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THE HIRED FARM LABOR MARKET:

A Transition in Oregon Agriculture



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THE HIRED FARM LABOR MARKET:
A TRANSITION IN OREGON AGRICULTURE

by

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PREFACE

This bulletin deals with a very important sector of Oregon's economy: the hired farm labor market. The basic nature of this market is undergoing a transition which has significant implications, not only for the agricultural sector, but for the general public as well.

This market has reached a critical watershed. Wage increases in this market have historically meant higher incomes for farm workers. "A transition in Oregon Agriculture" refers to the fact that the Oregon market has now entered a phase in which a wage increase results in a more than proportionate decrease in the number of workers employed. A permanent wage increase of 1 percent would now result in a decrease in hired farm employment of slightly over 3 percent. Averaging the displaced workers at zero wage with those retaining their jobs at a 1 percent wage increase results in an income level for the average farm worker which is lower than the average level before the wage increase.

The current nature of the hired farm labor market is discussed in this bulletin from the layman's point of view. No professional training in economics or statistics is needed.

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Introduction

The demand for hired farm labor was studied extensively by agricultural economists during the early and middle 1960's, typically using data from the 1930's through the 1950's. These studies consistently indicated that the level of employment for this market was relatively insensitive to wage changes, and that the income of the average farm worker would rise with an increase in his basic wage rate. Of course, any wage increase will cause some employers to hire fewer workers, but this effect was found to be small, with the average worker benefiting from wage increases.

It is a basic characteristic of demand that, for any market, the number of items purchased will tend to decline as its price increases. In some cases this decline will be very rapid, while in other markets it will be very slow. Markets may be classified into three basic types, according to the nature of their demand. For Type I markets, an increase in price (wage) more than offsets the reduction in number of items purchased (workers hired). For Type II markets, an increase in price (wage) is exactly offset by the reduction in number of items purchased (workers hired). For Type III markets, an increase in price (wage) is more than offset by the decline in number of items purchased (workers hired).^{1/} A simple example for each type will illustrate the consequences of a wage increase.

Table 1. Income-Wage Response for an Average Worker in Each of Three Different Market Types

Market type	Wage increase	Change in workers hired ^{a/}	Net income change ^{b/}
I	+5%	-2%	+3%
II	+5%	-5%	0%
III	+5%	-8%	-3%

^{a/} These percentages are illustrative only, and not intended to be representative of any specific market.

^{b/} Rounded to nearest whole percent.

^{1/} In economic terminology, a Type I market is an inelastic market; a Type II market is a unit elasticity market; and a Type III market is an elastic market.

The same wage increase has been used for each market type; only the employment response differs. An increase in the wage rate would be beneficial to the workers in a Type I market, but detrimental to the workers in a Type III market. With any significant wage increase, it is likely that some marginal laborers will be fired (or not rehired). In a Type I market, this effect is relatively small, while in a Type III market it is relatively large. The workers retained will benefit from the wage increase, while those displaced will be forced into alternative job markets or onto welfare rolls.^{2/}

If the displaced workers are averaged at zero income with the higher wage recipients, the average income level for all workers will increase in a Type I market but decrease in a Type III market. This averaging technique is not meant to minimize the plight of those workers who do lose their jobs. It makes no difference to them what type of market they were in to start with.

Since the studies of the early 1960's clearly identified farm labor as a Type I market, the policy implications were clear: An increase in the minimum farm wage would benefit the average farm worker. However, recent data from the State of Oregon indicate that the demand for hired farm labor has shifted from a Type I market to a Type III market. Wage increases now result in worker displacement of sufficiently large magnitude to cause the income level to fall for the average farm worker. Additional analysis of the aggregate U.S. market indicates that the nationwide demand for hired farm labor may soon be entering a Type III phase as well.

Analysis of Oregon's Labor Market

A model of demand and supply was developed and solved for the Oregon market. The model is explained in detail in Part II of this report, and need not be

^{2/} An even simpler example is as follows: Suppose that a farmer employs only one worker on a full-time job which cannot be scaled down; it is either done on a full-time basis or not done at all. Further, suppose that the worker demands a 10 percent wage increase. Our farmer pays the increase and continues to employ the now happier worker. This is the extreme example of a Type I market. Now suppose that the worker demands a second 10 percent increase, and is fired as a result. This is now the extreme example of a Type III market.

repeated here. It is not essential for interpretation of the results. The aggregate Oregon labor market produced the following:

Table 2. Change in Number of Farm Workers Hired in Response to a 1 Percent Increase in Wages or a 1 Percent Increase in Farm Prices (Oregon: 1951-1970)

Given a 1 percent increase in	Change in number of workers hired	
	First year	Long-run
Farm wage rate.....	-1.6%	-3.3%
or		
Farm product prices.....	+0.1%	+0.3%

Table 2 indicates that a 1 percent increase in wages results in a reduction in the number of workers hired by 1.6 percent in the first year, holding all other factors constant, and a reduction of 3.3 percent in the long-run. It takes time for farmers to adjust their production process and, therefore, the immediate impact of a wage increase is dampened. If the wage increase is permanent, the net impact will eventually be a decrease in hired farm employment of over 3 percent for every 1 percent increase in the wage rate. Since the employment response is larger than the initial wage increase, the market is Type III in nature.

This is clearly an acute problem for the average farm worker. Those who retain their jobs will be better off from the wage increase. However, enough workers will lose their jobs such that the average worker in this sector has a lower income level than before. Even an increasing level of farm prices would help this situation only marginally. A 1 percent increase in prices received for farm products would result in an eventual increase in employment of only 0.3 percent, holding all other factors constant. Although the newspapers are recently replete with information on rising farm prices, this is not likely to help hired farm workers significantly.

Does this mean that the minimum wage should not be increased for hired farm workers? No, it does not necessarily mean this. It does mean that the society at large would have to be willing to absorb workers displaced by such

a policy. This issue will be discussed in detail in the implications section. Some further data analyses are in order first.

Additional Analysis

Two cautions must be kept in mind whenever labor demand is investigated. First of all, the shift away from hired farm labor is often accomplished through adoption of capital-using technology such as the purchase of new harvesting, thinning, or conditioning machinery. It may also be accomplished through a change in the cropping pattern. The shift away from hand-harvested pole beans and strawberries reflects, in part, this trend. This altered cropping pattern or this new machinery, once adopted, is not easily nor readily abandoned. This means that a wage reduction will not produce an employment increase of equal magnitude to the decrease resulting from the initial wage rise. Second, there are many problems of data and measurement for this market. For both these reasons, the fact that the market is in a Type III condition is much more important than the exact response percentages obtained. For these same reasons, additional analyses should be performed in an attempt to verify these initial findings before they are accepted at face value.

Two additional studies will be made at different levels of aggregation. At a lower level of aggregation, one sector of Oregon's agriculture will be examined; at a higher level, the nationwide hired farm labor market will be investigated.

Fortunately, data are available for one crop over a sufficient length of time to justify analysis: Pear harvesting in Jackson County, Oregon (1954-1970). Unfortunately, data are not available for other sectors. It would certainly be helpful to analyze a series of crops, but this is simply not possible. The same model used at the statewide level produced the results shown in Table 3. The results from this sector are in line with the statewide calculations. The fact that the short-run employment response is even larger for this sector than for the state as a whole lends credibility to the earlier results.

The U.S. Market

If one state is already well along in its transition from a Type I (slow labor release) market to a Type III (rapid labor release) market, it is highly

Table 3. Change in Number of Farm Workers Hired in Response to a 1 Percent Increase in Wages or a 1 Percent Increase in Farm Prices (Pear Harvesting, Jackson County, Oregon, 1954-1970)

Given a 1 percent increase in	<u>Change in number of workers hired</u>	
	First year	Long-run
Farm wage rate.....	-1.8%	-2.1%
or		
Farm product prices.....	+0.9%	+1.4%

probable that other states are exhibiting a similar trend. It is unlikely that Oregon would be entirely unique in its behavior toward this sector. It may be hypothesized, then, that the aggregate U.S. data should reflect this trend. The same model used for Oregon will be applied to the nationwide data. A series of data periods is used, with the results for each period shown in Table 4.

As Table 4 shows, the increase in wage response since the data periods used in the original studies of this market has been remarkably persistent. In fact, a nationwide shift to a Type III market may not be far away. The results from the aggregate U.S. data confirm the trend identified, using Oregon markets.

The Farm Labor Demand Cycle

Certainly the early studies of this market were not incorrect. During the 1930's through the 1950's, machinery was a poor substitute for hired farm labor. Many crops required hand care and harvesting if they were to be produced at all. This situation left the farmer with few alternatives: He could retain his workers and pay any necessary wage increases, or terminate production. It might be thought that this situation would lead to a very high price for labor. However, the supply of workers was relatively large during this period, and as a result, wages were not high by today's standards. Conditions have changed since these earlier data periods. New technology is developing at a rapid rate in this sector, and the supply of workers is declining at the farm level. The new technology has increased the supply of labor-saving machinery, and has also increased the quality of that machinery. At the same time social, political, and economic pressures have increased the basic wage rate, causing

Table 4. Change in Number of Farm Workers Hired in Response to a 1 Percent Increase in Wages (U.S.: 1930-1969)

Time period	Change in number of workers employed	
	First year	Long-run
	----- percent -----	
1930-1958.....	-0.22	-0.53
1931-1959.....	-0.34	-0.55
1932-1960.....	-0.52	-0.52
1933-1961.....	-0.53	-0.54
1934-1962.....	-0.57	-0.57
1935-1963.....	-0.60	-0.60
1936-1964.....	-0.64	-0.64
1937-1965.....	-0.61	-0.66
1938-1966.....	-0.73	-0.83
1939-1967.....	-0.74	-0.95
1940-1968.....	-0.73	-1.03
1941-1969.....	-0.85	-1.05

machinery to become less expensive, relative to labor costs. All of these factors mean that machinery becomes an increasingly effective substitute for hired farm labor. Couple this trend with the pressures for upgrading worker housing, and the threat of labor strikes, and you find farmers much more willing to substitute machinery for workers in the face of a wage increase.

The effect of many of the early technological thrusts in agriculture was to increase the productivity of the farm labor force. We have seen the adoption of mechanical tillage (substitute for animal power), fertilizer use (substitute for natural soil productivity), irrigation (substitute for adequate rainfall), and genetic modifications (substitute for naturally occurring plant and animal development). At the present time we are experiencing a different thrust. New technological developments are often designed to replace farm labor itself.

The results from this study indicate that the trend toward farm labor out-migration will accelerate. Of course, many workers will survive the shift toward greater mechanization. Machines still require men to run and repair them. In addition, unionization may be strong enough to preserve employment of their members in certain sectors. The type of worker who survives this transition to a more capital-intensive agriculture is likely to be quite different from the average farm worker of today. He is likely to be better educated, more highly skilled as an equipment operator, better paid, and employed on a more permanent basis. In short, many workers will acquire skills which will decrease their substitutability with other inputs. If the number of workers declines sufficiently, and if those remaining workers acquire the necessary skills, then labor substitutability will decline to the point at which demand reverts to a Type I market again. At that point, wage increases would once more benefit the average farm worker. This reversion is likely to require many years to accomplish, with the market remaining in a Type III condition for the foreseeable future.

Policy Implications

Currently, in the State of Oregon, an increase in the basic wage paid to hired farm workers would cause a more than proportionate decrease in the number of workers employed. In other words, the average farm worker would be worse off as the result of such a policy. This does not mean that the wage rate should not be increased, nor is it a plea for lowering the current wage rate. Increasing the wage is one method for improving the standard of living for those workers who retain their jobs. However, this policy is not without social cost, and it is the purpose of this paper to point out this fact. A continuation of the rising agricultural wage will displace many of the current farm workers. This displacement will now occur at a much faster rate than it occurred when the original policy decisions concerning the desirability of higher agricultural wages were made.

Since many of the workers who will be displaced are already in this sector because of their limited access to alternative labor markets, their forced exit from agriculture would create an immediate social welfare problem. Society at large cannot expect to improve the standard of living for all workers in this

market by simply legislating increasingly higher minimum wage and housing standards. Job retraining facilities and a willingness to tolerate an increase in welfare programs must accompany such a policy.

Oregon should move very carefully in adopting policies which have been, or seem to be, successful in California. An analysis of the demand for hired farm labor in California indicates that, as a whole, the state is still in a Type I (slow labor release) market. This means that a rising wage still benefits California's average farm worker, with a much smaller displacement problem than would be the case in Oregon.

One last policy conflict deserves mention. In a Type I market, farm labor unions tend to support policies which would benefit all farm workers. Their pressure toward higher wages and better housing benefits members and nonmembers alike. This is not necessarily the case in the Type III market that Oregon is currently experiencing. A strong labor union might be able to retain jobs for its members while forcing a wage increase which would cause a high displacement rate among nonmembers. In addition, the mere threat of a strike tends to increase labor-machinery substitutability in the minds of employers. This would result in an acceleration of the labor displacement rate in a Type III market, while its effect would not be as great in a Type I market. It may be concluded, then, that labor unions would benefit farm workers relatively more in California than in Oregon.^{3/}

^{3/} A technical report (referred to as Part II in this publication), detailing the statistical properties of the various models, is available from the authors.