

Unlike Europe, where strong paternalistic employer-employee relationships reinforced the social need for unemployment compensation, income maintenance provisions for American workers experiencing periods of involuntary unemployment were debated from an economic rather than a social or institutional base. The American worker was considered an asset whose productive powers needed to be restored in order to maintain production efficiency (2).

The Federal Government established minimum requirements for participation under the unemployment compensation provisions in the Social Security Act of 1935 and later the Federal Unemployment Tax Act (FUTA). Individual States are encouraged to adopt legislation within the Federal guidelines through the provision of a "tax credit" to employers. This tax credit is conditional upon certification of the state law by the U.S. Secretary of Labor. All employers with employment covered under FUTA are taxed at a rate of 3.2 percent on the first $4,200 paid to each employee. Only the first $4,200 paid by an employer to an individual is taxable. No tax is paid on wages in excess of this amount. Employers in States passing legislation meeting the minimum requirements of the FUTA receive a Federal tax credit of up to 2.7 percent. The remaining .5 percent is paid to the Federal fund by all subject employers to cover costs of administering both the Unemployment Insurance Program and a part of the U.S. Employment Service.

The Texas Unemployment Compensation Act requires participation by all subject employers having one or more workers for at least a portion of each of 20 weeks or who pay wages of at least $1,500 in a high quarter in a calendar year. An employing unit which becomes an employer under the Act for the first time during the calendar year 1972 is charged a rate of 1 percent of his taxable payroll until an "experience" rate can be assigned. However, an individual who became liable for the first time in 1972 (because he acquired the business of a subject employer) is not eligible for the 1 percent rate. The employer's experience rate is a ratio of the sum of benefits charged against his account to the sum of his taxable payroll for the most recent consecutive three year period, adjusted by a State replenishment ratio. The replenishment ratio increases the rate when the State fund falls below a legislated minimum level and decreases it when an excess of funds exists.

If no unemployment was experienced during the previous three years, the rate may fall as low as .1 percent of his current taxable payroll. The maximum State experience rate is 4 percent. The minimum and maximum rates are subject to increase through the influence of the replenishment ratio if the overall level of the State fund is low.

An unemployed worker may receive benefits in Texas if he has had wages of $500 in a base period consisting of the first four of the last five quarters. These wages must be earned in at least two quarters and must equal one and one-half times the high quarter earnings. Weekly benefits are 1/25 of the high quarter earnings with a maximum of $63 per week. Normally benefit payments do not extend longer than 26 weeks and must not be more than 27 percent of total wages earned in the base period.

Benefits received by a worker are charged to subject employers for whom he worked during the base period in proportion to the wages paid him by these employers. Benefits are charged to out-of-state employers relative to wages earned out of State. These benefits are apportioned among the several employers, if more than one, according to the formula existing under legislation of the respective State or States.

To qualify for benefits, the unemployed worker of a subject employer must establish his ability and willingness to work and must register for work and continue to report at any employment office in accordance with regulations prescribed by the Texas Employment Commission (TEC). He must accept jobs within his skill and occupation range when they become available. An individual will not be denied benefits if he is in a job training program receiving the approval of the TEC.

Agricultural Exclusion

Agriculture was excluded from the Unemployment Insurance program enacted in 1935. The special characteristics of agricultural labor use, including factors such as seasonality of employment and the large number of very small employing units, raised questions concerning the feasibility of coverage. At that time there were no foreign industrial nations with compulsory coverage extended to the agricultural sector. Experience could not serve as a guide.

Agricultural labor was defined as "services performed on a farm in connection with cultivating the soil; harvesting crops; or raising, feeding or managing livestock, bees and poultry." The definition also included "processing services incidental to ordinary farming operations performed for the farm operator who raised the produce" (9). In 1939 the definition of agricultural employment exempt from unemployment insurance coverage was expanded. Agriculturally related industries such as nurseries and greenhouses, research farms, certain agricultural cooperatives, fur farms, stables and certain landscaping firms were excluded from coverage.

Definition of Terms

Agricultural employment is currently defined by the Texas Unemployment Compensation Act as all services performed:

1. On a farm, in the employ of any person, in connection with cultivating the soil, or in connection with raising or harvesting any agricultural or horticultural commodity, including the raising, shearing, feeding, caring for, training, and management of livestock, bees, poultry, and fur-bearing animals and wildlife;

2. In the employ of the owner or tenant or other operator of a farm, in connection with the operation, management, conservation, improvement, or maintenance of such farm and its tools and equipment, or in salvaging timber or clearing land of brush and other debris left by a hurricane, if the major part of such service is performed on a farm;

3. In connection with the production or harvesting of any commodity defined as an agricultural commodity in Section 15 (g) of the Ag-

ricultural Marketing Act, as amended (46 Stat. 1550, 3; 12 U.S.C. 1141j), or in connection with the ginning of cotton, or in connection with the operation or maintenance of ditches, canals, reservoirs, or waterways not owned or operated for profit, used exclusively for supplying and storing water for farming purposes;

4. a. In the employ of the operator of a farm in handling, planting, drying, packing, packaging, processing, freezing, grading, storing, or delivering to storage or to market or to a carrier for transportation to market, in its unmanufactured state, any agricultural or horticultural commodity; but only if such operator produced more than one-half (½) of the commodity with respect to which such service is performed;

   b. In the employ of a group of operators of farms (or a cooperative organization of which such operators are members) in the performance of service described in subparagraph (a) above, but only if such operators produced more than one-half (½) of the commodity with respect to which such service is performed;

   c. The provisions of subparagraphs (a) and (b) shall not be deemed to be applicable with respect to service performed in connection with commercial canning or commercial freezing or in connection with any agricultural or horticultural commodity after its delivery to a terminal market for distribution for consumption.

5. On a farm operated for profit if such service is not in the course of the employer's trade or business or is domestic service in a private home of the employer.

As used in this subsection, the term "farm" includes stock, dairy, poultry, fruit, fur-bearing animals, and truck farms, plantations, ranches, nurseries, ranges, greenhouses or other similar structures used primarily for the raising of agricultural or horticultural commodities, and orchards.

The stated reasons for the exclusion of agriculture from unemployment insurance were mainly economic and administrative in nature. It was felt that the spatial diffusion of the mostly small agricultural employing units would result in higher administrative costs per covered agricultural employee than for nonagricultural employees. Additional administrative costs would also have been incurred if the dollar value of food and shelter received by agricultural employees were to be accurately determined.

It was felt that the administrative task of determining worker qualification would present additional problems. Many housewives and students

who may be ineligible for coverage due to insufficient attachment to the labor force, nonetheless are members of the farm labor force during part of the year. Some farm workers are self-employed or tenants and sharecroppers the rest of the year. The existence of family crews, crewleaders and labor contractors made it even more difficult to maintain accurate records on earnings and employment patterns of the agricultural workers associated with these organizational forms. It was agreed that small farmers also kept very few payroll-related records.

An additional problem existed in labor supply states such as Texas. Texas is one of the three main sources of this country's interstate migrant labor streams (the other two are Florida and California). Determination of availability for work is often difficult and work performed and skill requirements vary between jobs held during the course of the year. The extensive mobility patterns of these workers also raised additional interpretive questions when attempting to determine eligibility for work. For example, should employees whose normal work activities include employment in two or more states be eligible to receive benefits if no local employment is available?

An additional factor influencing the decision to exclude the agricultural sector from coverage was the concern by employers of regular workers that they would be paying for benefits received by workers with large amounts of seasonal unemployment. The proportion of benefits received by workers to taxable wages paid them will be very small for employers whose workers experience little or no unemployment. Their yearly experience-rated State unemployment insurance contributions may be less than $5.00 per regular employee. (The Federal tax of .5 percent of employee taxable payroll would be paid in addition to this State minimum.) On the other hand, the ratio of benefits to taxable wages for employers of seasonal employees may be greater than the current State maximum tax rate of 4 percent. Under normal Fund conditions the employers of such seasonal workers can only be charged at this maximum rate. The cost of remaining benefits received by his workers will be indirectly spread over all employers regardless of industry through adjustment of the replenishment ratio.

Changes in agricultural organization and knowledge gained from over forty years experience with unemployment insurance have reduced many of the distinctions between agricultural and non agricultural employment. Record keeping by farmers has improved since 1935. All employers who would be subject to the unemployment insurance program under existing legislation are now maintaining payroll records for Social Security purposes. Farm consolidation has decreased the number of potentially eligible agricltural employing units thus reducing potential administrative problems.

To facilitate distribution of benefits and costs for workers with wage credits in several states, all states now participate in interstate wage combining arrangements. These permit orderly transfers of costs to employers and receipt of benefits by workers. The successful experience of the unemployment insurance program in the construction, garment and food processing industries, which are characterized by highly seasonal employment patterns, further serves as a guide for the inclusion of the agricultural sector. In fact, because of the high risk of seasonal unemployment, workers in the garment trades were included under some of the earliest private company and union plans (1).

Finally, a factor often overlooked in discussions of farm firm growth and consolidation is the influence on the tenure and security of the agricultural employee. In the past, as an informal member of the farm family, a farm worker was assured of food and lodging, often commensurate with that of the farm owner or operator. This implicit responsibility of the employer was especially crucial during seasonal periods of non-work. With the growth of large scale agriculture, organized either on a family or a corporate basis, the employee-employer relationship often becomes more formal; security provisions for employees may also require a more formalized approach. Unemployment insurance benefits, which are based directly upon previous work experience and earnings, may be viewed as a means of restoring, in part, the informal employee income maintenance guarantees which were existent under the older informal relationships.

EMPLOYER PARTICIPATION

The Unemployment Insurance (U.I.) fund is maintained by taxes levied on subject employers. Currently all employers in industries covered under the Federal Unemployment Tax Act (covered industries) employing one or more workers for 20 or more weeks or who meet a high quarter payroll of at least $1,500 in a calendar year are considered subject employers.

The extent of agricultural employer participation will be discussed with respect to the above coverage provision in addition to four additional provisions in order to provide a perspective for decision making. These five alternative provisions are:

1. One or more workers anytime (universal coverage)

2. One or more workers for 20 or more weeks or at least $1,500 in any calendar quarter

3. Four or more workers for 20 or more weeks or at least $5,000 in any calendar quarter

4. Four or more workers in 20 or more weeks

5. Eight or more workers in 26 or more weeks.

Provision one is a bench mark representing complete coverage of all agricultural employers. Provision two conforms to current Texas U.I. legislation as well as the 1970 Employment Security Amendments to the Federal Unemployment Tax Act and would exclude employers who hire only a small quantity of seasonal labor. Provision three is also a possible coverage criterion designed to exclude employers with only intermittent labor needs. Provisions four and five conform to the "large farm" concepts embodied in the recent Congressional proposals.[4]

Employer Participation by Economic Class

Under provision five, the most exclusive coverage provision, only three percent of all farm employers would have been subject. However, 34 percent of total payroll would have been covered (Table 5).

[4]H. R. 12625 introduced by the Nixon Administration during the First Session of the 91st Congress provided the most inclusive coverage (criterion 4). H. R. 14705, as amended by the Senate Finance Committee, would have extended the more restrictive provisions of provision 5.

Subject employers would have increased to 11 percent and 13 percent under provisions four and three, respectively, including 53 and 59 percent of total payroll. Ninety-nine percent of total payroll and 92 percent of the employers would have been subject under criterion two, the one currently in effect for the nonagricultural industries.

Coverage of employers and gross payroll in Economic Classes III and IV decreases considerably from provision two to provision three. The percentage of subject employers in Class IV declines from 84 percent under provision two to 2 percent under provision three. It remains at 2 percent under four and declines to less than .5 percent under five. Economic Class III coverage was 91 percent under two, 1 percent under provisions three and four and less than .5 percent under five.

Similarly, coverage of gross payroll declines with each more exclusive coverage provision—96 percent, 19 percent, 15 percent and 2 percent under provisions two, three, four and five for Economic Class IV; and 99 percent, 9 percent, 8 percent and 2 percent under Economic Class III.

TABLE 5. DISTRIBUTION OF SUBJECT TEXAS FARM EMPLOYERS AND GROSS PAYROLL WITHIN EACH ECONOMIC CLASS UNDER FIVE SELECTED COVERAGE PROVISIONS, 1969

		Coverage provisions				
		1	2	3	4	5
Gross sales	Totals	1 worker anytime	1 worker in 20 weeks or $1500 in high quarter	4 workers in 20 weeks or $5000 in high quarter	4 workers in 20 weeks	8 workers in 26 weeks
				percent		
$40,000 or more (Economic class I)						
Employers	7,481	100	99	38	32	12
Gross payroll	$132,979,696	100	99	79	73	51
$20,000-$39,999 (Economic class II)						
Employers	6,465	100	93	8	5	a
Gross payroll	$ 34,594,864	100	98	28	16	2
$10,000-$19,999 (Economic class III)						
Employers	5,665b	100	91	1	1	a
Gross payroll	$ 18,319,568	100	99	9	8	2
Under $10,000 (Economic class IV)						
Employers	7,482b	100	84	2	2	a
Gross payroll	$ 17,467,920	100	96	19	15	2
All classes						
Employers	27,093b	100	92	13	11	3
Gross payroll	$203,362,048	100	99	59	53	34

a. Less than .5 percent.

b. This number is an underestimate since the population is based on employers filing Social Security Wage Statements. Excluded are employers with payrolls less than $150 per year and non-reporters. Most of these employers have annual sales less than $20,000. However, this exclusion has very little effect on total payroll.

Employer participation under Economic Class II declines more slowly from provision two (93 percent of employers and 98 percent of gross payroll) to provision three (8 percent and 28 percent respectively) and provision four (5 percent and 16 percent). However, with provision five, coverage declines to a parity with Economic Classes III and IV (less than .5 percent of employers and 2 percent of gross payroll).

Participation of Economic Class I employers who meet the bulk of total payroll remains higher than employers in the remaining classes. Coverage of gross payroll would have stayed at 100 percent under provision two and declines to 79 percent under three, 73 percent under four and 51 percent under five. Economic Class I employers would have been subject at 99 percent, 38 percent, 32 percent and 12 percent, respectively, under provisions two, three, four and five.

Employer Participation by Type of Farm

The three major products—cash grain, livestock farms and ranches, and cotton—accounted for 72 percent of Texas farm gross payroll and 85 percent of Texas farm employers under provision one (Tables 6 and 7). However, this predominance would have diminished with the more exclusive coverage provisions. Under provision three, the percentage of total gross payroll represented by the three major products declines to 61 percent and 69 percent of Texas farm

employers. It declines to 58 percent and 65 percent, respectively, under four and 53 percent and 56 percent under five.

Participation of employers in the three major products decreases under the more exclusive criteria (Tables 8 and 9) because these product groups are made up of a very large number of small employers who do not hire sufficient labor to remain covered under the more exclusive provisions.

Under provision three, the gross payroll of the three major products combined would have been covered at only 49 percent while all other products would have been covered at 82 percent. Only 11 percent of employers in the three major products, but 29 percent of those employers in other products would have been subject. With provisions four and five, respectively, 43 percent and 25 percent of the gross payroll of the three major products and 8 percent and 2 percent of employers would have been subject, while 78 percent and 57 percent of gross payroll and 26 percent and 11 percent of employers in other products would have been included.

Vegetable and fruit and nut operations, on the average, are organized into larger labor-using units than are the three major product groups, and would have had the greatest coverage of any of the products. Provisions one and two would have provided universal coverage of employers and gross payroll in these

TABLE 6. DISTRIBUTION OF GROSS PAYROLL OF SUBJECT TEXAS EMPLOYERS UNDER FIVE SELECTED COVERAGE PROVISIONS BY TYPE OF FARM, 1969

| | Coverage provisions | | | | |
Type of farm	1 1 worker anytime	2 1 worker in 20 weeks or $1500 in high quarter	3 4 workers in 20 weeks or $5000 in high quarter	4 4 workers in 20 weeks	5 8 workers in 26 weeks
			percent		
Cash grain	23	23	16	15	9
Livestock	30	30	29	29	31
Cotton	19	19	16	14	13
Subtotal—three major products	72	72	61	58	53
Other field crops	4	4	4	4	3
Vegetables	5	5	8	9	12
Fruit and nuts	3	3	5	6	5
Poultry	3	3	4	4	5
Dairy	7	7	11	12	13
General	1	1	a	a	a
Miscellaneous	5	5	7	7	9
Subtotal—other products	28	28	39	42	47
Total—all products	100	100	100	100	100

a. Less than .5 percent.

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	Coverage provisions				
	1	2	3	4	5
Type of farm	1 worker anytime	1 worker in 20 weeks or $1500 in high quarter	4 workers in 20 weeks or $5000 in high quarter	4 workers in 20 weeks	8 workers in 26 weeks
	percent				
Cash grain	27	27	27	27	17
Livestock	35	35	24	23	22
Cotton	23	23	18	15	17
Subtotal—three major products	85	85	69	65	56
Other field crops	4	3	3	3	3
Vegetables	1	1	4	4	8
Fruit and nuts	1	2	5	6	4
Poultry	1	1	4	5	8
Dairy	4	4	11	14	14
General	1	1	a	a	a
Miscellaneous	3	3	4	3	7
Subtotal—other products	15	15	31	35	44
Total—all products	100	100	100	100	100

a. Less than .5 percent.

products. Provisions three, four and five would have included 54 percent, 40 percent and 28 percent of employers in vegetables and 95 percent, 90 percent, and 78 percent of gross payroll. In fruits and nuts, 43 percent of employers would have been subject under provisions three and four and 11 percent under five, while 91 percent of gross payroll would have been covered under three and four and 49 percent under five.

ECONOMIC IMPLICATIONS OF EXTENDING UNEMPLOYMENT INSURANCE TO AGRICULTURE

Economic effects resulting from the inclusion of the Texas agricultural sector under the provisions of the Federal Unemployment Tax Act will be reviewed from the perspective of the employee, the employer and the effect on the Unemployment Insurance System.

Costs to the Unemployment Insurance System

Benefit/taxable wage rates (the ratio of the sum of the benefits received by workers to the sum of taxable wages paid by employers) are presented in Table 10.

The percentages presented in Table 10 can be interpreted from the three perspectives stated above in the following manner:

1) Employees—the rates associated with the row identified as *Total* is the ratio of benefits/taxable wages from all covered employment. This is the proportion of benefits received by *actual* beneficiaries to taxable wages received by *all* workers.

2) Agricultural employers—the average costs of unemployment insurance coverage stated as a proportion of taxable wages paid to hired workers. The percentages associated with the row identified as *Industry* reflect the amount of benefits allocated to agricultural employers accounts as a proportion of taxable wages paid by these employers. Benefits were allocated in direct proportion to the distribution of the beneficiaries total covered earnings between agricultural and nonagricultural employment.

3) The Unemployment Insurance System—the percentages associated with the row identified as *Added* relate to the ratio of additional benefits resulting from the inclusion of the agricultural sector as a proportion of taxable wages paid by agricultural employers. Added benefits are defined as total benefits received by actual beneficiaries minus benefits based on nonfarm covered earnings only. Taxable agricultural wages is the same figure used to calculate the Industry rate.

TABLE 8. DISTRIBUTION OF SUBJECT TEXAS EMPLOYERS UNDER FIVE SELECTED COVERAGE PROVISIONS BY TYPE OF FARM, 1969

	Coverage provisions				
	1	2	3	4	5
Type of farm	1 worker anytime	1 worker in 20 weeks or $1500 in high quarter	4 workers in 20 weeks or $5000 in high quarter	4 workers in 20 weeks	8 workers in 26 weeks
	percent				
Cash grain	100	93	13	11	2
Livestock	100	92	9	7	2
Cotton	100	80	10	7	3
Subtotal—three major products	100	92	11	8	2
Other field crops	100	69	9	9	2
Vegetables	100	100	54	40	28
Fruit and nuts	100	100	43	43	11
Poultry	100	100	40	40	22
Dairy	100	100	42	41	13
General	100	99	1	1	1
Miscellaneous	100	100	28	18	12
Subtotal—other products	100	91	29	26	11

As seen in Table 10, the ratio benefits/taxable wages is quite uniform over all five coverage provisions. The cost to agriculture (*Industry* rate) ranges from 3.41 percent to 3.56 percent, with no consistent pattern emerging. The *Added* cost rates vary from 3.08 to 3.73, decreasing slightly under the two most exclusive coverage provisions. This indicates that on the average those workers that would remain covered under the more exclusive provisions would have re-

ceived more benefits under nonfarm coverage than the workers covered under the more inclusive provisions. The ratios presented under the *Total* heading are consistently higher than those for the industry or added rows since they include all benefits and all taxable wages earned from all taxable employment of workers in the Texas agricultural labor force, both agricultural and nonagricultural. These rates are related to the *Added* rates in that they measure the

TABLE 9. DISTRIBUTION OF GROSS PAYROLL OF SUBJECT TEXAS EMPLOYERS UNDER FIVE SELECTED COVERAGE PROVISIONS BY TYPE OF FARM, 1969

	Coverage provisions				
	1	2	3	4	5
Type of farm	1 worker anytime	1 worker in 20 weeks or $1500 in high quarter	4 workers in 20 weeks or $5000 in high quarter	4 workers in 20 weeks	8 workers in 26 weeks
	percent				
Cash grain	100	99	40	34	13
Livestock	100	100	57	53	36
Cotton	100	97	49	38	22
Subtotal—three major products	100	99	49	43	25
Other field crops	100	99	54	54	29
Vegetables	100	100	95	90	78
Fruit and nuts	100	100	91	91	49
Poultry	100	100	82	82	63
Dairy	100	100	86	84	59
General	100	100	26	26	26
Miscellaneous	100	100	81	71	62
Subtotal—other products	100	100	82	78	57

TABLE 10. BENEFIT/TAXABLE WAGE RATES UNDER ALTERNATIVE AGRICULTURAL COVERAGE PROVISIONS FOR TOTAL, INDUSTRY AND ADDED COST CRITERIA, 1969[a]

	Coverage provisions				
	1	2	3	4	5
Type of rate	1 worker anytime	1 worker in 20 weeks or $1500 in high quarter	4 workers in 20 weeks or $5000 in high quarter	4 workers in 20 weeks	8 workers in 26 weeks
			percent		
Total	4.10	4.00	4.15	3.94	3.84
Industry	3.47	3.41	3.54	3.50	3.56
Added	3.73	3.60	3.72	3.44	3.08

a. Calculated as (≥benefits/≥taxable wages) X 100.

relationship of total benefits to total taxable wages and, hence, reflect the importance of benefits received as a result of nonagricultural earnings. Similar to the *Added* ratios, the *Total* ratios, with but one exception, decrease as coverage provisions become more exclusive. The difference between the *Total* and the *Added* rates increases as coverage provisions become more exclusive. This supports the conclusion suggested by the direction of change of the *Added* cost ratios, namely, that on the average the workers covered under the more exclusive provisions will have a greater proportion of their benefits charged against the accounts of nonfarm employers.

Table 11 presents alternative benefit/taxable wage rates by coverage provision for workers with varying proportions of taxable earnings within the Texas agricultural sector. Earnings received from employment in the Texas agricultural sector as a proportion of total earnings, is a measure of attachment to the State's agricultural labor force. Workers with all of their earnings in the Texas agricultural labor force—those whose rates are represented in row A—would have all benefits charged against employers in the Texas agricultural sector. The benefit/taxable wage rates for this group range from 3.23 percent for universal coverage to 3.8 percent for the most exclusive coverage of eight workers in 26 weeks. It is also seen from Table 11 that workers with

three-quarters, but less than 100 percent, of their earnings from Texas agricultural employment had relatively lower cost rates than did the other groups. The reason for this is not readily apparent, and would require more thorough analysis of the data. It is very reasonable that the cost ratios for groups C, D and E, that is workers who earn smaller amounts of the total earnings from Texas agricultural employment, would have higher ratios of benefits to taxable wages than for beneficiaries who earned all of their earnings in Texas agriculture. Most of the interstate migrant workers will fall into categories C, D and E. These are the workers for which the higher rates would be expected.

To gain an appreciation for the relative impact of extending Unemployment Insurance to Texas agriculture, a comparison of the estimated 1969 Texas agricultural gross and taxable payrolls to the total actual covered gross and taxable payrolls in Texas during the same period is presented in Table 12.

Based on figures for actual covered nonagricultural workers in 1969, extension of coverage to agriculture in that year would have resulted in an additional $209,097,000 of covered taxable payroll. This would have amounted to 2.4 percent of total Texas covered taxable payroll. An estimated $223,638,000 of covered gross payroll (total agricultural payroll)

TABLE 11. BENEFIT/TAXABLE WAGE RATES FOR THE TEXAS AGRICULTURAL SECTOR UNDER ALTERNATIVE COVERAGE PROVISIONS AND AMOUNT OF WAGES EARNED BY BENEFICIARIES FROM TEXAS AGRICULTURE, 1969[a]

	Coverage provisions				
	1	2	3	4	5
Texas agricultural earnings as a percent of total earnings	1 worker anytime	1 worker in 20 weeks or $1500 in high quarter	4 workers in 20 weeks or $5000 in high quarter	4 workers in 20 weeks	8 workers in 26 weeks
			Industry rate in percent		
A 100%	3.23	3.28	3.44	3.46	3.80
B 75%— 99.9%	1.79	1.83	1.88	1.82	1.60
C 50%— 74.9%	6.65	6.29	6.52	6.36	6.67
D 25%— 49.9%	5.02	4.64	4.78	4.82	4.08
E .01%— 24.9%	5.68	5.42	5.63	4.88	4.42

a. Calculated as (≥ benefits/≥ taxable wages) X 100.

would have been added, or about 1.3 percent of the total.

Benefits charged against the accounts of Texas agricultural employers and first payments attributed to coverage of the agricultural sector occur in greater proportion than would be indicated by the relative importance of taxable payroll. Assuming agricultural coverage during the period July 1969 through June 1970, the data indicate that 14.4 percent of the total benefits which would have been paid would have been attributable to agricultural coverage. Twenty-five percent of the total first payments would have been attributed to agricultural coverage.

As noted in the footnote to Table 12, the figures for nonagricultural coverage relate to the coverage actually in force during the period under discussion. The coverage provision at that time was limited to workers employed for subject employers having at least four workers for 20 or more weeks. The data relating to agricultural coverage is for universal coverage.

Data are not available to estimate the increase in nonagricultural taxable payroll, benefits paid and first payments under universal coverage. However, it is possible to estimate the relative impact under coverage extended to agriculture corresponding to that existing in 1969-1970 for the nonagricultural sectors in Texas. Under the criterion of four workers for 20 or more weeks, the proportion that agricultural coverage would have contributed to the total payroll would have been .7 percent. Taxable agricultural payroll would have been 1.3 percent of total taxable payroll, with benefits paid out estimated at 14.4 percent. Beneficiaries with covered agricultural earnings would have been about one-fourth of all beneficiaries.

Table 13 presents the net effect to the 1969 Texas state benefit/taxable wage rate, assuming alternative rates for the agricultural sector. The actual 1969 rate for subject Texas employers was .35 percent. Accepting the previously estimated agricultural rate of 3.47 percent, the net increase to the state rate would have been approximately .075 percent. Inclusion of all ag-

ricultural payroll at an average rate of 3.5 percent would have therefore increased the state rate to .427 percent. A benefit/taxable wage rate of 7 percent would have increased the overall rate by .163 percent to about one half of one percent.

Of interest to nonagricultural employers is the ability of the agricultural sector to "pay its own way." Although some individual employer rates would be above the state maximum of 4 percent, the sector as a whole would be self-financing. The change in the overall Texas benefits/taxable wage ratio is so slight that the Texas ratio would change only seven-hundredths of one percent if the agricultural sector ratio changed from 4 percent to 7 percent (.513 percent less .449 percent — see Table 13). This minor change in overall rate is due to the small proportion that taxable agricultural wages are of total taxable wages.

Employee Participation

Extension of unemployment insurance legislation to the Texas agricultural sector would have brought employees into the system under varying degrees of participation. Table 14 presents the estimated participation of the Texas agricultural labor force in the unemployment insurance program under alternative definitions of participation status.

The most inclusive level of participation is determined simply by having been employed by a subject employer. Under universal coverage all workers, by definition, have participated at this level. However, under the most exclusive coverage provision examined in Table 14, the total labor force participation declines to approximately 73 percent. At the intermediate coverage provision of four workers in 20 weeks or $5,000 high quarter earnings, about 92 percent of the labor force would have participated.

The next most inclusive level of participation is that of the potential beneficiary. To qualify as a potential beneficiary under Texas legislation, a worker must: (1) have been employed by a subject employer; and (2) have earned at least $500 during the base period (for purposes of the study, the record year)

TABLE 12. COMPARISON OF COVERED GROSS AND TAXABLE PAYROLL AND ACTUAL BENEFICIARIES UNDER EXISTING COVERAGE AND COVERAGE INCLUSIVE OF THE AGRICULTURAL SECTOR, 1969-1970

Sector	Texas covered gross payroll		Texas covered gross payroll		Benefits paid		Beneficiaries actual first payments	
	Dollars (thous.)	Percent	Dollars (thous.)	Percent	Dollars (thous.)	Percent	Number	Percent
Agricultural[a]	$ 223,638	1.3	$ 209,097	2.4	$ 7,625	14.4	34,982	25.0
Nonagricultural[b]	17,212,533	98.7	8,407,092	97.6	45,423	85.6	105,021	75.0
Total	17,436,171	100	8,616,189	100	53,048	100	140,003	100

a. The figures for agriculture are based on provision one (universal coverage) while those for the nonagricultural sector are based on 4 workers for 20 weeks. First payments due to agricultural coverage exclude beneficiaries previously eligible based on nonfarm earnings.

b. U.S. Department of Labor, Manpower Administration, *Handbook of Unemployment Insurance Financial Data*, 1938-1970. Washington, D.C.: U.S.D.L., 1971, p. 134. Data are weighted by respective 1969 and 1970 distributions for each item.

TABLE 13. EFFECT OF ALTERNATIVE AGRICULTURAL BENEFITS/TAXABLE WAGE RATES ON THE 1969 TEXAS U.I. TRUST FUND

Agricultural benefit/taxable wage ratio	Actual Texas benefit/taxable wage ratio[a]	Indicated benefit/ taxable wage rate after agricultural coverage
----------------------------------Percent----------------------------------
3.0	.35	.415
3.5	.35	.427
4.0	.35	.449
4.5	.35	.452
5.0	.35	.464
5.5	.35	.476
6.0	.35	.488
7.0	.35	.513

a. Source: U.S.D.L. *Handbook of Unemployment Insurance Financial Data, 1938-1970*, Washington: 1971, p. 135.

spread over two quarters with total earnings at least one and one-half times the high quarter earnings. At this level of participation 82 percent of the labor force would have participated under universal coverage. Under coverage provision five, somewhat less than 60 percent would have participated, with slightly over three-quarters of the labor force participating under the intermediate coverage of four workers in 20 weeks or $5,000 high quarter earnings.

Actual beneficiaries are those workers who were employed by a subject employer, met the necessary monetary requirements to qualify as potential beneficiaries, and in addition were unemployed and met the subjective tests relating to the involuntary nature of the unemployment and their willingness to accept alternative employment under the prescribed legal conditions. At this level of participation, 34 percent of the labor force would have been involved under universal coverage, somewhat less than a quarter of the

work force would have participated under coverage provision five. Slightly less than one-third of the work force would have been actual beneficiaries under the intermediate coverage provision number three.

The final and most exclusive level of participation is the benefit exhaustee. The benefit exhaustee is the actual beneficiary who receives his total entitlement based on previous earnings and labor force attachment during the base period (defined here as the record year), and the receipt of weekly benefits is terminated by virtue of exceeding the legally authorized benefit period. Under universal coverage, approximately 10 percent of the labor force would have been benefit exhaustees. Under the most exclusive coverage provision analyzed on Table 14, approximately seven percent of the labor force would have been benefit exhaustees with approximately 10 percent under the intermediate coverage provision, four workers for 20 weeks or $5,000 high quarter.

Table 15 details the net increase in participation of the Texas agricultural labor force in the Unemployment Insurance program as a result of coverage extended to agriculture. Some workers who are employed by agricultural employers are also employed by nonagricultural employers subject to the provisions of the Texas unemployment insurance law. Therefore, the difference between total participation of the agricultural labor force and net participation is obtained by simply subtracting those persons who would have participated under each of the participation status criteria under existing coverage in 1969. It is seen from Table 15 that the net increase in participation is approximately 80 percent of total participation under all participation status criteria for all agricultural coverage provisions illustrated. When compared against the total estimated agricultural labor force of 128,843, the data indicate that 65 percent, 27

TABLE 14. ESTIMATED TOTAL PARTICIPATION OF THE TEXAS AGRICULTURAL LABOR FORCE IN THE UNEMPLOYMENT INSURANCE PROGRAM, 1969-1970

Participation status	Agricultural coverage provisions				
	1	2	3	4	5
	1 worker anytime	1 worker in 20 weeks or $1500 in high quarter	4 workers in 20 weeks or $5000 in high quarter	4 workers in 20 weeks	8 workers in 26 weeks
	(Percent of total labor force in parentheses)				
Total labor force	128,843	128,843	128,843	128,843	128,843
	(100)	(100)	(100)	(100)	(100)
Number employed by a subject employer	128,843	125,283	118,961	112,215	93,759
	(100)	(97.2)	(92.3)	(87.1)	(72.8)
Potential beneficiaries	105,754	102,969	97,670	91,585	75,449
	(82.1)	(79.9)	(75.8)	(71.1)	(58.6)
Actual beneficiaries	44,002	42,218	40,913	37,908	30,801
	(34.2)	(32.8)	(31.8)	(29.4)	(23.9)
Benefit exhaustees	13,665	12,892	12,726	11,030	9,196
	(10.6)	(10.0)	(9.9)	(8.6)	(7.1)

TABLE 15. ESTIMATED NET INCREASE IN PARTICIPATION OF THE TEXAS AGRICULTURAL LABOR FORCE IN THE UNEMPLOYMENT INSURANCE PROGRAM, 1969-1970

| | Agricultural coverage provisions | | | | |
Participation status	1 1 worker anytime	2 1 worker in 20 weeks or $1500 in high quarter	3 4 workers in 20 weeks or $5000 in high quarter	4 4 workers in 20 weeks	5 8 workers in 26 weeks
	(Percent of total participation status in parentheses)				
Potential beneficiaries	83,829 (79.3)	81,359 (79.0)	77,013 (78.9)	72,818 (79.5)	60,295 (79.9)
Actual beneficiaries	34,982 (79.5)	33,435 (79.2)	32,336 (79.0)	30,477 (80.4)	25,973 (84.3)
Benefit exhaustees	11,099 (81.2)	10,422 (80.8)	10,256 (80.6)	9,046 (82.0)	7,777 (84.6)

percent and 8.5 percent of the agricultural labor force are new participants in the system at the level of potential beneficiary, actual beneficiary and benefit exhaustee. Under the most exclusive provision analyzed, the respective percentages are 46.8, 20.2 and 6 percent. Under the intermediate coverage provision of four workers in 20 weeks or $5,000 high quarter, the net addition of potential beneficiaries is 60 percent of the estimated agricultural labor force. Actual beneficiaries are 25 percent, and benefit exhaustees are 8 percent of the Texas agricultural labor force.

Tables 16 and 17 compare average weekly benefit amounts, average duration of benefits, and total average benefits received by actual and potential beneficiaries under agricultural coverage. Where data are available, comparisons are also made with the respective values under existing coverage.

Table 16 shows that average weekly benefit amount, average duration, and average total benefits received by actual beneficiaries under agricultural coverage are very similar under all coverage provisions analyzed. Average weekly benefit amounts vary from $34.39 to a high of $35.84 per week with average duration of benefits between 8.43 and 8.71 weeks. Average total benefits received varies from a high of $310 and $311, for universal coverage and the intermediate coverage provision three, to a low of $294 under the most exclusive coverage provision analyzed. These figures are consistently lower than those which actually prevailed under existing Texas legislation in the 1969-1970 period (column one, Table 16).[5]

[5]To obtain the values in column one of Table 16, an average figure was obtained for the years 1969 and 1970 to more closely conform with the estimates obtained from the sample data. It is recalled that the record year from which the sample values are calculated is June 30, 1969 to June 27, 1970. Actual unemployment insurance data are available for the calendar years 1969 and 1970. (See note at the bottom of Table 16 for an explanation of the derivation of these figures.)

The average weekly benefit amount under existing Texas coverage was $39.52, average duration of benefits received was 11.2 weeks and average total benefits received was $443.00. The comparison of these figures with the agricultural sample indicates that the average income of actual beneficiaries under agricultural coverage was lower than the prevailing average of actual beneficiaries. The average total weeks of compensable unemployment was also less.

Table 17 provides a comparison of average weekly benefit amounts, duration of benefits, and average total benefits received by benefit exhaustees under agricultural coverage. The only data available from published U.I. sources relating to unemployment insurance coverage in Texas in 1969 and 1970 was average duration of benefits received. Similar to the situation existing for actual beneficiaries, it is seen that duration of benefits received by benefit exhaustees under existing coverage was higher than for benefit exhaustees under agricultural coverage. It is also interesting to note that while the average duration of benefits received by benefit exhaustees under agricultural coverage is higher than the average for all actual beneficiaries under agricultural coverage, the average weekly benefit amount is approximately $3.00 lower. However, duration of benefits received is long enough to increase the total benefits received by agricultural benefit exhaustees by more than $100 over total benefits received by all beneficiaries.

Costs to Texas Agricultural Employers

Although coverage extended to agriculture would have only a minimal effect on the aggregate fund balance, the cost to the individual employer must also be considered since the employer tax rate is partially based on the unemployment experience of his workers as reflected in benefit charges to his account. A comparison of minimum, maximum and average costs applied to alternative levels of taxable wages is presented in Table 18. (This rate applies only to the first $4,200 of wages paid per employee by each employer. Wages earned in excess of this amount are not taxable.)

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TABLE 16. COMPARISON OF AVERAGE WEEKLY BENEFIT AMOUNTS, DURATION OF BENEFITS AND AVERAGE TOTAL BENEFITS RECEIVED UNDER ALTERNATIVE AGRICULTURAL COVERAGE PROVISIONS WITH EXISTING COVERAGE, ACTUAL BENEFICIARIES, 1969-1970

Benefit criteria	Existing 1969-1970 Texas coverage[a]	Agricultural coverage provisions				
		1 1 worker anytime	2 1 worker in 20 weeks or $1500 in high quarter	3 4 workers in 20 weeks or $5000 in high quarter	4 4 workers in 20 weeks	5 8 workers in 26 weeks
Average weekly benefit amount	$ 39.52	$ 35.84	$ 35.70	$ 35.52	$ 35.52	$ 34.39
X						
Average duration of benefits received (weeks)	11.2	8.65	8.62	8.71	8.43	8.54
=						
Average total benefits received	$443.00	$310.00	$307.00	$311.00	$299.00	$294.00

a. Source: U.S.D.L. *Handbook of Unemployment Insurance Financial Data, 1938-1970*. Washington: 1971. pp. 324-326. Figures are weighted by the proportion of each year's dollar value of benefits to the sum over the two years.

The minimum state employer tax to employers with no benefits charged against their account in the three most recent calendar years is .1 percent. All subject employing units must pay a net federal tax of .5 percent.[6] Hence, the minimum tax rate is .6 percent of taxable wages or $6.00 per thousand dollars of taxable wages. Conversely, the maximum rate under normal fund conditions is 4.0 percent, in addition to the federal rate, or a total of 4.5 percent of taxable wages. An employer subject to the maximum rate would therefore contribute $45 per thousand dollars of taxable wages.

[6]Up to 2.7 percent of the 3.2 percent federal tax rate is offset in states meeting the minimum Federal requirements. The remaining .5 percent Federal tax rate is levied on all subject employers regardless of the State tax rate.

The average cost rate is 3.23 percent under universal coverage for workers who are employed only in the Texas agricultural sector (Group A, Table 11). Employers paying wages of $1.75 per hour and taxed at the average rate would experience an increase in labor costs of six and one-half cents per hour. Hourly labor costs for employers taxed at the minimum rate would increase by one cent per hour. Labor costs to employers taxed at the maximum rate of 4 percent would increase by eight cents per hour.

Earnings Received by Agricultural Employees

The operational impact from the extension of unemployment insurance to agriculture is to provide a deferred income to qualified workers who become unemployed due to industry related causes (involun-

TABLE 17. COMPARISON OF AVERAGE WEEKLY BENEFIT AMOUNTS, DURATION OF BENEFITS AND AVERAGE TOTAL BENEFITS RECEIVED UNDER ALTERNATIVE AGRICULTURAL COVERAGE PROVISIONS, WITH EXISTING COVERAGE, BENEFIT EXHAUSTEES, 1969-1970

Benefit criteria	Existing 1969-1970 Texas coverage[a]	Agricultural coverage provisions				
		1 1 worker anytime	2 1 worker in 20 weeks or $1500 in high quarter	3 4 workers in 20 weeks or $5000 in high quarter	4 4 workers in 20 weeks	5 8 workers in 26 weeks
Average weekly benefit amount	—	$ 32.43	$ 32.15	$ 32.51	$ 32.88	$ 31.28
X						
Average duration of benefits received (weeks)	17.3	13.32	13.30	13.26	13.29	13.43
=						
Average total benefits received	—	$432.00	$428.00	$431.00	$437.00	$420.00

a. Source: U.S.D.L. *Handbook of Unemployment Insurance Financial Data, 1938-1970*. Washington: 1971. pp. 324-326. Figures are weighted by the proportion of each year's dollar value of benefits to the sum over the two years.

TABLE 18. ALTERNATIVE EMPLOYER COSTS FROM EXTENSION OF UNEMPLOYMENT INSURANCE TO AGRICULTURE

Total taxable payroll	Minimum cost[a]	Maximum cost[b]	Average cost for workers employed only in Texas agriculture[c]
$ 1,000	$ 6	$ 45	$ 37.30
5,000	30	225	186.50
10,000	60	450	373.00

a. .5 percent Federal tax plus .1 percent State tax.

b. .5 percent Federal tax plus 4.0 percent State tax.

c. .5 percent Federal tax plus assumed 3.23 percent State tax.

tary unemployment). While unemployed, workers receive benefits, the level and duration of which are dependent upon their work force earnings and length of employment in covered industries during the first four of the last five quarters of employment prior to filing of the initial claim. Total benefits drawn may not exceed 27 percent of total wages earned during the base period. The weekly benefit amount is equal to 1/25 of highest quarterly earnings in the base period with total benefits payable equal to the lesser of 26 times the weekly benefit amount or 27 percent of total wages in the base period.

Table 19 shows average earnings of full-time agricultural workers employed in Texas agriculture only. They are compared with earnings of beneficiaries with Texas agricultural employment only and beneficiaries who had agricultural employment both in Texas and in agriculture outside the State.

Workers employed full-time (at least 50 weeks per year) in Texas agriculture earned an average of $3,806 during the record year. Workers employed 40 or more weeks in Texas agriculture, with no out of state agricultural employment, earned an average of $3,355 and would have received an average of $251 in benefits or total earnings of $3,606. Interstate agricultural workers with 40 or more weeks of employment earned an average of $2,941 from all sources of employment, and would have drawn an average of $182 in benefits for a total of $3,123.

The figures developed in Table 19 indicate that full-time agricultural workers receive on the average higher incomes than workers with 40 or more weeks of employment who, in addition, could have drawn U.I. benefits. Actual beneficiaries who worked in Texas agriculture for 40 or more weeks received 88 percent of the earnings of full-time workers employed in Texas agriculture. They received benefits of $42.64 per week for an average of 5.88 weeks or a total of $251 in benefits. The total estimated income of this group, including benefit payments received while unemployed, was slightly less than 95 percent of the income received by full-time workers.

Beneficiaries employed for 40 weeks or more as interstate agricultural workers, doing some agricul-

tural work in Texas as well as in other states, received an average of $2,941 from all employment. U.I. benefits would have been received for an average of 4.69 weeks with an average weekly benefit amount of $38.87. The total income for this group of workers would have been $3,123, or 82 percent of the earnings of full-time agricultural employees in Texas. Workers employed for at least 40 weeks out of the year could be expected to accept full-time employment if it were available. The data presented above indicates that, for the sample studied, unemployment insurance benefits provide a deferred income during periods of unemployment, but do not increase total earnings up to the level of that received by full-time workers.

Cost Incidence for Benefits Received by Actual Beneficiaries

Employees are divided into two groups to facilitate a discussion of the employer cost incidence for benefits received. The effects of extending unemployment insurance to interstate seasonal workers, and to other workers who have been employed by employers in addition to their Texas agricultural employers (groups B-E, Table 11), will be treated first. The second group includes workers in group A, Table 11, that is, workers employed only in the Texas agricultural sector.

Benefits Received by Interstate Seasonal Workers

Unemployment insurance, in addition to providing partial income maintenance during periods of involuntary unemployment, can result in income transfers into the state. Under Texas legislation, the cost borne by employers of beneficiaries, if more than one, is in proportion to total wages received by beneficiaries. For example, 50 percent of the actual benefits received by a worker earning half of his taxable wages from Texas agricultural employment would be charged to his Texas agricultural employers. The other half would be charged to employers outside of the state. This pattern of cost distribution is economically advantageous to employers, workers and the local community.

TABLE 19. COMPARISON OF AVERAGE EARNINGS FOR FULL-TIME AGRICULTURAL EMPLOYMENT WITH EARNINGS RECEIVED BY BENEFICIARIES WITH FORTY OR MORE WEEKS OF EMPLOYMENT, 1969-1970

Income statistic	Full-time workers Texas agr. only (50 or more weeks of employment)	Beneficiaries	
		Workers with 40 or more weeks of work, Texas agr. only	Interstate agr. employment with 40 or more weeks of work
Average wages	$3,806,00	$3,355.00	$2,941.00
Average benefits	—	251.00	182.00
Total income	3,806.00	3,606.00	3,123.00

An advantage is gained by workers since all wages, rather than only the Texas portion, are used to determine duration and amount of benefits received. Secondly, Texas employers are charged only on that portion of wages earned in Texas, and thirdly, the local community in which the unemployed worker resides receives a positive income transfer equal to the amount of benefits charged to employers outside the community.

This latter effect may be quite important in areas such as South Texas, which is a "home base" for a large number of interstate agricultural workers. Many of these workers earn a portion of their income outside this home base area. The weekly U.I. benefits received by them while residing in South Texas will have a positive impact on the local economy.[7]

Table 20 shows that for each dollar of benefits received by workers earning from 75 percent to 99 percent of their income in the Texas agricultural sector, an additional $.12 was associated with employment outside the sector. The transfer is $.56 for workers earning 50 to 75 percent of their total earnings in the Texas agricultural sector, and $1.78 for those earning 25 to 50 percent. For those earning less than one-fourth of their total earnings in the Texas agricultural sector, benefit transfers of $6.40 would have been realized for each dollar of benefits charged to employers in the Texas agricultural sector.

While the data suggest that potentially large income transfers into the state are possible, it is unlikely that sizeable benefit outflows would occur. Table 4 shows that Texas agricultural employers hire relatively few workers from out of state, indicating very few benefit transfers from Texas agricultural employers to out of state residents.

Benefits Received by Employees With Texas Agricultural Employment Only

The nature of the employer-employee relationships for regular workers may be much different from that for interstate seasonal workers. The latter group has very formal and sporadic associations with their employers while the former, especially on smaller farms, may have a very informal association. It is much easier to discuss benefits received by interstate seasonal workers in purely economic terms than for workers who have a stronger noneconomic attachment to their employers.

It may be quite common for certain employers, such as cash grain employers, to have slack periods of employment during the winter months. Currently these employers may keep workers on their payroll in

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[7]It is possible that some of the benefits would be attributed to local nonagricultural employment and thus not be considered as new income to the community. This is most likely to occur with workers earning from 75 percent to 99.9 percent of their income in agriculture.

TABLE 20. BENEFIT TRANSFER RATIOS FOR THE TEXAS AGRICULTURAL SECTOR

Percentage of total earnings from Texas Agriculture		Benefit transfer ratios[a] (Universal coverage)
A	100%	$ .00
B	75%– 99.9%	.12
C	50%– 74.9%	.56
D	25%– 49.9%	1.78
E	.01%– 24.9%	6.40

a. Benefits charged to employers outside the Texas agricultural sector for each dollar of benefits charged to Texas agricultural employers.

order to tide them over these slack periods. With passage of unemployment insurance, however, there may be an increased economic incentive to formally lay off these workers and save salary costs. In such a situation, it is quite likely that the worker would be in an economically disadvantaged position after passage of unemployment insurance. It is very difficult to accurately assess the extent to which this would occur.

As can be developed from Table 18, the minimum cost per employer paying total yearly wages of at least $4,200 would be $25.20. Hence, for employers of full-time workers experiencing no unemployment during the year, this would be the extent of the added labor cost charged to the employer. If the employer elects to lay off the worker during the slack periods, his cost would likely increase to near the normal maximum of $189. The difference between the cost of maintaining the worker on his payroll and $163.80 is the amount that would be saved by the employer electing this option.

In addition to the monetary costs, the employer would also have to take into consideration the nonmonetary benefits of keeping the worker on his payroll over the slack period. An added saving may be obtained only if any payments in kind which the worker receives actually have marketable value. Many farm workers receive as part of their salary the use of a house. If the house remains vacant while the worker is unemployed, the farmer does not gain rental income from it. Likewise, it may be difficult to impute a market value on the food or other payments in kind provided the worker.

CONCLUSIONS AND DISCUSSION

Agricultural employers with sales of $40,000 or more, while accounting for 29 percent of all agricultural employers in the state, paid out two-thirds of the total payroll. At the other extreme, the employers with sales less than $10,000 made up 28 percent of all employers, but paid out less than 10 percent of total payroll. Moving from universal coverage of agricultural employers to less inclusive coverage, Class I employers make up an increasingly larger proportion of total subject employers. Coverage extended to em-

ployers with 4 workers in 20 weeks or having a payroll of $5,000 in the high quarter would include only 13 percent of all farm employers in the state. However, these employers pay almost 60 percent of total Texas farm payroll. Of all employers covered under this criterion, over three-fourths would have been in Economic Class I, having sales of $40,000 or more. Moving to yet more exclusive coverage provisions of four workers in 20 weeks and eight workers in 26 weeks, the proportion of subject farm employers declines to 11 percent and 3.5 percent, while total farm payroll covered declines to 53 percent and 34 percent.

The overall effect on the Texas state benefits/taxable wages ratio due to inclusion of the agricultural sector under unemployment insurance legislation would be minimal. The data indicate that, on the average, the agricultural sector would be self-financing, although the actual ratio of benefits as a proportion of taxable wages would be above the 4 percent maximum state rate for some employers. Even under the unlikely hypothetical event that all agricultural employers would experience benefit/taxable wage ratios as high as 7 percent, the added cost to nonagricultural employers would have been less than seven hundredths of one percent of taxable wages.

Extension of unemployment insurance under provisions other than universal coverage would consistently cover a greater proportion of payroll than employers. Under the most exclusive coverage provision analyzed, covering employers hiring at least eight workers for 26 or more weeks, three percent of the employers and 34 percent of the payroll would have been covered. Twelve percent of the employers with sales over $40,000, accounting for 50 percent of the total payroll, would have been covered under this provision. By comparison, under the intermediate provision, four workers for 20 or more weeks or a $5,000 high quarter payroll, 15 percent of the employers and 59 percent of the payroll would have been covered. Concurrently, under this provision were 38 percent of the employers with gross sales over $40,000, representing almost 80 percent of the total payroll covered.

Almost three-quarters of the total payroll and 85 percent of employers were associated with either cash grain, livestock, or cotton operations. The average number of workers per operation, however, was much smaller than for the remaining 15 percent of the employers which included dairy, fruit and vegetable operations. This is illustrated by the very rapid decline in the proportion of total employers covered under the more exclusive provisions. Under the intermediate provision, four workers in 20 weeks or $5,000 high quarter, only 11 percent of the three major product group employers would remain covered, accounting for 49 percent of total payroll. By comparison, almost 30 percent of the remaining em-

ployers and 82 percent of the total payroll would have remained covered under the intermediate provision. Under the most exclusive coverage provision analyzed, two percent of the major product group employers representing 25 percent of the payroll would have remained covered. Respective figures for the remaining product groups are 11 percent of the employers and 57 percent of the payroll.

The benefits/taxable wages ratio provides a measure of program costs to employers. Benefits received by workers, as a result of coverage extended to the Texas agricultural sector, would have ranged from 3.47 percent of taxable agricultural payroll under universal coverage, to 3.56 percent under the provision eight workers for 26 weeks. A rate of 3.54 percent was estimated for the provision four workers in 20 weeks or $5,000 of high quarter earnings.

Using the same ratio as a measure of benefits received by workers, the data indicated that benefits paid to workers with only Texas agricultural employment averaged between 3.23 and 3.8 percent of taxable agricultural wages received. Workers receiving from 50 to 74.9 percent of total wages from employment in the Texas agricultural sector received benefits totaling 6.65 percent of taxable agricultural wages.

Agricultural wages paid in Texas during the period under study represented slightly over one percent of total wages paid in covered employment assuming agricultural coverage in 1969. An estimated 2.4 percent of taxable payroll would have been allocated to agriculture during the same period. However, benefits paid to agricultural workers would have been slightly over 14 percent of total benefits paid. About one-fourth of the first payments would have been paid to agricultural workers. Although the amount of benefits paid to agricultural workers would have been quite disproportionate to the amount of taxable payroll represented by agriculture, the actual increase to the overall state ratio of benefits to taxable wages would have been less than one-tenth of one percent under universal coverage.

Under agricultural coverage an additional 35,000 actual beneficiaries, representing approximately 27 percent of the agricultural labor force, would have been added in 1969-1970. Under the intermediate coverage provision approximately 32,000 persons or 20 percent of the agricultural labor force would have been new actual beneficiaries, with approximately 26,000 or 25 percent of the agricultural labor force participating as actual beneficiaries under the coverage provision eight workers for 26 weeks.

The average weekly benefit amount, the average duration of benefits received, and the total benefits received consistently would have been lower for workers receiving benefits as a result of agricultural employment than the averages which actually prevailed in Texas during the study period. For the

former, the weekly benefit amount was $35, with benefit duration approximately 8½ weeks and with the range of total benefits received falling between $294-$311, depending on the coverage criteria.

By comparison, the prevailing average weekly benefit amount in Texas was $39.52, the average duration 11.2 weeks, with average benefits totaling $443. As a group, only agricultural workers receiving their maximum entitlement, and thus becoming benefit exhaustees, approached this latter figure, averaging between $420 and $432 per beneficiary.

Under normal conditions the employer assumes the full cost of supporting the unemployment insurance system. Employers paying the current maximum state rate of four percent and the net Federal rate of .5 percent of taxable payroll would pay a total of $189 for each worker earning at least $4,200. This amount would be proportionally reduced for earnings less than $4,200. The minimum employer cost on wages of $4,200 would be $25.20.

Full-time agricultural workers with wages from employment in the Texas agricultural sector only earned average wages of $3,806 per person over the record year. Workers employed at least 40 weeks in the Texas agricultural sector only, but who also would have drawn benefits against covered employment, averaged $3,606 per person, of which $251 was from unemployment insurance benefits. Finally, the data indicated that interstate seasonal workers employed over 40 weeks per year received from all sources an average of $3,123 per person, of which $182 was from unemployment insurance benefits.

Extension of the Unemployment Insurance Program to the agricultural sector would provide a deferred wage to interstate seasonal workers who reside in the Lower Rio Grande Valley. Agricultural employment opportunities have been declining for these workers in recent years, and nonagricultural employment opportunities have lagged behind those available in other parts of the state. Benefits received by these workers during periods of involuntary unemployment would be based on their non-Texas as well as their Texas employment. Benefits received from wages earned outside the state, or for that matter outside the region, would provide a direct, positive impact to the economy of the Lower Rio Grande Valley.

Since unemployment insurance benefits are tied directly to the worker's unemployment history during the past year, the continuance of the right to receive benefits would be contingent upon the worker's employment during subsequent years. Unemployment insurance benefits, unlike welfare payments or the food stamp program, are tied directly to employment and wage history, and thus have a positive built-in work incentive.

The advantages of extending unemployment insurance to regular workers are not quite so clear cut,

however. Employers who face a normal seasonal decline in activity may have a sufficient incentive to lay off a worker during this period, allowing him to collect unemployment insurance benefits, thus saving normal payroll costs. In this case, the worker would be receiving a lower income after coverage under U.I. The extent to which this would occur is very difficult to assess accurately. If the noneconomic aspects of the employer-employee relationship outweigh the economic and the employee is not laid off, the added employer cost would be $25.20 for an annual taxable wage of $4,200, declining proportionately for lesser wages.

Coverage of the agricultural sector under provisions of the Federal Unemployment Tax Act would bring under coverage one of the two major sectors still excluded in the private sector and afford workers an insurance and income maintenance protection currently unavailable. If viewed from strictly an economic perspective, a compelling case is made to extend coverage to workers on larger farms who have a more formalized employer-employee relationship similar to that existing in the nonagricultural sectors. The situation is less clear in the case of workers employed on smaller operations and enjoying a more informal association with their employers. On the whole, extension of coverage to these workers would raise employer costs by a minimum of one cent per hour and a maximum of eight cents per hour, but offer an insurance protection against industry induced unemployment which can be viewed as a fringe benefit.

Limitations of the Study

This report provides a partial assessment of the economic effects resulting from the inclusion of the Texas agricultural sector under the provisions of the Federal Unemployment Tax Act. No attempt has been made to analyze the added administrative burden placed upon local unemployment insurance personnel as a result of increased claims. Changes in both supply and demand for agricultural labor have occurred since 1969. The implications of these changes have not been included in this analysis.

For analysis purposes, it was necessary to define the one year period from June 30, 1969 to June 27, 1970 as both the record year and the base period. That is, this one year period was used both to measure compensable unemployment as well as total wages received. It is very difficult to estimate how much, if any, bias was introduced by this technique.

Additionally, extension of social legislation involves considerations other than strictly economic or administrative. The relative importance of moral, political and social values cannot be treated as constants over time. Reasonable men reacting to conflicting goals and ideals may be expected to apply differing weights to each of these factors.

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Glossary of Terms

Coverage Provision—state legislated minimum employment or payroll requirements for compulsory employer participation in the unemployment insurance program.

Covered Employment (Covered Industry)—employment for which employers meeting specified requirements under unemployment insurance legislation must make contributions to State and Federal unemployment insurance funds for their employees. For ease in presentation, the terms "covered industry" and "covered employment" are used synonymously since proposed legislation would cover employment in the agricultural industries treated in this analysis.

Subject Employers—employers of covered employment who meet the requirements of State legislated coverage provisions.

Covered Gross Payroll—total payroll under any coverage provision.

Taxable Payroll—the first $4,200 of wages per worker employed by a subject employer.

Contributions—percentage of taxable payroll paid by subject employers to the unemployment insurance State and Federal funds.

Compensable Unemployment—that type of unemployment for which benefits will be paid to former workers of subject employers. For purposes of this study, compensable unemployment was liberally defined; all weeks of nonwork with the exception of school attendance, sickness, injury or paid vacation were considered compensable. The categories of "keeping house" and "retired" were considered compensable although they are not so considered under current legislation.

Base Period—the first four of the last five completed calendar quarters preceding the filing of the initial claim.

Potential Beneficiaries—employees who have sufficient covered earnings to qualify them to receive benefits when unemployed.

Actual Beneficiaries—a potential beneficiary who has one or more weeks of compensable unemployment during the record year.

Record Year—the period June 30, 1969-June 27, 1970 was used for purposes of determining both yearly earnings and benefits received.

Benefits—the money payments received by actual beneficiaries as a result of involuntary unemployment.

Benefits/Taxable Wages—the ratio of unemployment insurance benefits received by workers to the taxable wages paid by employers. The ratio is a measure of program cost when viewed from an employer perspective and a measure of income transfer when viewed from a beneficiary perspective. Taxable wages are defined as the first $4,200 of wages paid by a subject employer to an employee.

All Employers—all employers of agricultural labor, including farm employers, nonfarm agricultural employers and crew leaders.

Benefit Transfer Ratio—the amount of employee benefits charged to subject employers outside of the Texas agricultural sector associated with each dollar of benefits charged to the subject employers within the Texas agricultural sector.

U.I.—Unemployment Insurance.

Appendix A

Methodology

Two separate surveys were made to obtain the necessary information to determine the costs to employers from extension of unemployment insurance to the agricultural sector in Texas as well as to determine the impact of benefits received by workers.[1] The first of these was a sample of agricultural employing units. The second survey was a sample of the individuals employed by these employing units.

The sample of agricultural employing units was based on the 1969 universe of agricultural employers meeting the minimum qualifications for participation in the OASDHI (Social Security System). To qualify for provisions of this act, an employer must have paid in wages to a worker in his employ at least $150 in a calendar year. Hence, the universe from which the employer sample was drawn is much smaller than the total number of agricultural units in the State. In fact, this universe is a sub-sample (Economic Classes I-IV) of the so-called commercial farms (Economic Classes I-V as defined by the Bureau of the Census).

Employer Survey

The basic universe listing of the 35,385 agricultural employers filing annual reports with OASDHI in 1969 on Form 943 were ranked by size of payroll and ordered into 10 equal payroll strata. The 15,044 employers reporting during the first quarter of 1969 on Form 941 were treated as a separate 11th stratum. A 12th stratum was defined which included those agricultural employers employing 30 or more individuals in 1969, but who were not included on the OASDHI list. These were delinquent reporters, non-reporters and those filing reports from another state, but having agricultural operations in Texas. Finally, a separate strata of crew leaders not included on Forms 943 or 941 was defined. From the above lists, which comprised the total universe from which the sample was picked, a sample of 2,865 employing units stratified by payroll was selected. The sample was selected to yield a mean payroll estimate with less than one percent error at the 95 percent confidence level. Employer survey forms were sent to this group, of which 1,235 or 43 percent returned a completed form.

Worker Survey

A sub-sample of employers from the employer survey was selected for worker interviews. Employers previously selected for inclusion on the employer survey were considered for inclusion based on the number of wage items as reported on the 1969 OASDHI list, as well as the amount of total agricultural sales in their county of reference. Large farms located in counties with very heavy agricultural ac-

tivities were sampled at a higher proportional rate than were the smaller employing units or those employing units located in counties in which agriculture contributed a smaller proportion of total income.

Standard questionnaires were administered throughout all 15 states for both the employer and the worker surveys. The employer questionnaire obtained information concerning the type of farm, the size of business as determined by gross agricultural sales, total payroll and total number of workers employed on the farm. In addition, a 52-week record of the weekly employment history of the employer was also obtained as well as information concerning fringe benefits.

The worker survey obtained detailed week-by-week information concerning the worker's place and type of employment and the amount of earnings received. In addition, information concerning weeks of unemployment during the record year defined as July 1, 1969 to June 30, 1970 was obtained. Additional economic and sociological data pertaining to mobility patterns, community participation, and detailed information concerning employment activities of the day of interview was also obtained. A more complete discussion of sampling methodology can be found in W. W. Bauder, J. G. Elterich, R. O. P. Farrish, and J. S. Holt, *Impact of Extension of Unemployment Insurance to Agriculture*, Report submitted to U.S. Department of Labor, October 31, 1972.

Post Stratification for Worker Sample

The cooperative participation of the State of Texas in the NE-58 Research Project stipulated an interviewing period during the months of October, 1970 to February, 1971. Although it was realized that there is a considerable range of agricultural production in the state, it was considered to have been cost-prohibitive to interview all workers at their peak level of employment. The following post stratification procedure utilizing population values obtained from the OASDHI wage item population data was used to more accurately estimate the population characteristics.[2]

The population of all wage items may be classified into a two-way table of wage item strata indexed h, i by classifying them by

(a) amount of wage item indexed h
(b) the number of employers (i) who employ the worker during the calendar year.

Denote by N_{hi} the number of wage items falling into stratum h, i. Unfortunately the OASDHI data only provide the marginal totals $N_h = \sum_i N_{hi}$. However, for the sample, the corresponding sample frequencies n_{hi} are available. Confining this discussion to a range of i = 1 employer to i = 3 employers these frequencies are set out in Table 1.

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[1]Some data values presented in this publication may vary slightly from values presented in other reports due to computer rounding discrepancies.

[2]The authors are indebted to Professor H. O. Hartley for development of the post stratification procedure.

TABLE 1. SAMPLE AND POPULATION FREQUENCIES FOR NUMBER OF WAGE ITEMS

	Sample			Social Security
$i =$	1	2	3	
1			n_1	N_1
.			.	.
.			.	.
Wage Item Bracket h		n_{hi}	n_h	N_h
.		.	.	.
H			n_H	N_H
Total			n	N

We now estimate the number of wage items in bracket h earned by a worker with i employers by

$$\hat{N}_{hi} = N_h \frac{n_{hi}}{n_h} \tag{1}$$

where n_{hi} is the survey number of wage items in bracket h, i.

Next we estimate the number of **workers** with $i = 1$ employer and a single wage (item) falling into bracket h by

$$\hat{W}_h = \hat{N}_{h1} = N_h \frac{n_{h1}}{n_h} \tag{2}$$

Next we estimate the number of **workers** $W_{h,h'}$ with $i = 2$ employers and wage items in brackets h,h'.

Using the sample number $w_{h,h'}$ of workers with wage items in brackets h,h', we estimate the corresponding population number by the ratio estimate

$$\hat{W}_{h,h'} = \frac{w_{h,h'}}{n_{h2} + n_{h'2}} (\hat{N}_{h2} + \hat{N}_{h'2}) = \frac{w_{h,h'}}{n_{h2} + n_{h'2}} (N_h \frac{n_{h2}}{n_h} + N_{h'} \frac{n_{h'2}}{n_{h'}}) \tag{3}$$

Similarly, the estimate $\hat{W}_{h,h',h''}$ of workers with $i = 3$ employers who have wage items in brackets h,h',h'' is given by

$$\hat{W}_{h,h',h''} = \frac{w_{h,h',h''}}{n_{h3} + n_{h'3} + n_{h''3}} \left\{ N_h \frac{n_{h3}}{n_h} + N_{h'} \frac{n_{h'3}}{n_{h'}} + N_{h''} \frac{n_{h''3}}{n_{h''}} \right\} \tag{4}$$

We now turn to the stratified sampling estimation of an item total such as "benefits." We use as strata the following **strata of workers**:

TABLE 2. NUMBER OF WORKERS IN STRATA FOR OASDHI POPULATION

# of employers	Wage item bracket(s)
$i = 1$	h
	W_h
$i = 2$	h,h'
	$W_{hh'}$
$i = 3$	h,h',h''
	$W_{hh'h''}$

Denote by b_h, $b_{hh'}$, $b_{hh'h''}$ the benefit sample totals for all sampled workers in the above strata and by w_h, $w_{hh'}$, $w_{hh'h''}$ (as before), the number of sampled workers, then the post stratified estimator of the benefit total would be computed from

$$\hat{B} = \sum_h W_h \frac{b_h}{w_h} + \sum_{h \leqslant h'} W_{hh'} \frac{b_{hh'}}{w_{hh'}} + \sum_{h \leqslant h' \leqslant h''} W_{hh'h''} \frac{b_{hh'h''}}{w_{hh'h''}} \tag{6}$$

where the sample mean $\frac{b}{w}$ is replaced by 0 if $w = 0$. Substituting for W_h, $W_{hh'}$, $W_{hh'h''}$ their estimates given by (2), (3), (4) we obtain (since $w_h = n_{h1}$)

$$\hat{B} = \sum_h \frac{N_h}{n_h} b_h + \sum_{h \leqslant h'} \frac{b_{hh'}}{n_{h2} + n_{h'2}} \left\{ N_h \frac{n_{h2}}{n_h} + N_{h'} \frac{n_{h'2}}{n_{h'}} \right\}$$

$$+ \sum_{h \leqslant h' \leqslant h''} \frac{b_{hh'h''}}{n_{h3} + n_{h'3} + n_{h''3}} \left\{ N_h \frac{n_{h3}}{n_h} + N_{h'} \frac{n_{h'3}}{n_{h'}} + N_{h''} \frac{n_{h''3}}{n_{h''}} \right\} \tag{7}$$

Formula (7) is equivalent to allocating the benefit sample total $b_{hh'}$ in proportions

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$$\frac{n_{h2}}{n_{h2} + n_{h'2}} \quad \text{and} \quad \frac{n_{h'2}}{n_{h2} + n_{h'2}} \qquad (8)$$

to the two wage item strata h and h'. Likewise the sample total $b_{hh'h''}$ is allocated in proportions

$$\frac{n_{h3}}{n_{h3} + n_{h'3} + n_{h''3}}, \frac{n_{h'3}}{n_{h3} + n_{h'3} + n_{h''3}}, \frac{n_{h''3}}{n_{h3} + n_{h'3} + n_{h''3}}$$

$$(9)$$

to the wage item strata h, h', h''. With the above quotas added to the b_h we denote the modified sample totals by b_h^* and obtain the simple formula

$$\hat{B} = \sum_h \frac{N_h}{n_h} b_h^* \qquad (10)$$

The above procedure follows accepted methods of post stratification with post strata set out in Table 2 but with post strata sizes estimated by a method summarized in equations 1-4. The resulting estimator of an item total (equation 10) was, however, only used as a control computation since the allocation formulas (8) and (9) exhibited certain unsatisfactory features when applied to fiscal items. An alternative method of estimating the unknown post strata frequency was therefore employed based on **total dollar values** of the wage items rather than the **number** of wage items. A table corresponding to Table 1 in which all symbols n and N are replaced by symbols d and D, representing total dollar values for the workers sample and for the OASDHI population data, was therefore employed. The corresponding arguments set out above lead to allocation equations (8') and (9') replacing equations (8) and (9) respectively and given below. For two employer workers ($i = 2$) allocate items to strata h, h' in proportions

$$\frac{d_{h2}}{d_{h2} + d_{h'2}} \quad \text{and} \quad \frac{d_{h'2}}{d_{h2} + d_{h'2}} \qquad (8')$$

For three-employer workers ($i = 3$) allocate items to strata h, h', h'' in proportions

$$\frac{d_{h3}}{d_{h3} + d_{h'3} + d_{h''3}}, \frac{d_{h'3}}{d_{h3} + d_{h'3} + d_{h''3}}, \frac{d_{h''3}}{d_{h3} + d_{h'3} + d_{h''3}}$$

$$(9')$$

Certain comparisons by the two methods showed that they differed very little, and that on the whole the dollar allocation method represented by equation (8') and (9') was preferrable, and this was used for all items (fiscal or other) tabulated in this report.

The computational use of these allocation formulas is extremely simple, for the proportions (8') and (9') can be multiplied by the associated extension factor N_h/n_h, $N_{h'}/n_{h'}$ and so on, so that all totals can be estimated by applying the usual "strata extension factors" to all workers items.