THE EFFECTS OF THE 1980, 1981, AND 1982 TAX LAWS ON TEXAS RICE FARMERS

JAMES W. RICHARDSON and CLAIR J. NIXON

Abstract

A whole farm Monte Carlo simulation model was used to simulate a typical rice farm on the Texas Gulf Coast for 10 years under the 1980, 1981, and 1982 income tax provisions. Results for this analysis indicate that the 1981 tax provisions clearly were more beneficial to farm operators than the 1980 or 1982 income tax provisions. While the 1981 and 1982 tax law changes clearly improved the cash flow of farm operators, they did not greatly improve the wealth positions of farm operators in the Texas Gulf Coast.

Key words: income tax; farm policy; simulation

During the past 3 years there have been two major changes in federal income tax policy which have directly affected farm operators. First, the Economic Recovery Tax Act of 1981 (ERTA), the largest overall tax reduction bill in history, had widespread effects on the agricultural production sector as well as the whole economy (Government Printing Office, 1981). Secondly, only a year after ERTA, Congress passed the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) (Government Printing Office, 1982). This second Act was the largest tax revenue generating bill in history. While the overall impact of these new tax laws has been to lower the income tax liabilities of farm operators, the question remains as to whether farm operators have benefited.

Although much has been written on the impact of individual tax law changes on farm operators, the issue of the cumulative effect of these changes on farm operators has largely not been addressed (Davenport, Boehlje, and Martin; Richardson, Nixon, and Smith). The purpose of this paper is to assess the cumulative economic impacts of the changing tax laws on farm operators. The tax law provisions under pre-ERTA, ERTA, and TEFRA are compared by simulating their effects on a typical rice farmer on the Texas Gulf Coast.

ALTERNATIVE TAX LAWS

The literature is replete with descriptions of provisions of the three alternative tax laws (pre-ERTA, ERTA, and TEFRA) incorporated in this study (e.g., Prentice-Hall; Nixon and Richardson; Harl). The rapidity with which tax law revisions have occurred in recent years has created a high degree of uncertainty as to the continuing direction of tax policy. Nevertheless, it is important for policy decisionmakers to have insight into the impact of these changing tax policies on individual farm operators.

Distinctions between the three tax laws which have the greatest impact on farm operators are summarized in Table 1. These changes affect a broad cross-section of farm operators who are sole proprietors. Other farming entities will be affected differently by the new tax laws. For example, the 1982 Subchapter S Revision Act had a significant impact on formation and operation of Subchapter S (family) corporations. However, the analysis of the tax laws in this study deals strictly with sole proprietorships.

There are numerous provisions in the tax law which have an effect on farm operators. Yet, the focus of this article is on changes which occurred in the tax law during 1980-1982. Those changes which will likely have a significant impact on farm operator income tax liabilities follow. One area of important change under TEFRA deals with the regular and alternative minimum taxes. Table 1 describes how these taxes were computed prior to TEFRA. Beginning January 1, 1983, however, the regular minimum tax was eliminated and farm operators were required to pay the greater of the regular income tax liability after credits and the alternative minimum tax. The new alternative minimum tax structure involves a complicated interplay among capital gains income, accelerated depreciation in excess of straight-line on real estate and leased equipment, expensed intangible drilling costs, percentage depletion in excess of basis, certain interest and other deductions, and the farm operator's marginal tax rate in the regular tax calculation. For

	Pre-ERTA	ERTA	TEFRA
1. Income tax rates	max. tax rate 70 percent with a 50 percent rate on personal service (earned) income.	50 percent maximum rate on all income. Marginal tax rates reduced through 1984. Indexing of tax brackets, exemptions and zero bracket amount, based on CPI for all-urban consumers beginning in 1985.	Same as ERTA.
2. Depreciation	Facts and circumstances—straight-line, sum-of-the-years digits, and declining balance, component depreciation, and Asset Depreciation Range with class lives according to useful life.	Four classes of depreciable personal property (Sec. 1245) using the 150 percent declining balance method for 1980-1984, 175 percent declining balance for 1985, and 200 percent declining balance for 1986 and thereafter. Real property has one class and may be depreciated in as little as 15 years. Salvage value is ignored in depreciation computation.	Same as ERTA except scheduled faster writeoffs in 1985 and 1986 have been eliminated.
3. Additional first year depreciation/expensing	Additional first year depreciation of 20 percent of basis of qualifying personal property with useful life of 6 years or more up to a maximum of $2,000/year ($4,000 if married filing jointly). No basis reduction for investment tax credit.	Eliminated additional first-year depreciation, replaced with first-year expensing on personal property. $5,000 in 1982 and 1983, $7,500 in 1984 and 1985, and $10,000 in 1986 and thereafter. Expensing reduces the basis for the investment tax credit.	Same as ERTA.
4. Investment tax credit	Three rate groups based on useful life of personal property: (1) 3-5 years—3.3 percent, 5-7 years—6.6 percent and 7 or more years—10 percent. Investment tax credit claimed has no effect on basis for depreciation. Used property limitation $100,000.	Two rate groups based on class life of personal property: 3 year class—6 percent, 5-, 10- and 15-year class—10 percent. Investment tax credit has no effect on basis for depreciation. Used property limitation increased to $125,000 for 1981-1984 and to $150,000 for 1985 and thereafter. "At risk" limitations extended to investment tax credit.	Same as ERTA except individuals have the option of reducing basis for depreciation by 1/2 of investment tax credit claimed or taking 2 percent less investment tax credit than allowed with no effect on depreciable basis beginning January 1, 1983.
5. Investment tax credit recapture	Based on how long asset was kept in service by taxpayer; 0-3 years—all recaptured, 3-5 years—2/3 of maximum credit recaptured, 5-7 years—1/3 of maximum credit recaptured and 7 or more years—no recapture.	Two percent of the credit is earned for each full year that the asset is kept in service.	Same as ERTA except to coincide with investment tax credit rules, the adjusted basis for computing gain or loss is increased by one-half of the investment tax credit recapture upon disposition. When the maximum investment credit is claimed originally.
6. Regular minimum tax	Fifteen percent rate on certain tax preference items in excess of the greater of $10,000 or 1/2 income tax liability. Added to income tax liability.	Same as Pre-ERTA.	Eliminated after 1982.
7. Alternative minimum tax	Three progressive tax rates (10 percent, 20 percent and 25 percent) on alternative minimum taxable income (AGI less itemized deductions and exemptions plus capital gains deductions, and adjusted itemized deductions) in excess of $20,000 exclusion. Pay the greater of alternative minimum tax or income tax liability after credits plus regular minimum tax plus investment tax credit recapture.	Same as Pre-ERTA except the maximum rate was reduced to 20 percent.	Combines regular minimum tax and the alternative minimum tax. Eliminated the adjusted itemized deduction as a preference item. New preference items are added. The exclusion is increased to $40,000 with a flat 20 percent tax rate on the excess.

8. Leasing	Leveraged leases used to transfer tax benefits.	Safe harbor leasing arrangements used to facilitate greater use of leasing as a means of transferring tax benefits from lessee to lessor.	Benefits under ERTA greatly reduced and eventually eliminated after 1983. New financing lease instituted in 1984 similar to conditions under Pre-ERTA.
9. Retirement plans	Keogh plan for self-employed lessor of $7,500 or 15 percent of compensation. Cannot use IRA if use Keogh.	IRA's open to all taxpayers regardless of use of other qualified plan. IRA limit increased to $20,000 and Keogh increased to $15,000.	Same as ERTA except expanded coverage for noncorporate taxpayers.

example, investment in tax credit generating activities will not provide the income tax benefits previously realized for farm operators who have substantial capital gains income.

The alternative minimum tax under TEFRA (Section 55 of the Internal Revenue Code) is basically a combination of the regular and alternative minimum tax under ERTA. Furthermore, the new tax preference items added by TEFRA increased the probability that moderate to high income farm operators will be affected by the alternative minimum tax. Farm operators especially vulnerable to the new alternative minimum tax are those who have large capital gains income and/or income tax credits.

Careful tax planning is needed to maximize taxpayer benefit under the new alternative minimum tax rules. For example, if a farm operator expects to pay the alternative minimum tax, it will be beneficial to shift additional taxable income into the current year. The reason being that this income will not be taxed as long as the alternative minimum tax liability exceeds the regular income tax liability less tax credits. For farm operators using the cash method of tax accounting, such a procedure could easily be accomplished by year-end sales of crops and livestock. In addition, year-end equipment purchases designed to reduce income taxes should be carefully analyzed to ensure that the intended tax benefits will be realized in light of the new alternative minimum tax. This will be especially critical where large investment tax credits were previously used to reduce the farm operator's income tax liability generated by large capital gains income.

The expensing provision under ERTA and TEFRA are similar to additional first year depreciation under pre-ERTA, except that expensing reduces the basis for the investment tax credit. The tradeoff between electing expensing versus the full investment tax credit will generally be determined by the taxpayer's marginal tax bracket. The higher the marginal income tax bracket, the more benefit the farm operator receives through expensing because expensing is a reduction in taxable income whereas investment tax credit is a reduction in the income

tax liability. On the other hand, since investment tax credit is not affected by subsequent sales prices, if the asset is likely to increase in value (or decrease in value slower than cost recovery deductions); the farm operator should utilize the full investment tax credit. This is because the depreciation recapture provisions under Section 1245 of the Internal Revenue Code require that when the sales price of the asset exceeds the asset's adjusted tax basis, the difference is treated as ordinary income in the year of the sale. The recapture of investment tax credit, under Section 47 of the Internal Revenue Code, however, is based solely on how long the asset is kept in service and not on value.

SIMULATION MODEL AND TYPICAL FARM

To compare the cumulative economic impacts of these three income tax programs on a typical farm, a Monte Carlo, firm-level simulation approach was selected. The Firm Level Income Tax and Farm Policy Simulator (FLIPSIM V) was selected for the analysis because it is capable of simulating a typical farm for alternative income tax provisions. FLIPSIM V is a firm level, Monte Carlo simulation model which simulates the annual production, farm policy, marketing, financial management, and income tax aspects of a typical farm. The three income tax provisions (pre-ERTA, ERTA, and TEFRA) were analyzed under conditions of uncertainty (random prices and yields) to quantify the probable impacts of these policies on the typical farm's viability.[1]

FLIPSIM V has been described elsewhere (Richardson, Lemieux, and Nixon) so a detailed description of the model is not included here. A special version of the original model (FLIPSIM-TAX) was used for this analysis. This new model did not include the machinery leasing sections of the computer program described by Richardson, Lemieux, and Nixon. Additionally, FLIPSIM-TAX was expanded to include the

---

[1] Viability in this case refers to the probability the farm will be able to survive for 10 years. Survival is defined as the farm remaining solvent for 10 years. The farm remains solvent as long as the overall equity to asset ratio for the farm remains greater than 0.30.

income tax provisions of pre-ERTA, ERTA, and TEFRA.[2]

For this analysis, a typical Texas Gulf Coast rice farm was simulated recursively over a 10-year planning horizon. The planning horizon was replicated 50 times using rice prices and yields drawn at random from empirical probability distributions. Assuming continuation of the 1981 farm policy for rice, the model was used to simulate the typical farm for the three income tax policies. The same assumptions regarding beginning equity, off-farm income, family consumption[3], machinery replacement, annual inflation rates and interest rates, production costs, fixed costs, crop yields and prices, and farm programs were used for all three income tax scenarios. By holding these assumptions related to the farm constant for the different income tax scenarios, the cumulative impacts of changing the income tax program can be isolated for a typical farm.

The typical Gulf Coast rice farm selected for this study had 1,700 acres of land, divided equally between pastureland and cropland (Gerlow; Richardson, and Bailey). Rice was planted on the same cropland every other year and idle cropland was cash leased for grazing. The operator was a part owner and had 60 percent equity in 412 acres of cropland while leasing the remainder on a share lease. Crop-share leases in the area involved the landlord receiving 10 percent of the crop and paying his share of grain drying costs (Gerlow). Enterprise budgets for the typical farm were developed using the Oklahoma State Budget Generator (Richardson and Bailey).

The farm was simulated assuming all production costs increase 5 percent per year throughout the planning horizon. The average rice prices for 1976-1981, Table 2, were used as the mean prices for the first year in the

TABLE 2. PROBABILITY DISTRIBUTIONS OF RICE YIELDS AND PRICES FOR TEXAS GULF COAST RICE PRODUCERS

Item	Rice yields		Rice prices 1974-1981	
	First crop	Second crop	July	January
	cwt.		$/cwt.	
Mean	45.82	11.36	10.28	9.62
Ranked deviation from the mean				
1	−4.89	−11.36	−3.49	−2.75
1	−4.89	−11.36	−3.49	−2.75
2	−3.82	− 4.56	−2.29	−1.29
3	−3.12	− 2.47	−2.23	−1.55
4	−2.00	0.39	−1.64	−1.04
5	−0.87	0.85	−0.65	−0.31
6	0.83	2.96	0.42	0.39
7	2.37	3.52	0.49	0.95
8	3.02	4.41	0.63	1.23
9	4.92	5.32	4.55	2.85
10	6.50	5.71	5.52	3.18
Correlation coefficient	0.44		0.87	

planning horizon, 1983. Annual mean prices for rice for 1984-1992 were generated by inflating the 1983 mean price by 5 percent per year. The average loan rate and target price for 1976-1981 ($6.98/cwt. and $9.30/cwt., respectively) were used for their respective values in the first year of the planning horizon. Annual loan rates and target prices for 1984-1992 were obtained by inflating the 1983 values for these variables 5 percent per year. The replacement cost of machinery was assumed to increase 5 percent per year while the nominal market value of used equipment was assumed to remain constant.[4] Annual interest rates were assumed to be 8 percent over the entire planning horizon for both long- and intermediate-term debts.[5] Land values were assumed to increase 5 percent per year over the planning horizon.

It was assumed the farm operator did not elect to utilize the expensing provision under ERTA. This assumption was used because the

---

[2] The pre-ERTA tax section of the model for calculating farm operator tax liabilities over the planning horizon included: (a) the 1980 income tax schedules held constant for all years of the simulation, (b) additional first-year depreciation, (c) double-declining balance depreciation, (d) full investment tax credit with no basis reduction, and (e) the pre-1982 alternative minimum tax, regular minimum tax, and income averaging. The ERTA tax section of the model included: (a) the tax rate schedules for 1981-1984 with indexing for 1985 and beyond, (b) accelerated cost recovery deductions (ACRS), (c) first year expensing, (d) full investment tax credit with no basis adjustment, and (e) the pre-1982 alternative minimum tax, regular minimum tax, and income averaging. Finally, the TEFRA tax section of the model included: (a) the tax rate schedules for 1981-1984 with indexing for 1985 and beyond, (b) ACRS, (c) first year expensing, (d) full investment tax credit with reduction in basis for depreciation, and (e) a revised alternative minimum tax and income averaging. The regular minimum tax was eliminated in TEFRA.

[3] In all three scenarios, the operator had an initial debt of 40 percent on $409,200 of cropland and $247,700 of machinery. The initial net worth for the farm operator was $395,900, off-farm income was zero, family living expense was constant at $25,000 per year, and it was assumed the farm could not grow by increasing acres of cropland owned or leased.

[4] Market value of used machinery was held constant rather than assuming it increases or decreases slightly over time. While the price of new machinery was rising 8 to 10 percent per year during the 1970's, the nominal value of used farm equipment in Texas increased about 1 percent per year (Richardson, Nixon, and Smith, p. 73). Since new equipment prices were assumed to increase only 5 percent per year in this analysis, the rate of change in used equipment values was assumed to be zero.

[5] Eight percent interest rates and 5 percent annual inflation imply a 3 percent real rate of interest. A 3 percent real rate was used because the study is a long-term analysis. Given that the annual rate of inflation was constant at 5 percent per year, it was assumed inflationary expectations would subside from their 1980-1983 levels thus allowing the real rate of interest to return to its long-term value of about 3 percent.

expensing provision did not change from ERTA to TEFRA but the basis adjustment procedure when electing investment tax credit did. Therefore, to assess the full impact of the basis adjustment procedure under TEFRA (when electing investment tax credit), the full purchase price of the asset rather than the original purchase price less the amount expensed was used. The maximum investment tax credit was elected under all three tax law provisions.

The Consumer Price Index (CPI) used in the income tax indexing procedure for tax years 1985-1992 was increased 5 percent annually to coincide with the assumed rate of inflation. All equipment acquired after 1980 was assumed to qualify for ACRS. Also, the farm operator was assumed to use the most rapid rate of depreciation permitted under the alternative tax laws when purchasing new equipment.[6]

A bivariate probability distribution for rice yield (first crop and second crop) was developed from producer's yield records in the Gulf Coast. Actual farm yields for 5 years (1977-1981) were used to develop empirical probability distributions for first and second crop rice yields, Table 2.[7] Yield for the second crop is correlated (0.44) to yield for the first crop in the model using the procedure suggested by Richardson and Condra (p. 433). The bivariate yield distribution reported in Table 2 was used for all three income tax policies analyzed.

Several marketing strategies exist for rice producers in the Gulf Coast. However, the typical strategy is to sell first crop rice in July and sell second crop rice in January (Gerlow). To simulate this practice, an empirical bivariate probability distribution for July and January rice prices was developed using average monthly cash prices (July and January) observed in the area over the period 1974-1981, Table 2.[8]

The bivariate yield and price distributions were used in FLIPSIM V to generate random yields and prices annually for the 10-year planning horizon. The planning horizon was replicated 50 times (drawing a different set of random yields and prices for each iteration) to generate a sample for various output variables used to evaluate the cumulative impacts of the three income tax policies.

RESULTS

Results of the simulation analyses under the three tax laws are summarized in tables 3 and 4. While the probability of survival for the typical farm was the same under all three tax laws, the financial implications to the farm operator were not. The 1981 tax law (ERTA) clearly provided the farm operator with the best ending financial position in terms of average ending cash reserve, average present value of ending net worth, and the lowest average overall tax liabilities, Table 3. The operator's average after-tax net present value[9] experienced under TEFRA was 5.2 percent greater than under the pre-ERTA provisions and 1.6 percent less than under the ERTA provisions. Similarly, the average present value of ending net worth for the operator under the provisions of TEFRA were 3.9 percent greater than under the pre-ERTA provisions and about 1.3 percent less than under the ERTA provisions.

TABLE 3. COMPARISON OF THE ECONOMIC VIABILITY OF A TYPICAL TEXAS GULF COAST RICE FARM UNDER THE INCOME TAX PROVISIONS OF PRE-ERTA, ERTA, AND TEFRA

State variable	Pre-ERTA	ERTA	TEFRA
Probability of Survival (%)[b]	98.0	98.0	98.0
After-tax net Present value ($1,000)[a]			
Mean	521.7	557.8	548.9
Std. dev.	147.0	162.1	160.5
Maximum	777.5	861.5	847.6
Minimum	−20.7	−20.7	−20.7
Present value of Ending net worth ($1,000)			
Mean	680.3	716.4	707.4
Std. dev.	137.3	152.6	151.1
Maximum	933.2	1017.1	1003.3
Minimum	278.6	278.6	278.6
Ending cash reserve in 1992 ($1,000)			
Mean	92.1	130.9	123.0
Std. dev.	135.8	156.5	155.5
Maximum	369.2	426.3	419.5
Minimum	−167.2	−164.8	−155.6

[a] After-tax net present value is the present value of the net annual family withdrawals plus the present value of the change in net worth over the planning horizon. An after-tax discount rate of 4 percent was used for the present value calculation.
[b] Probability of survival is the probability the typical farm will remain solvent, i.e., maintain at least a 30 percent equity to assets ratio, for 10 years.

[6] This latter assumption is based on a limited survey of rice producers and discussions with extension personnel in the area.

[7] The empirical yield distribution was developed by computing the deviations about the mean for each crop's (first crop and second crop) annual yield. The resulting distribution consisted of five deviations about the mean for 1977-1981 for each crop. Simulation techniques were used to interpolate each distribution and expand it to the 10 deviations about the mean reported in Table 2. The advantage of using the empirical distribution is that it allows the researcher to use the actual distribution experienced by farm operators rather than assuming an a prior distribution (e.g., normal, uniform, triangular, or Beta).

[8] The empirical price distribution was developed in the same manner as the distribution for rice yields.

[9] After-tax net present value is the present value of the net annual family withdrawals plus the present value of the change in net worth over the 10-year planning horizon. An after-tax discount rate of 4 percent was used to compute after-tax net present value and the present value of ending net worth.

The operator's average annual taxable income is greater under the provisions of TEFRA than under ERTA in each year of the planning horizon, Table 4. Average annual net taxable income for the typical rice farmer was generally greater under the pre-ERTA income tax provisions and lower under the provisions of ERTA.

Of interest is the average income tax liability incurred by the farm operator in 1986. In this case, the average income tax liability under TEFRA is $800 less than under ERTA, Table 4. The difference is due to the alternative minimum tax computation. Under ERTA, earned investment tax credits reduced the operator's income tax liability below the alternative minimum tax amount. Hence, the alternative minimum tax became the income tax liability. Yet, under TEFRA, the $40,000 exclusion reduced the farm operator's alternative minimum tax below the regular tax liability after accounting for the investment tax credit. Nevertheless, the structure of the alternative minimum tax under TEFRA is such that middle to high income farm operators with higher capital gain income or large investment tax credits will likely be required to pay some alternative minimum tax.

Changing the tax policy from ERTA to TEFRA increases the operator's average total personal income tax liability from $65,500 to $69,300 or about 5 percent over the 10-year period, Table 4. Changing the income tax provisions from per-ERTA to ERTA reduces the average annual income tax liabilities for the farm operator over the 10-year planning horizon from $113,300 to $65,000 or about 42 percent. Despite the increased income tax liabilities brought about by TEFRA, farm operators in the Texas Gulf Coast will have 38 percent lower income tax liabilities than they would have experienced under the provisions of the pre-ERTA tax policy.

While the tax laws strongly influence the cash flow of most business operations, the cumulative impact of the changing tax laws on farm operators' after-tax wealth position was not greatly different between the three tax laws. The average present value of ending net worth for the farm operator ranged from $680,300 under pre-ERTA to $716,400 under ERTA, with

TABLE 4. ANNUAL NET FARM INCOME AND PERSONAL INCOME TAXES FOR A TYPICAL TEXAS GULF COAST RICE FARM UNDER THE PRE-ERTA, ERTA, AND TEFRA INCOME TAX PROVISIONS

Variable	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
					- - PRE-ERTA - -					
Net farm income ($1000)										
Mean	−47.2	44.4	40.7	40.4	54.4	55.7	93.9	62.4	48.5	74.3
Std. dev.	54.5	64.2	58.6	59.2	67.8	63.1	82.2	71.8	71.5	72.5
Maximum	137.1	237.2	203.7	242.3	234.1	242.5	287.3	256.1	316.2	265.6
Minimum	−112.0	−68.1	−55.6	−62.5	−77.5	−81.7	−69.6	−108.0	−46.8	−44.3
Personal income tax ($1000)										
Mean	0.9	2.3	3.2	5.7	12.6	12.2	24.0	18.3	11.8	22.3
Std. dev.	3.5	6.4	7.3	18.5	19.8	19.5	29.5	23.3	20.8	28.6
Maximum	15.7	32.7	32.0	127.5	80.2	102.1	112.5	112.9	98.6	111.9
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
					- - ERTA - -					
Net farm income ($1000)										
Mean	−54.4	46.8	36.9	35.3	47.6	52.4	88.7	58.5	44.9	70.9
Std. dev.	54.5	64.2	58.2	59.3	67.0	63.9	82.5	72.1	72.9	74.9
Maximum	129.9	239.9	202.5	240.4	229.7	240.3	288.4	245.9	315.2	289.4
Minimum	−119.2	−65.4	−56.9	−65.3	−81.9	−77.5	−76.5	−104.7	−69.3	−42.4
Personal income taxes ($1000)										
Mean	0.5	1.2	2.7	4.8	6.3	7.3	13.1	10.1	6.0	13.5
Std. dev.	2.3	4.0	6.8	15.5	11.7	13.5	19.4	15.7	12.8	21.2
Maximum	10.3	22.3	31.6	86.0	44.1	68.7	89.1	74.7	64.9	77.4
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
					- - TEFRA - -					
Net farm income ($1000)										
Mean	−53.9	47.3	38.2	39.8	52.1	55.4	91.2	61.6	49.6	75.1
Std. dev.	54.5	64.2	58.1	59.4	67.2	63.3	81.3	72.3	71.7	73.4
Maximum	130.4	240.4	202.9	248.7	237.1	245.0	285.2	259.7	311.5	278.0
Minimum	−118.6	−65.0	−56.4	−64.8	−74.5	−70.1	−69.2	−100.8	−59.2	−37.8
Personal income tax ($1000)										
Mean	0.5	1.2	2.8	4.0	7.2	7.6	14.5	11.1	6.1	14.3
Std. dev.	2.3	4.0	7.1	14.1	12.8	14.3	19.5	16.8	13.8	21.1
Maximum	10.4	22.7	32.2	87.7	51.0	73.1	82.1	83.2	70.5	81.6
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

the value for TEFRA falling in between at $707,400, Table 3. The standard deviation for ending net worth increased as the mean increased and the operator experienced about the same relative variation in present value of ending net worth across all three income tax provisions.

SUMMARY AND CONCLUSIONS

Two major changes in income tax provisions have been made in the past 3 years. The Economic Recovery Tax Act of 1981 (ERTA) and the Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA) have, respectively, been the largest overall tax reduction act and tax revenue generating act in history. While it has been established that the provisions of ERTA lowered the income tax liabilities for most farm operators, little work has been done to determine the cumulative impacts of TEFRA on farm operators. The main question to be addressed in this paper related to the cumulative effects of ERTA and TEFRA on a farm operators' net farm income, personal income tax liabilities, and wealth.

The cumulative effects of the income tax provisions of pre-ERTA, ERTA, and TEFRA on a farm operator were quantified by simulating a typical Texas Gulf Coast rice farm under all three tax policies for 10 years. The Firm Level Income Tax and Farm Policy Simulator (FLIPSIM V) was used to simulate the typical farm. For each income tax policy, the farm was simulated over a 10-year planning horizon which in turn was replicated 50 times using a different set of random crop prices and yields for each year. Results of the analysis indicate that the typical Texas Gulf Coast rice farm will not be greatly affected by the change in the income tax provisions from pre-ERTA to ERTA to TEFRA. The probability that the typical part-owner rice farmer in the region will remain solvent for 10 years was the same (98 percent) across all three income tax policies. Only minor changes in the operator's expected income earning potential and ending wealth position were observed for the three income tax policies.

Changes in the income tax provisions from pre-ERTA to ERTA increased the operator's expected after-tax net present value (for a 10-year period) only 6.9 percent and the change from ERTA to TEFRA decreased it 1.6 percent. Similarly, the change from pre-ERTA to ERTA increased the operator's expected present value of ending net worth (for a 10-year period) about

5 percent and the change from ERTA to TEFRA reduced it about 1 percent. The reduced income tax liabilities over a 10-year period for a farm operator from pre-ERTA to TEFRA (about 38 percent) will likely improve the cash flow position of rice farmers in the Texas Gulf Coast.

Though the results for a commercial Gulf Coast rice farm are not directly applicable to farm operators in other regions, results suggest general implications for commercial crop farmers in other regions. Results suggest that both ERTA and TEFRA improved the cash flow position of farm operators over the pre-ERTA income tax provisions of 1980. In addition, the cash flow position of farm operators who must pay income taxes should be more favorable under TEFRA than under the provisions of the pre-ERTA income tax codes.

One change in the tax law which has important implications for farmers in a planning mode under TEFRA is the effect of capital gain income on income tax liabilities. With the changes which have occurred in the alternative minimum tax since its initiation in 1978, this "add-on" tax is reducing for many taxpayers, the benefits previously realized on capital gain income. While 40 percent of the net long-term capital gain is added to taxable income, the remaining 60 percent deduction becomes part of the alternative minimum tax computation. Farm operators would be advised to time their capital gain income in years of either high farm income or other income as well as high qualifying deductions.

Results of this study also suggest that the tax policy changes in 1981 provided farmers an incentive to invest in farm machinery and thus expand supply. Even though the change from ERTA to TEFRA gave farm operators a negative supply incentive regarding investment in machinery, many farmers may still perceive a positive investment incentive due to comparing TEFRA provisions to the pre-ERTA provisions. Impacts of federal income tax policy on farm machinery investments and thus the capacity of agriculture to supply food and fiber have largely been ignored by policymakers in developing farm programs. As a result, the supply incentive components of ERTA and TEFRA reduced the efficiency of the 1982-84 acreage set asides for cotton and grains. In the future more attention should be paid to the impacts of federal income tax policy on the effectiveness of farm programs, particularly the impacts on the effectiveness of supply control programs.

REFERENCES

Davenport, C., M.D. Boehlje and D.B. Martin. "The Effects of Tax Policy on American Agriculture," U.S. Dept. Agr., Econ. Res. Serv., Ag. Econ. Rept. No. 480, Feb. 1982.

Gerlow, A. Tex. Agr. Ext. Ser., Bryan, Texas, Interviews, 1982.

Government Printing Office. *Economic Recovery Tax Act of 1981 Public Law 97-34,* Washington, D.C., August 13, 1981.

Government Printing Office. *The Tax Equity and Fiscal Responsibility Act of 1982.* H.R. 4961. Washington, D.C., August 19, 1982.

Harl, N. "EFRA, The Tax Equity and Fiscal Responsibility Act of 1982," *Agr. Finance,* October 1982: 20-22.

Nixon, C.J. and J.W. Richardson. "The Economic Recovery Tax Act of 1981: Consequences of Farm Operators." *Agr. Fin. Rev.* Vol. 42, U.S. Dept. Agr., Econ. Res. Serv., 1982, pp. 1-8.

Prentice-Hall, Inc. *Complete Internal Revenue Code of 1954, 1983 Edition,* Englewood Cliffs, N.J., June 1, 1983.

Richardson, J.W. and G.D. Condra. "Farm Size Evaluation in the El Paso Valley: A Survival/Success Approach." *Amer. J. Agr. Econ.,* 63(1981):430-437.

Richardson, J.W. and D.V. Bailey. "Debt Servicing Capacity of Producers in the Lower Gulf Coast," Texas A&M Univ., Dept. of Agri. Econ., (Mimeo), Nov. 1982.

Richardson, J.W., C.J. Nixon and E.G. Smith. "Economic Impacts of the 1981 Agricultural Act and the 1981 Tax Act on Texas High Plains Farmers," *So. J. Agr. Econ.* 14 (1982):71-76.

Richardson, J.W., C.M. Lemieux, and C.J. Nixon. "Entry into Farming: The Effects of Leasing and Leverage on Firm Survival." *So. J. Agr. Econ.* 15 (1983): 139-45.