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INFLATION AND WATER RESOURCE DEVELOPMENT IN SOUTH DAKOTA

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Until the 1970's, the annual rate of inflation in the U.S. was 1 to 3 percent per year, or even less. During the early and mid-1970s, the rate climbed to between 4 and 7 percent and now at the turn of the decade rates of 10 to 12 percent are being experienced.

In this Newsletter issue, the possible implications of high rates of inflation for water resource development in South Dakota are examined. The examination is in terms of not only general inflation but also changes in the relative rates of price increase for different farm outputs and inputs.

Water resource development in South Dakota

Water resource development is interpreted in this Newsletter issue to represent investments to increase the productivity of the state's water resources. Since irrigation is currently the major water-using sector in the state (65% of total water-use), and is projected by the S.D. State Department of Water and Natural Resources to grow in its relative importance as a water-using sector, attention is limited to the irrigation component of the state's water resources.

From 1890 to 1920, the area irrigated in South Dakota increased from about 20 to 100,000 acres. Although the area irrigated dropped to about 50,000 acres in the early 1940's, it increased thereafter and in 1974 comprised about 150,000 acres. In the space of only 4 years after this the acreage more than doubled.

Over the past two decades, a major factor influencing investments in irrigation equipment has been the rapid increase in the price of land. Prior to 15 years ago, for example, the value of a quarter-section of land was not too different from the value of a center-pivot facility to irrigate the land. Nowadays, however, the value of land is commonly over twice as much. In the more short-term, a major factor determining whether farmers invest in additional irrigation equipment is the amount of very recent rainfall. The high rate of inflation and the accompanying escalation in interest rates during the past two years are additional factors of major importance that now must be taken into account by those considering the possibility of introducing or expanding irrigation facilities.

General inflation: a deterrent or stimulus to water resource development?

The impact of general inflation on decisions to further invest in water resource development depends very importantly on personal values and expectations. In some respects, rapid inflation can be a deterrent to investment; in others, it can be a stimulus.

Inflation implies that dollars earned today have less value tomorrow. Thus, the more rapid is inflation, the less incentive is there for people to save. The existence of inflation, therefore, usually lessens the amount of funds otherwise available for investment. Depending on the nature of the capital market, interest rates may go up and/or not everyone can obtain credit that wants to.

The more rapid the rate of inflation, the greater the uncertainty about what the future rate will be, and hence the greater the risk in making business investments. The added risk can restrain potential borrowers from increasing their investment debt.

From several other standpoints, however, the existence of inflation may stimulate additional investment. Continued rapid inflation tends to make prior investments look good and may motivate people to invest now while they can "buy cheaper". Also, investments financed through debt involve repayment with lower-valued dollars of the future, further reinforcing the possible positive incentive to potential borrowers to make investments.

Changes in the relative rates of price increase for different farm products and inputs

Investment decisions are influenced not only by the rate of general inflation, but also by prospective changes in the relative rates of price increase for different farm products and inputs (such as fertilizer, tractors, and farm machinery). For example, a period of inflation involving rapid rates of increase in the price of farm inputs, but even more rapid increases in the price of farm products, could quite conceivably be a boom period for investment.

To determine how much the prospective price of products would have to increase to counterbalance a certain increase in the price of an input requires an analysis of costs and other data. Since the recent escalation in the price of energy appears likely to continue for the foreseeable future, the input selected for illustration is energy. A recent study in Nebraska shows that the profitability of raising corn would be undisturbed if, in the wake of a doubling in the price of energy, the price of corn were to increase by $0.30 per bushel.

Empirical analysis on the impact of rising energy prices on the development of South Dakota's irrigation resources has recently been initiated in SDSU's Economics Department. The impacts of prospective rises in energy prices on the economics of investments to (1) place rainfed land under irrigation, (2) convert existing high-pressure sprinkler systems to low-pressure systems, (3) purchase more capital-intensive, energy-saving irrigation infrastructure (e.g., conveyance channels, water distribution equipment), and (4) lift and convey water different distances are being investigated. The results of this analysis--in conjunction with projections on prospective increases in the prices of commodities such as corn, alfalfa, energy, and fertilizer--should give greater insight on the probable influence of possible differences in the relative rates of price increase on the nature and pace of future irrigation development in the state.

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