Operational Costs of Canal Companies and Irrigation Districts in the Intermountain Region

by

John Wilkins-Wells,[1] Hubert J. Lagae,[2] Raymond L. Anderson,[3] and Muhammad S. Anwer[4]

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[1] Senior Research Scientist, Special Assistant Professor, Department of Sociology, Colorado State University, Fort Collins, Colorado, 80523

[2] Graduate Research Assistant, Department of Agricultural and Resource Economics, Colorado State University, Fort Collins, Colorado, 80523

[3] Faculty Affiliate, Department of Agricultural and Resource Economics, Colorado State University, Fort Collins, Colorado 80523.

[4] Post-Doctoral Research Associate, Department of Agricultural and Resource Economics, Colorado State University, Fort Collins, Colorado, 80523

Abstract

This study reports on the trends of operational costs of farmer owned and operated irrigation enterprises (irrigation districts and canal companies) in five intermountain states. Administrative costs have risen faster then operation and maintenance costs. While salaries of employees have not risen significantly over time, legal costs have greatly escalated.

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Key words: irrigation, irrigation districts, canal companies, operating cost, irrigation water cost

Introduction

In most areas of the West, irrigation water is delivered to farms primarily through mutual irrigation companies and irrigation districts; broadly referred to as *irrigation enterprises*. Most farmers in the West still depend heavily upon the ability of their local

irrigation enterprise canal system to deliver gravity-fed water to their farm turnouts in a timely and reliable fashion. This generally requires that the irrigation enterprise be financially sound, and with sufficient employees to supervise water deliveries and ensure good service. This paper presents some recently compiled data on the cost of operating an irrigation enterprise in the 1990s, and therefore the cost paid by farmers for gravity surface irrigation water. A glimpse is also given into some historical trends in irrigation enterprise operating costs from 1945 to 1995.

Whether one speaks of irrigation districts developed under U.S. Bureau of Reclamation programs or private mutual companies owned by farmers, these enterprises operate on a nonprofit basis. This means that they provide water service to farms and are designed as businesses to provide water to farmers at the lowest possible cost. This is in order to hold down the overall production costs borne by farmers in growing crops, of which water is a significant cost component. They perform much in the way that any farm supply or commodity marketing cooperative that is organized to reduce production costs.

Federal or state policies conceived in the name of improving water conservation, increase the cost of water for irrigation and may have far-reaching negative repercussions on farm income. Efforts to promote the marginal pricing of water, or efforts to promote local water markets, are often seen as a means of stimulating water reallocation to other uses. However, such policies should be evaluated in terms of the effect they have on farm production costs. It will be shown in this paper that the cost of gravity surface irrigation water in the intermountain region (Colorado, Idaho, New Mexico, Utah and Wyoming) has increased significantly in recent years. Given this increase in water costs,

how does this trend balance with federal or state agency attempts to increase the cost of irrigation water through various means? Are such policies potentially regressive in their failure to acknowledge the water costs and overall production costs borne by irrigators today? We will close with some comments on these issues, after reviewing some new data on gravity surface water costs in the intermountain region.

Data Collection

A three-year study funded by the U.S. Bureau of Reclamation (USBOR) and located at Colorado State University compiled current and historical financial data on thirty-six irrigation enterprises in five intermountain states. This involved visits to irrigation enterprise offices in these states. Certified financial audits and annual reports were used in most instances. Balance sheets, and revenue and expense statements were coded using an account numbering system developed by the National Association of Regulatory Utility Commissioners for Class "A" water utilities. Selected years were coded, including every fifth year beginning in 1945 and up to 1995. When an enterprise was missing records on a selected year, other sources were consulted when available.

The sampled irrigation enterprises consisted of four irrigation districts and nine mutual canal companies in urbanizing counties and eleven irrigation districts and 12 mutual companies in rural counties. The sample was also distributed proportionally across the five-state region. Not all irrigation districts sampled were part of USBOR projects. Some canal companies, on the other hand, received supplemental water

supplies from USBOR projects. Overall, the sampling procedure focused on diversity in size, geographical location and enterprise type.

Types of Enterprise Expenditures

Irrigation enterprises exhibit different operational costs, depending upon the complexity of the irrigation system. In fact, no correlation was found in the sample between the per acre cost of operating an irrigation enterprise and the size--in acres–of the enterprise service area. Administrative costs alone are affected by the cost of employee salary rates that vary with the enterprise's location, the number of employees required to administer the irrigation system effectively, and legal and regulatory costs.

Following is a brief summary of the various cost items reported in revenue and expense statements by irrigation enterprises participating in the study. Again, most enterprises today have very well itemized revenue and expenditure statements.

Operation and Maintenance Costs (O & M Costs)

The main function of the management staff of the irrigation enterprise is to maintain and operate the irrigation system so that water is delivered to farmers in a timely and reliable way. Typical O & M costs associated with these activities include the following and related areas: repairs and maintenance of diversion structures, canals, and machinery, repairs to headgates and measuring stations, maintenance of enterprise land, right-of-ways, and buildings; maintenance of dams and reservoirs under the management

or supervision of the enterprise. These are all examples of annual budget line items. Depreciation expenses, for those enterprises that kept depreciation accounts, are also included in this broad cost category.

Administrative Costs

Administrative costs are comprised mainly of payroll for full as well as part-time field, office and managerial staff, and contract labor. In addition, there are a variety of other costs incurred over the budget year that contribute considerably to administrative costs. These include regulatory fees, property taxes on organization property, and payroll taxes (e.g., employee pensions and benefits); loss on sale of investments, the expense of legal services; accounting services and engineering services. Also special studies and other contractual services, insurance, advertising, the cost of meetings and board stipends, purchase of office equipment, transportation, rental of small equipment and a number of other miscellaneous items are included.

Trends in Costs

Figure 1 shows historical trends for these broad categories of irrigation enterprise costs for a subset of fourteen enterprises irrigating approximately 555,037 acres, and for which there is continuous data from 1945 to 1995. This figure shows the total costs rose steadily until about 1975, and since then they have risen sharply. Costs have increased in each of the five-year increments examined.

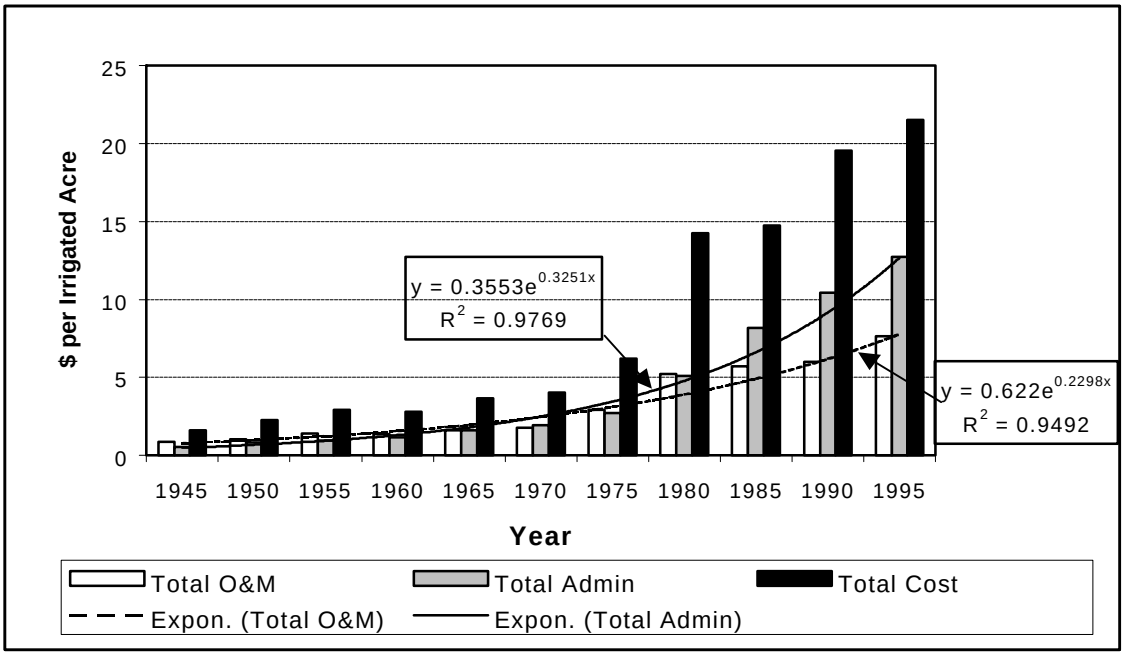

Figure 1. Irrigation enterprise trends of total, administrative, and operation and maintenance costs every fifth year from 1945 to 1995 (shown in nominal dollars, N = 14).

Administrative costs have risen faster than O & M costs. Figure 1 shows that in every five-year period, administrative costs have risen rapidly since the 1980's. In 1995 they comprised about 60 percent of the total costs whereas in 1945 they were only 35 percent of total costs. In nominal dollars total costs have risen from around $2.00 per acre in the late 1940's to over $21.00 per acre in 1995. For a typical 200 acre irrigated farm in the intermountain region, this would amount to over $4,000 a year of family farm income being spent on the cost of operating an irrigation enterprise.

Figure 2 shows the average cost per irrigated acre in 1995 for the entire sample of enterprises. A total of 1,478,720 irrigated acres is represented in Figure 2. We find that in 1995, for this larger sample, the cost of operating an irrigation enterprise was $7.75 per irrigated acre for O & M costs, $11.87 per irrigated acre for administrative costs, 88¢ for debt payment, both principle and interest, on the irrigation enterprise and 17¢ for special project costs. These projects are special O & M expenditures that do not occur on an annual basis such as canal lining projects and rehabilitation after floods. The overall cost per service area irrigated acre in operating an irrigation enterprise was $20.68 for this larger sample of 36 irrigation enterprises.

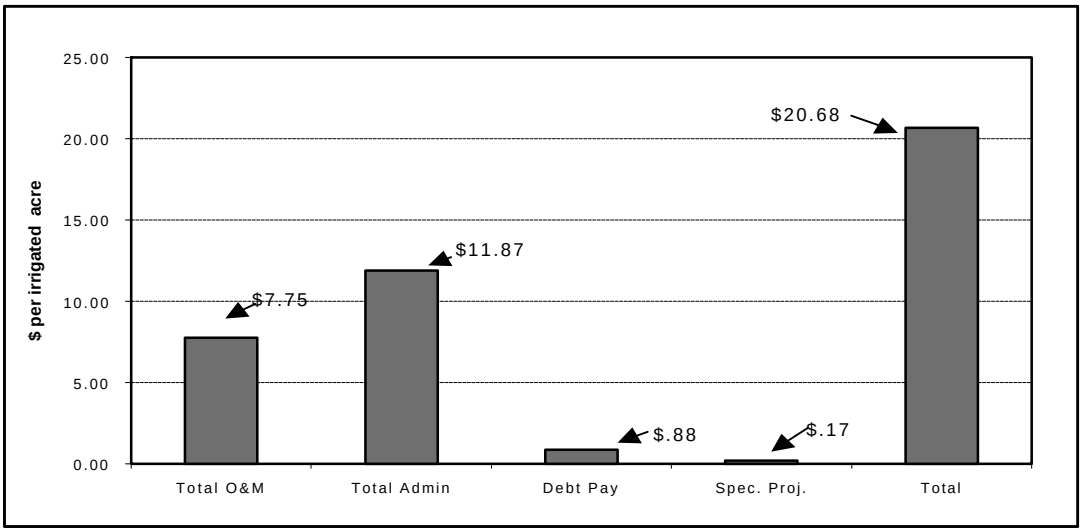

Figure 2. 1995 irrigation enterprise average cost per irrigated acre (nominal dollars, N = 36).

As might be expected, the cost trend has been upward for virtually all major cost categories. This cost trend is a function of the many factors that go into operating, maintaining and administering the daily needs of a canal system. We will now explore some of the key factors believed to be contributing to this cost trend.

Operation and Administrative Costs

The data show that O & M cost have increased less than administrative costs, particularly when adjusted for inflation. Figure 3, graphing trends in both total administrative and salary costs in constant dollars, shows that administrative costs have risen dramatically in recent years, even when such costs are adjusted for inflation. Administrative costs seem to explain most of the rise in total costs over the years. The decade of the 1980s appears to be the period in which administrative costs begin to show their most rapid increase. Some of this is undoubtedly due to the general inflation in the economy at this time. However, the trend is still evident when adjusted for inflation, and continues unabated thereafter. Another jump in costs occurs in the early 1990s and continues into the present. Much of this later jump appears to be due to costs associated with urbanization in the intermountain region, in addition to effects of increased regulation associated with the environmental movement. Discussions with irrigation enterprise managers and board members clearly point to urbanization and increased environmental regulation as the main factors associated with the nearly 300 percent rise in costs between 1975 and 1995.

Employee Salary Costs

One element contributing to the rise of administrative costs appears to be employee salaries. Figure 3 shows the trend in employee salary costs in constant dollars.

From this graph it is apparent that, for this sample of twenty-one enterprises having records back to 1960, salaries account for about one third of total administrative cost in 1995. It appears that the increase in employee salaries, when adjusted for inflation, is increasing less than other administrative costs. However, the cost of employee salaries takes on more significance when looking at irrigation enterprises in urbanizing areas. Figure 4 shows the difference in employee salaries for irrigation enterprises in rural and urbanizing counties. Employee salaries are nearly twice as high for enterprises in

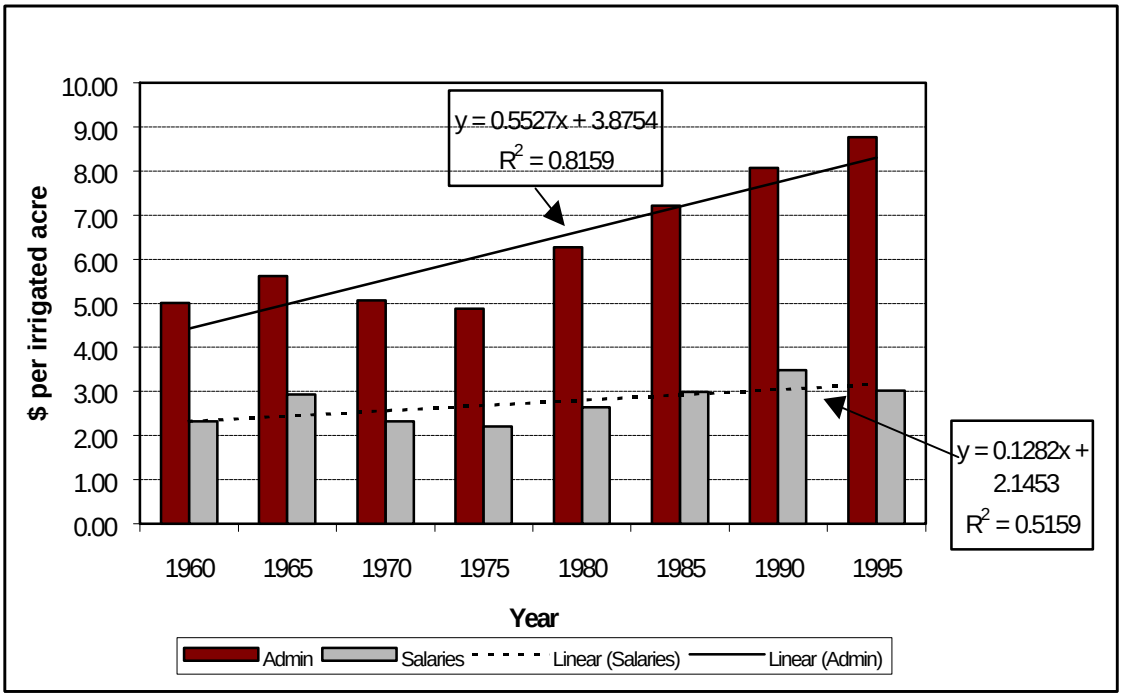

Figure 3. Total administrative and salary inflation adjusted cost trends for 1960 to 1995. (N = 21; inflation based on CPI with 1982-1984 = 100)

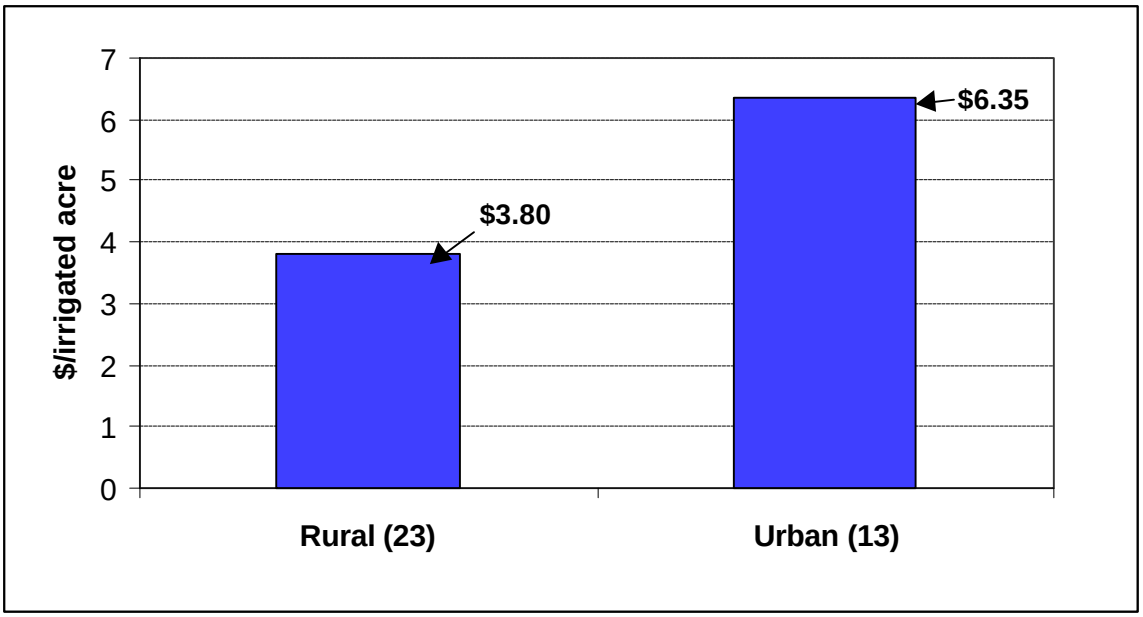

Figure 4. Irrigation enterprise salary costs for 1995 in rural and urban areas in nominal dollars. (N = 36)

urbanizing counties. The supervision requirements of operating a canal system in urban or urbanizing areas are generally greater than they are for more rural areas. This leads to the need for a greater number of employees, and therefore a greater overall allocation of the total enterprise budget to employee salaries, employee benefits and related administrative costs. Job opportunities are greater in urbanizing areas, requiring higher salaries to keep competent workers from leaving for better pay.

Legal and Other Contractual Costs

Another important area of administrative costs for irrigation enterprises involves legal and other contractual services, such as those associated with accounting services and special engineering services and studies. The true extent of legal costs, or the actual amount spent by irrigation enterprises in the intermountain region on legal fees, will probably require a special study in the future. However, we can report on some general

trends here. First, there are legal costs associated with regional water rights issues, such as the adjudication of large river basins that are borne jointly by all types of water users in the area. It is often difficult to know what percentage of these legal costs is borne specifically by irrigation enterprises, although it is probably borne by the majority of them unless state government has footed part of the bill.

In other instances, irrigation enterprises in particular river basins may have formed a regional association in the past to represent their joint interests. In this instance, the legal costs borne by individual enterprises generally are not known. Irrigation enterprises often pay annual assessments to such umbrella associations, who then hire lawyers of their own to represent the collective interests of all participating enterprises.

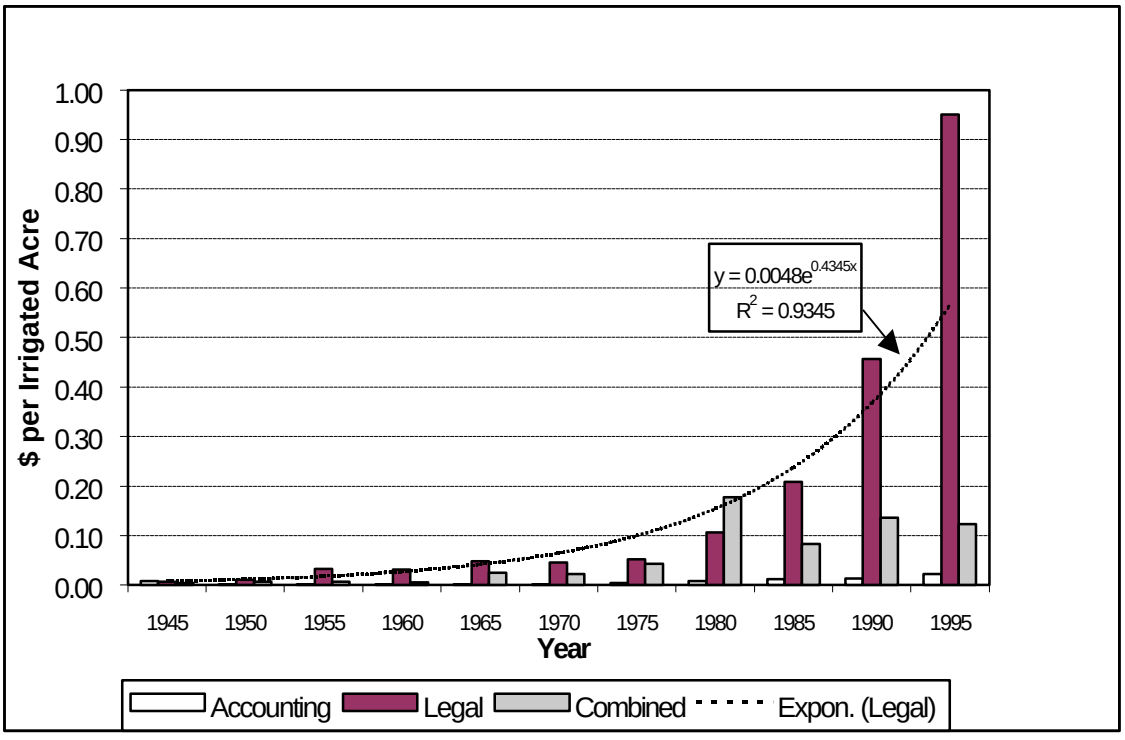

Figure 5. A legal and accounting cost trends for 1945 to 1995 in nominal dollars.

Figure 5 shows a trend in legal costs reported by ten of the fourteen enterprises that reported these costs separately. Clearly, legal costs have risen dramatically over the years. It is now one of the major costs items for irrigation enterprises. Accounting and other special service costs have risen more modestly. Total legal and accounting costs in 1995 were running about 95¢ per irrigated acre. This may not seem like much at first glance. However, what it means is that for an irrigation enterprise with a service area of 20,000 acres, the costs of legal services might very well amount to $19,000 or more. This is a recently occurring cost for these enterprises. There is no evidence they were paying these kinds of legal cost in the past. It is most certainly a phenomenon associated with increased competition for water supplies, environmental regulations, disputes with the environmental movement in general, and the gradual urbanization of irrigated lands in the intermountain region.

Conclusion

The costs of operating irrigation enterprises in the intermountain West have been increasing since World War II. Nominal costs have risen from an average of roughly $2.00 per acre in 1945 to over $20.00 per acre in 1995. While operation and maintenance costs of the canal systems have risen, the administrative costs, including legal expenses are now more expensive than the costs of physically operating the systems. Farms have expanded and gross sales have increased but expenses have risen in tandem with increased sales leaving little extra funds in the farmer's hands. This leaves little for farmers to pay for these increasing costs of water delivery

The water used in irrigation is coveted by many newly developed demands and irrigation enterprises have had to go to considerable expense to defend their water rights. This creates a burden on the irrigated farmers who also have to bear the cost of defending and improving the irrigation systems. Many of the enterprises are barely able to keep the systems functioning with little in the way of funds to rehabilitate the aging facilities, many of which are around 100 years old.