

pre- to post-ERTA tax rules was unexpected. Changes in investment tax credit and depreciation rules in ERTA were designed to encourage increased machinery investment, but this positive effect is apparently offset by reduced tax rates. Lower tax rates decrease the present value of tax savings from interest and depreciation deductions and increase the desirability of repairing machinery instead of replacing it.

Even though ERTA reduced machinery purchases, the farms still held excess machinery capacity. For example, the number of crawler tractors owned by the large farm in the terminal period was: no-tax, 2.31; pre-ERTA, 6.73; and, post-ERTA 4.99. (The analytical model could not be restricted to whole numbers; if the solution could be restricted, it would probably result in a slight increase in machinery investment.) Because cropping patterns were identical under pre- and post-ERTA rules and differed only slightly in the no-tax situation, differences in machinery purchases could be attributed almost entirely to tax rules.

Each model farm financed land and machinery purchases and made decisions regarding savings and equity refinancing. There are significant differences in optimum levels of saving and debt by situation (table 1). None of the farms had any savings in the pre-ERTA tax situation, and debt levels were high. Medium and large farms had some savings in the post-ERTA situation but also had relatively large debts. Without taxes, the model farms added significant amounts to savings and reduced their debt to very low levels.

Equity refinancing practices differed by farm size and tax situation. There was no refinancing in the no-tax situation. Equity refinancing was substantially greater in the pre-ERTA than in the post-ERTA situation (fig. 1). The higher pre-ERTA rate of refinancing results from lower net cash flows and higher tax savings for pre-ERTA interest deductions.

Even though ERTA decreased tax rates, the present value of the firms' total tax liabilities was higher under post- than pre-ERTA rules. After ERTA, it was advantageous for the farms to reduce investment, increase taxable income, and have higher total income tax liabilities. The present value of their after-tax net cash flows was also higher under the post-ERTA rules. These results indicate that, with ERTA, government tax revenues would increase as would net worths and net cash flows of the farms.

Conclusions

The results of our analysis of optimum adjustments to changing income tax laws by three hypothetical California row crop

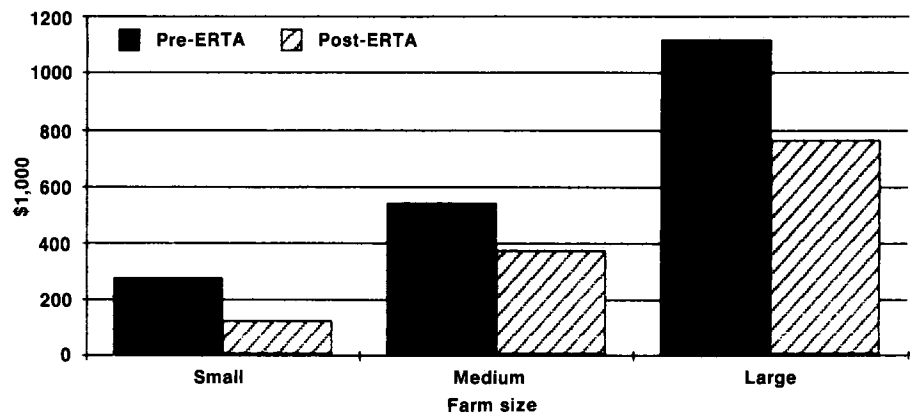


Fig. 1. Equity refinancing by three hypothetical farms was substantially greater before the Economic Recovery Tax Act of 1981 than after because of lower net cash flows and higher tax savings on interest deductions.

farms help explain past adjustments in the agricultural sector and provide hypotheses concerning future developments. We conclude that income taxes and changing tax rules can significantly affect farm investment patterns, financing decisions, and growth. Investment in land and machinery increases as progressive tax rates increase, and the degree of distortion increases with the income level of the farm firm. By increasing the demand for land and machinery, income tax rules can raise the prices of these assets. Because the high-income firm receives greater tax savings on its interest deductions, it can afford to pay more for an asset than can a low-income firm.

The progressive income tax rate structure is intended to redistribute income and improve equity among firms of different sizes. In reality, interactions between the rate structure and the deductibility of interest expenses and depreciation cause the investment opportunities of high-income farms to expand relative to those of lower income farms. By reducing the degree of progressivity, ERTA diminishes the relative bidding advantage of high-income over low-income farms. Progressive income tax rates combined with deductible interest and depreciation, however, will always provide a differential advantage to larger farms.

Our results suggest that income tax rules that promote debt financing are partially to blame for the financial crisis now faced by many farms. As shown by the pre-ERTA results, when crop prices and taxable incomes were high in the mid-1970s, the deductibility of depreciation and interest payments, combined with investment tax credits and progressive tax rates, promoted land and machinery purchases and encouraged debt financing. Now with lower crop prices, high real interest rates, and declining land values, many farms do not have the cash flow

necessary to service their debt and are unable to improve their position by selling land.

Many participants in the farm machinery industry blame low sales on the current depressed state of the farm economy. Low farm returns are an important factor in low machinery sales but, because of ERTA, sales will not rebound to the extent expected when crop returns improve. The decrease in tax rates and bracket indexing provided by ERTA diminish the incentive for farms to shelter income by investing in excess machinery capacity.

Income tax simplification proposals now before Congress have provisions that would decrease the progressiveness of the tax rate structure, lengthen the time over which depreciation deductions may be taken, and eliminate the investment tax credit. Preliminary analysis indicates that the rules being discussed will probably provide results somewhere between the no-tax and post-ERTA results in table 1. Proposed changes would certainly decrease the demand for farm machinery, other factors being equal, but the effect on incentives to purchase land is unclear. Land could become a preferred investment, given changes affecting other assets and the possible indexing of capital gains.

This research reveals the importance of considering the total package of tax law changes rather than singling out one provision and determining its isolated effect. Interactions between factors such as investment incentives and rate changes may have unexpected consequences and unintended effects.

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