

Federal Reserve Bank of Dallas

November 1984

Risk Taking Pays Off in Texas Agriculture

Over the past several years, weather-related calamities have struck Texas agriculture. The drought of 1982-84 and the Christmas freeze of 1983 in the Lower Valley are some examples of the harsh treatment that the Texas climate provides ranchers and farmers. Because Texas climatically divides the wet Southeast United States from the dry Southwest, the risk of weather-caused economic calamity varies widely among agricultural producers.

Variability of income is one measure of risk. An examination of the 1969-83 period shows that higher risk in Texas agriculture is usually rewarded with higher returns.

The Reward for Taking Risk

Economic theory suggests that a risk premium must exist for an individual to be attracted to a risky investment. The greater the risk, the higher the risk premium must be. For example, speculators in agricultural futures markets can have sizable returns on an investment, but the level of risk also can be high. Passbook accounts at federally insured banks yield much lower returns, but there is hardly any risk. The size of the risk premium needed to entice an individual into a risky investment can be related to the variations and average level of investment income over time.

Regional Risk and Return

The Texas Crop and Livestock Reporting Service divides Texas into 15 crop reporting regions. To estimate relative regional risk, average gross

sales and the variation in those receipts for both crops and livestock operations were calculated using Reporting Service data for the 1969-83 period. From these statistics a crude version of the theoretical risk premium was constructed, and the 15 crop reporting regions were ranked according to the riskiness of their agriculture. For total cash receipts, the northwest quadrant of Texas is the riskiest, an area that includes the Panhandle, the High Plains, and the Low Plains. By this same measure, the Lower Valley and the Trans-Pecos areas are the least risky.

To calculate the return on investment (ROI), additional information was needed on farm and ranch assets and costs of production. These data for 1978 and 1982 were gathered from the quadrennial Census of Agriculture. Only full-time farmers and ranchers were considered. In both years a gross measure of ROI and a limited net ROI (not all production expenses were netted out) were examined. The returns in all cases show similar rankings.

Greater Returns to Higher-Risk Regions

Statistical analysis indicates that
(Continued on back page)

Texas Shielded from Declines in Agricultural Exports

Exports of U.S. agricultural commodities are far below the level a few years ago. Increased competition and the strong U.S. dollar can explain much of the decline. Agricultural income suffers because foreign countries are a significant market for U.S. commodities. The export decline has not been as severe for Texas as for other major agricultural states, however, because the mix of crops and livestock produced in Texas is not as heavily weighted toward exports.

Decline in Farm Exports

Since the late 1960s the value of U.S. agricultural exports has grown significantly, constituting an increasing share of agricultural income. In 1968, exports were 14 percent of U.S. farm cash receipts; the share had grown to 30 percent by 1981. This

growth ended in 1982, when the value of farm exports fell 20 percent, followed by a 1-percent decline in 1983.

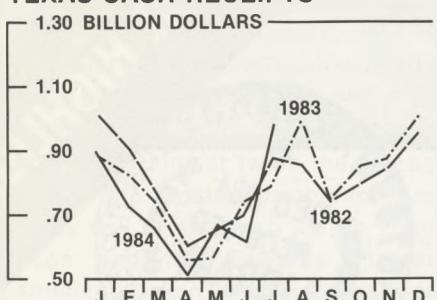
Several factors have contributed to the decline in exports. Increased foreign competition has played a significant role. The impact of competition has been exacerbated by the appreciation of the dollar. A strong dollar, relative to currencies of other agricultural exporting countries, means that U.S. agricultural commodities are more expensive for importing countries than commodities produced by other exporters.

Impact on Texas Agriculture

The decline in exports reduced total U.S. agricultural cash receipts. Of the major farm states, however, Texas has probably been the least affected. While
(Continued on back page)

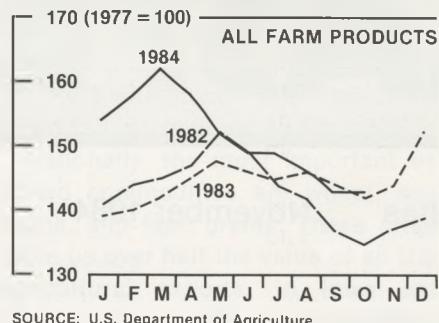
PRIME INDICATORS OF THE TEXAS AGRICULTURAL ECONOMY

TEXAS CASH RECEIPTS



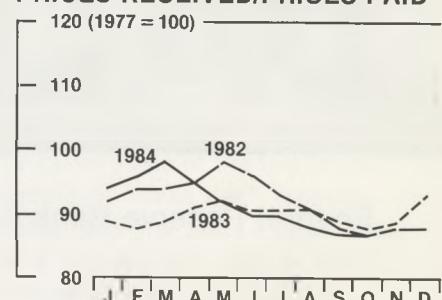
SOURCE: U.S. Department of Agriculture.

INDEX OF PRICES RECEIVED: TEXAS



SOURCE: U.S. Department of Agriculture.

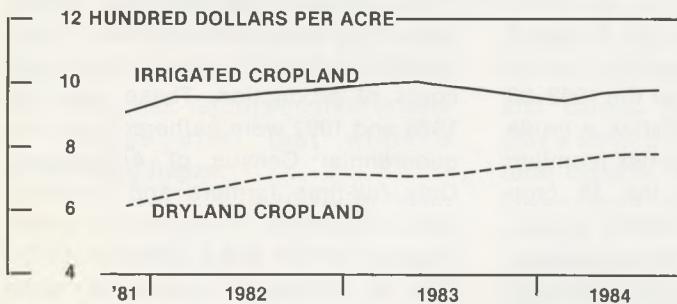
PRICES RECEIVED/PRICES PAID¹



1. Prices received by farmers in Texas divided by prices paid by farmers nationwide (No separate series exists for prices paid in Texas).

SOURCES: U.S. Department of Agriculture.
Federal Reserve Bank of Dallas.

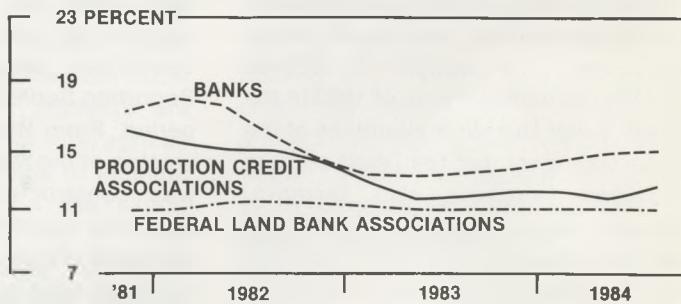
TEXAS FARM REAL ESTATE VALUES¹



1. 3 quarter centered moving average.

SOURCE: Quarterly Survey of Agricultural Credit Conditions,
Federal Reserve Bank of Dallas.

INTEREST RATES ON TEXAS FARM LOANS¹



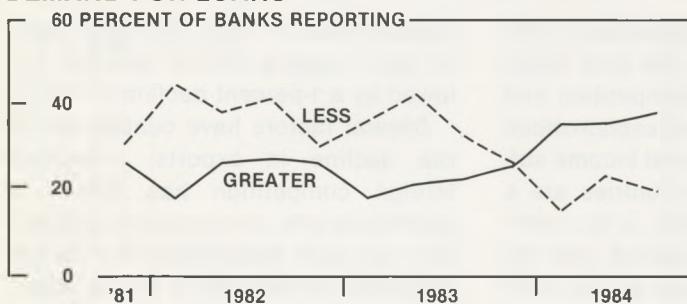
1. FLBA rates are for farm real estate loans.

SOURCES: Quarterly Survey of Agricultural Credit Conditions,
Federal Reserve Bank of Dallas.
Federal Credit System.

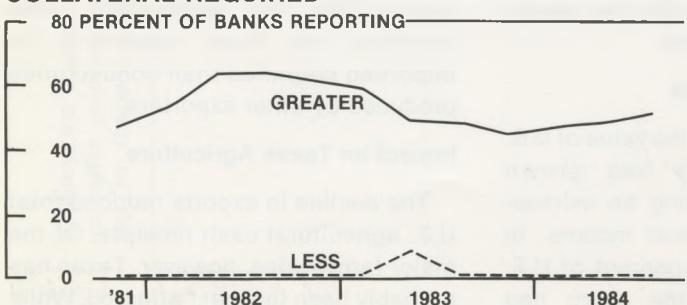
ELEVENTH DISTRICT AGRICULTURAL LOANS

Bankers report whether the variable is "greater," "the same," or "less" than a year ago.
Percent reporting "greater" or "less" are depicted below.

DEMAND FOR LOANS *

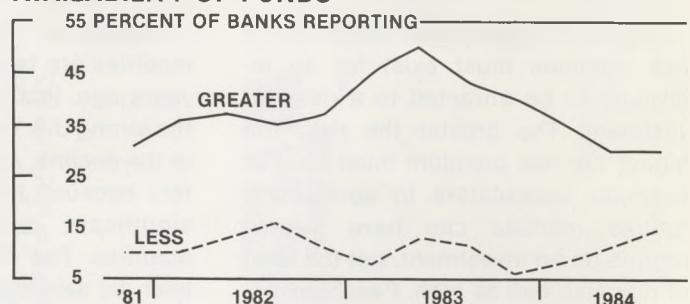


COLLATERAL REQUIRED *

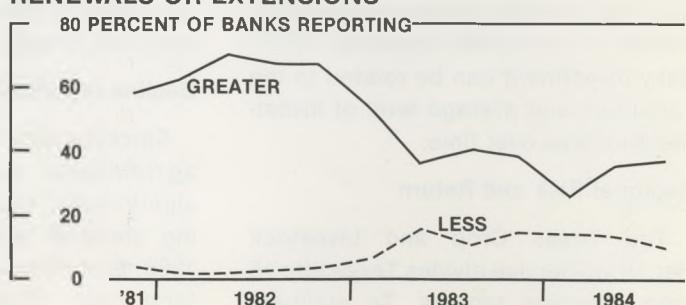


* SOURCE: Quarterly Survey of Agricultural Credit Conditions,
Federal Reserve Bank of Dallas.

AVAILABILITY OF FUNDS *



RENEWALS OR EXTENSIONS *



AGRICULTURAL BRIEFS

Interest rates and land values steady, more cattle, no citrus

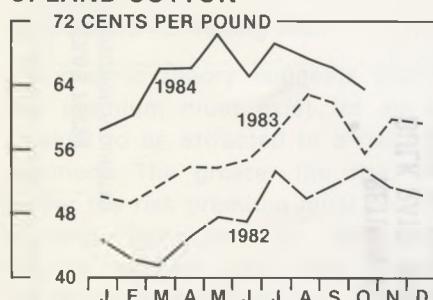
- Interest rates on agricultural loans by Eleventh District banks varied little during the third quarter of 1984. Agricultural operating loans hovered around 14.8 percent, unchanged from the second quarter. Most operating loans have variable-rate provisions. Thus, recent interest rate declines in national credit markets should show up quickly in agricultural loan rates.
- Average land values in the District also stayed fairly constant during the July-September period. The average adjusted values for District dry cropland, irrigated cropland, and ranchland held near \$779, \$1,019, and \$618 per acre, respectively. Land values in drought areas continued to decline in the third quarter of 1984. In the Rolling Plains, for example, the fall in third-quarter land values ranged from 3.6 percent for irrigated cropland to 4.4 percent for ranchland.
- The drought that has plagued Texas still lingers. Droughts are measured by evapotranspiration (plant needs), soil moisture recharge, and runoff. The Palmer index (PI) includes all three and is a good indicator of climatic

drought. It reveals that portions of South Texas bounded roughly by Del Rio, San Antonio, Corpus Christi, and McAllen are in moderate drought conditions. The PI also shows that an area of long-term drought is pushing out of western Oklahoma into the eastern Panhandle.

- Texas cattlemen are steering the national fed beef market with their marketing plans. Texas fed beef producers are planning to increase their marketings 25 percent in the fourth quarter of 1984. Total planned U.S. fed cattle marketings for the October-December period are up 5 percent from the same period last year. Without Texas, the national intentions are down slightly. Many of these marketings seem to reflect herd liquidation, raising questions about future beef supplies.
- The citrus crop of oranges and grapefruit, normally produced in great abundance in the Lower Rio Grande Valley, will be tiny. The Christmas freeze of 1983 caused so much damage that regular crop forecasts are not being made.

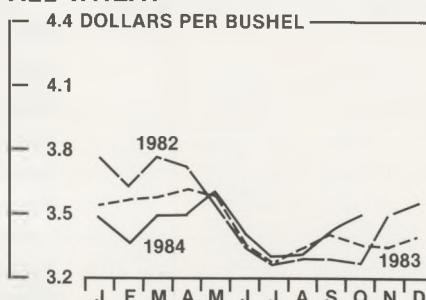
TEXAS COMMODITY MARKET PRICES

UPLAND COTTON



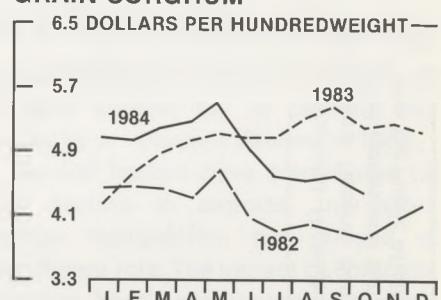
SOURCE: U.S. Department of Agriculture.

ALL WHEAT



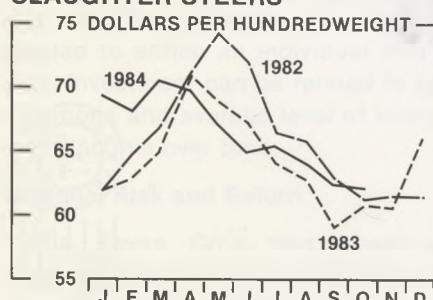
SOURCE: U.S. Department of Agriculture.

GRAIN SORGHUM



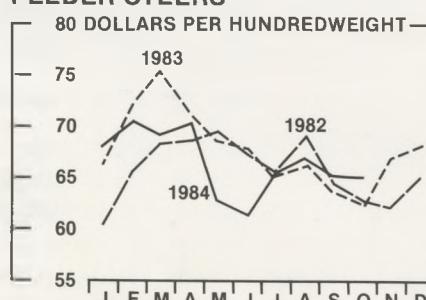
SOURCE: U.S. Department of Agriculture.

SLAUGHTER STEERS



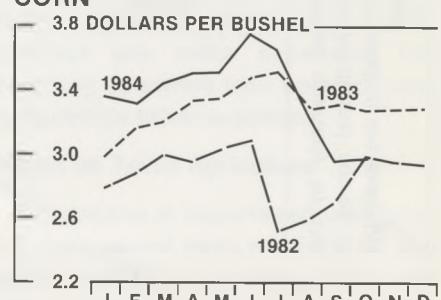
SOURCES: Texas Department of Agriculture.
Federal Reserve Bank of Dallas.

FEEDER STEERS



SOURCES: Texas Department of Agriculture.
Federal Reserve Bank of Dallas.

CORN



SOURCE: U.S. Department of Agriculture.

Risk Taking (cont.)

for Texas agriculture the regions facing higher risks also generally earn higher returns on investment. The northwest quadrant of Texas does earn higher than average returns, and in the Northern High Plains the return on investment is almost twice the average for the state. Most areas characterized by low risk levels, such as the Trans-Pecos and the Edwards Plateau, earned returns on investment that were less than the state average. The Lower Rio Grande Valley was estimated to have the lowest risk and the highest returns on investment. Valley agriculture is very diversified, which keeps risks low while irrigation and high-value specialty crops boost returns. The Valley risk-return equation is sure to change after last winter's devastating freeze.

—Hilary H. Smith

Exports (cont.)

specific state data on exports are not available, the relative importance of exports can be estimated by comparing the agricultural commodities produced in a state with those that are important in the U.S. agricultural export trade.

Nationally, the most important exported commodities are wheat, soybeans, and feed grains. These crops make up over half the value of all U.S. agricultural exports. In Iowa and Illinois, these crops constitute about 50 percent of cash receipts, making such states especially sensitive to changes in agricultural export volume.

The Texas mix of agricultural production is less export-intensive. About half the cash receipts come from cattle and calves. Livestock products are only a small proportion of total agricultural exports, which helps to insulate Texas from changes in the export market.

Although Texas is less vulnerable than other states to changes affecting

the major export crops, exports are still important to Texas agricultural cash receipts. Cotton and rice figure prominently in the export trade, and Texas does produce significant amounts of wheat, soybeans, and feed grains. The combined value of the five crops is 25 percent of Texas cash receipts—one reason why the state's cash receipts fell 8 percent from 1981 to 1983 as exports declined.

Cash receipts from exports are showing some slight improvement in 1984. This can be attributed to the continuing world economic recovery, which has led to increased consumption of grains, used for livestock feeding, and of cotton. The poor wheat crop in the Soviet Union is also playing a role by increasing world demand for wheat. Despite this improvement in exports, however, the level will still be significantly below the peak of 1980-81.

—Roger H. Dunstan

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