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Del D. Elffner, Allen M. Featherstone, and Christine A. Cole*

Taxation and tax reform are subjects that receive a great deal of attention and discussion in congressional and other political debates. Recent tax reform proposals have included the Flat tax, the USA tax, and the National Sales tax. Much of the reason for tax reform's staying power as a topic for debate arises from continued public dissatisfaction with the current system. Most alternative tax proposals therefore concentrate on resolving the public's dissatisfaction by improving the simplicity, efficiency, and equity of the current income tax system.

The National Commission on Economic Growth and Tax Reform has recommended the development of a new simplified income tax code based on six major policy points. The commission suggests that any new tax code should include (1) a single tax rate, (2) increased personal exemptions to remove the burden from those least able to pay, (3) lower tax rates for families, (4) payroll tax deductibility for workers, (5) ending the biases against work, saving, and investment, and (6) making the new tax system difficult to change. In addition to its policy recommendations, the commission suggested six principles that any new tax system should encompass. These were (1) economic growth through incentives to work, save, and invest, (2) fairness for all taxpayers, (3) simplicity so that anyone can figure it out, (4) neutrality that lets people and not the government make choices, (5) visibility to let people know the cost of government, and (6) stability so people can plan for the future. Although the commission did not endorse a specific tax proposal, some argue that the current flat tax proposals are consistent with these policies and principles.

A flat tax is one in which the marginal tax rate remains constant as taxable income increases. Marginal tax rates differ from average tax rates in that the marginal tax rate is the fraction of an additional

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dollar of income that must be paid in taxes, whereas average tax rates are the total amount of taxes paid divided by the individual's before-tax income. Robert Hall and Alvin Rabushka were the first to formally propose a flat tax, and most flat tax proposals are derivatives of their proposal.

The Hall-Rabushka proposal draws heavily on the principle of a consumption tax, under which consumers are taxed on what they take out of the economy, not what they put in. Hall and Rabushka suggest that all income should be taxed only once, at the same rate, and taxed as close to the source as possible. They believe the poorest families should pay no tax, and lower-income individuals should pay a smaller fraction of their incomes in tax than those with higher incomes. They argue that a flat tax would simplify tax returns for many wage earners. Their proposal has two classifications of income, business income and individual wage income, both taxed at the same rate.

On July 19, 1995, Representative Richard Armey (R-Texas) introduced H. R. 2060 to the 104th Congress. The bill, more commonly known as *The Freedom and Fairness Restoration Act of 1995*, is a pure flat tax on income based on the flat tax proposal put forth by Hall and Rabushka. This flat tax proposal would replace the current progressive tax system with a 20 percent flat tax that would remain in effect for two years, followed by a reduced rate of 17 percent thereafter. The rate reduction occurs provided revenues to the treasury increase, federal spending falls, and the deficit is lowered during this time frame. Given the current budget surplus, it is unclear what the flat tax rate would be.

Under Representative Armey's flat tax, the Social Security tax would remain intact. Although Social Security payments would no longer be deductible, the employer would still be obligated to make one-half of the employee's Social Security contribution, with the employee contributing the other half. Self-employed individuals could choose to have their entire business income taxed at the flat tax rate, or pay themselves a salary which could be deducted from gross revenue, lowering their business income. The salary would then be taxed at the flat tax rate and the Social Security tax rate (15.3%) after personal deductions were removed.

Several studies have examined the effects of a flat tax on the economy and agriculture. Fellows concluded that a flat tax system may not spur much economic growth since the work/leisure substitution and income effects would quite probably be nearly off-setting. Adams and Harl indicated that eliminating the deduction for interest paid under a flat tax would significantly impact young, highly-leveraged farmers. Without this deduction, many indebted farmers could have a negative net farm income, yet find they still owe taxes at the end of the year.

Adams and Harl also suggested higher land prices and land lock as two additional effects of a flat tax. Under most flat tax proposals, capital gains taxation and the present scheme of depreciation for business assets are eliminated, allowing capital purchases to be deducted as business expenses in the year they are incurred and fully taxed in the year of sale. Adams and Harl suggested farmers will purchase additional land to reduce their tax liability during a high income year, but that the large tax liability associated with the sale of the land will create a disincentive to sell, creating a lock-in effect, and potentially higher land prices. Increased land prices combined with the elimination of interest deductions would create a barrier for individuals wanting to enter farming.

Duncan, Koo, and Taylor estimated the effect of a flat tax on representative farms in North Dakota for 1996-2003. They concluded that only large-size farms would experience a tax savings under the flat tax system; small- and medium-sized farms would pay higher federal taxes.

Carmen and Boehlje examined past studies of changes in income tax laws from which they suggested several consequences of a flat tax. Some of the effects they offered were increased farm land prices, increased non-farm investor interest, and decreased land availability. These could lead to increased financial requirements and larger barriers to entry into farming. Carmen and Boehlje also suggested that the reduced after-tax cost of capital purchases due to full expensing in the purchase year would encourage greater capital investment. They conclude that greater capital investment would increase the mechanization of agriculture, increase business activity in machinery and equipment industries, and reduce farm employment. They further conclude that increased tax-sheltering could lead to increased production

over time.

Friedman suggested that a flat tax system would be beneficial to taxpayers and the economy. Friedman stated that "A low flat rate-less than 20 percent-on all income above personal exemptions with no deductions except for strict occupational expenses would yield more revenue than the present unwieldy structure. Taxpayers would be better off because they would be spared the costs of sheltering income from taxes; the economy would be better off because tax considerations would play a smaller role in the allocation of resources."

One issue some previous studies have neglected is the effect a flat tax could have on interest rates. John Golob, a Kansas City Federal Reserve Bank economist, has estimated that the elimination of the taxation of interest would cause interest rates to drop 25 to 35 percent. With the consideration of secondary factors, he suggests the drop would likely be closer to 25 percent than 35 percent.

The objective of this study is to evaluate the impact of a flat tax on Kansas Agriculture. Tax models are used determine the tax liability under the current system and the flat tax system, to analyze the shift in the tax burden on Kansas farmers, to evaluate the fairness and progressivity of the current and flat tax systems, and to determine the winners and losers resulting from a change in the tax system. The study also examines the impact of a flat tax on interest rates and capital investment.

DATA

Data used in this study is from the Kansas Farm Management Data Bank and a tax survey sent to all 1994 members of the Kansas Farm Management Association. The Farm Management Data Bank contains all necessary information for determining the tax liability under the current Federal tax system for each association member, except for the cost basis of livestock and other items purchased for resale, and capital or ordinary gains or losses. Because these figures were not explicitly included in the data bank, a survey was sent to all members enrolled in the Farm Management Association during 1994.

The tax survey asked for the *cost basis of livestock and other items purchased for resale*, found on

line 2 of the Schedule F, the *capital gains* figure, found on line 13 of the 1040 (taken from Schedule D), and the *other gains* figure, found on line 14 of the 1040 (taken from Form 4797), for the years 1990 through 1994. This information was then combined with the Farm Management Data to complete this study.

The tax survey was sent to 2,071 members of the Farm Management Association. Survey data for 653 producers were received. Of the 653, 593 were sole proprietorships, 27 were partnerships and 33 were corporations. Because not enough non-farm information was available to get a complete financial picture of individuals involved in partnerships and corporations, only the results for sole proprietorships are reported.

EMPIRICAL TAX MODELS

Tax models were developed to analyze the tax liability under the Current Federal Tax System (CTM) and a Federal Flat Tax (FTM). The models account for both income and self-employment taxes.

Current Tax Model

The Current Tax Model (CTM) was developed using the Schedule F to calculate farm income and expenses for sole proprietorships. Net farm income or loss was used to calculate self-employment taxes and Federal income taxes owed. Schedule SE and Form 1040 were used to determine self-employment taxes, social security tax, and Federal income taxes.

All farm expenses were broken into four different components; operating expenses, depreciation, interest paid, and real estate taxes, for comparison among tax plans. Farm expenses were subtracted from farm income resulting in net farm profit in the CTM. Once net farm income, capital gains, other gains, and self-employment taxes were found, total income and adjusted gross income were calculated. Total income was determined by adding net farm income, capital gains, ordinary gains, and any net operating loss carried forward from the previous years. Adjusted gross income was calculated by subtracting one-half of

the self-employment tax value from total income. Adjusted gross income was then used to determine taxable income.

The CTM calculated taxes due by using five income brackets ranging from 15 percent to 39.6 percent. To arrive at the final tax amount owed, taxes due were combined with the full value of self-employment and social security and medicare taxes. This became the amount of taxes paid by the operator. Table 1 provides a summary of the breakdown of income and expenses used to calculate the total tax liability under each tax plan.

Flat Tax Model

The Flat Tax Model (FTM) calculates the tax liability a Kansas farmer operating as a sole proprietor could expect to face under a flat tax plan. Representative Armeý's flat tax proposal places a 20 percent tax on the difference between revenue and expenses (if positive) for all business enterprises. The proposal subtracts purchases of goods and services, capital equipment, structures, and land from gross revenue to arrive at a base for the tax.

Gross revenue for the FTM was found by combining income variables from the Farm Management Data Bank (Elffner). All income variables included in the FTM are identical to the variables included in the CTM with only a few exceptions. Motor vehicle and machinery sales, building sales, land sales, and sales of breeding livestock are included as income in the FTM but not in the current tax system. Another departure from the current system is that in the FTM all capital assets are expensed at the time of purchase and are then not depreciated.

Expenses used by the FTM were similar to the CTM, except that interest paid, motor vehicle depreciation, machinery-equipment depreciation, and building depreciation were no longer deducted. This reflects Armeý's proposal to eliminate the interest and depreciation deductions and to expense all capital purchases the year they are placed in service.

Net farm income was found by subtracting the purchases of goods and services, capital equipment,

structures, and land and livestock from gross revenue. If net farm income was negative, then a net operating loss occurred, and the loss was carried forward to the next year. Under the Arney plan, this loss would earn interest equal to the 3-month Treasury rate for the last month of that next year, at which time the loss plus the interest earned would be deducted from that year's net income. If the net income for that year was again negative, then the combined loss would be carried forward again, until the loss was offset by income.

The Arney flat tax would eliminate the current self-employment tax, but leave the social security tax untouched. If a self-employed individual chose to pay themselves a salary, then personal deductions and dependent exemptions could be deducted, leaving the remaining value to be taxed at the 20 percent flat rate. This salary would also be subject to a social security tax. If a self-employed individual chose not to pay themselves a salary, their entire business income would be taxed at the flat 20 percent rate. It was assumed that producers, acting as rational individuals, would deduct a salary that would be exempt from the flat tax, but would be subject to social security taxes. A 15.3 percent social security tax was calculated on the salary, compared to a 20 percent flat tax rate.

The total tax liability for the sample observation (Table 1) was \$10,787.69 under the Flat Tax Model, which is \$3,019.46 less than the Current Model. This 22 percent decrease in taxes results from a lower taxable income.

TAX MODEL RESULTS

Table 2 reports the mean results for both the Current Model and the Flat Tax Model. Non-farm wages were included in both models and land transactions were included in the Flat Tax Model. The base flat tax plan assumes the complete expensing of land in the year of purchase, and it taxes the total sale price of the land when sold.

The mean Federal income tax for the Current model was \$5,945.48 with a standard deviation of \$10,318.01, while that for the Flat Tax Model was \$5,257.76 with a standard deviation of \$9,543.74. The

mean total tax for the Current Model, which included income tax, self-employment tax, and social security tax, was \$10,322.79 with a standard deviation of \$12,622.18 while that for the Flat Tax Model was \$8,181.44 with a standard deviation of \$10,528.02. This is a \$2,141.35 or 21% decline in average total taxes caused by switching from the current system to the flat tax system.

REGRESSION RESULTS

Ordinary least squares regression was used to evaluate the fairness and progressivity of the current and flat tax systems and to determine the winners and losers resulting from a change in tax systems. Models were estimated using yearly data from 1990 through 1994. Independent variables included as explanatory factors for federal tax liability and total tax liability were debt-to-asset ratio, net farm income-to-total asset ratio, total assets, age of the operator, number of dependents, type of farm operation, net farm income, and net farm income squared.

Fairness

Fairness is a subjective concept. These regressions summarize the tax liability across farms. Differences in the statistical and economic significance are examined. Regression results indicate that the net farm income-to-total assets ratio and total assets were positive and significant in both the CTM and the FTM (Table 3). This implies that more profitable farms and larger farms pay more federal taxes under both tax systems. Results also show that the debt-to-asset ratio was negative and significant in the CTM but positive and significant in the FTM. These results imply that highly leveraged firms will pay less tax under the current tax system and more tax under the flat tax system. Additionally, results show that in the CTM, a beef producer will pay lower taxes than a non-irrigated crop farmer. The number of dependents was not statistically significant in either model.

Comparison of the regression results for the FTM and the CTM indicate that the FTM reduces the effect of profitability and size on the tax burden. Under the FTM, more profitable farms and larger farms

pay relatively lower taxes than under the current tax system. However, under the flat tax system farms with high leverage ratios pay higher taxes.

Progressivity

Regression results for progressivity indicate the debt-to-asset ratio, net farm income, and net farm income squared were positive and significant in explaining the Federal tax owed in both tax plans. This implies that increases in these variables increase the tax owed at an increasing rate. Results also show the number of dependents to be negative and significant for both plans implying that as family size increases, the federal tax liability decreases. Additionally, the age of the operator was positive and significant under the current system indicating that as an operator ages, the tax liability increases.

Use of the squared net farm income term in the regression estimation allowed the equation to take a nonlinear form so the progressivity of both systems could be evaluated. To determine whether the tax systems were progressive or not, the regression equation was used to estimate the Federal tax liability for a range of net farm income levels, while the other variables were held constant at the mean level for the sample. Results indicate that as net farm income increases, the tax liability increases at an increasing rate for both tax plans, which implies that both the current tax system and the flat tax are progressive. However, the flat tax rates are lower when compared to the current system at all levels greater than \$12,795.

Although the flat tax reduces the Federal tax liability for incomes greater than \$12,795 the flat tax is more variable as illustrated by the mean of the standard deviation. The mean standard deviation for the FTM is \$5,145 while that for the CTM is \$4,061. The difference in variability between the two models arises partially because of the ability to expense capital asset purchases.

Winners and Losers

Regression analysis was used to determine the winners and losers caused by a move from the

current tax system to Armev's FTM. This was accomplished by regressing the difference in the total Federal and self-employment tax between the two tax systems on several explanatory variables. The total tax figure calculated by the FTM was subtracted from the total tax figure calculated by the CTM to get the difference in total taxes between the two models. This difference in total taxes is an increase or decrease in after-tax income.

Regression results indicate the net income-to-total asset ratio and total assets were positive and significant in explaining the difference in total taxes between the two plans. Thus, increases in profitability or in total assets will magnify the tax difference between the current tax system and the flat tax system. Hence, farms with higher profit or larger farms will realize relatively larger benefits from the implementation of a flat tax. These results support some of the economic reasoning given by proponents of a flat tax. A producer who has higher profits would be better off under a flat tax as compared to a graduated tax system because of the constant marginal tax rate.

Regression results also indicate the debt-to-asset ratio was negative and significant in explaining the total tax difference between the two models. Thus, individuals with higher leverage ratios would be relatively worse off under the flat tax as compared to the current tax system.

Further examination of the difference between the two models showed that roughly 63 percent of the producers would have been better off under the 20% flat tax. Based upon the historical information for the 593 sole proprietors and the tax results generated by the models, if the flat tax would have been in effect, 213 producers would have realized increases in their average total tax liability for the 5 year period. Of the 593 sole proprietors, 376 would have seen an average total tax decrease of \$100 or more over the 5 year period, with a mean total tax savings of \$5,502 for the group. A total of 199 of the sole proprietors would have seen an average total tax increase of \$100 or more during the 5 year period, with a mean total tax increase of \$4,199 for the group. The final 18 sole proprietors realized either a \$100 or less increase or decrease in average total taxes, with a mean total tax of negative \$22.98 for this group.

EFFECTS ON INTEREST RATES

Schuh has argued that “ a sectoral emphasis has caused neglect of the linkages of agriculture with the rest of the economy and underestimation (or underemphasization) of the interrelationships between agriculture and the larger economy (p. 810).” Thus, the total effects of a flat tax cannot be determined solely by changing the tax rate faced by individual farmers and recalculating their tax liability. A flat tax would have significant effects on many factors in the economy including interest rates. Understanding the difference between pre-tax and after-tax interest rates can provide some insight on potential interest rate changes under a flat tax. A comparison of the average interest rate earned on Moody’s Aaa rated state and local bonds, which are tax exempt, and Moody’s Aaa rated corporate bonds, which are taxable, illustrates how taxes affect interest rates.

Although these bonds are secured by different assets, they are roughly in the same risk and return class. The major difference between the two bonds is that state and local bonds are tax exempt, while corporate bonds are taxable, implying that corporate bond rates have accounted for the effects of taxes. The bond rates are listed in Table 4 along with the implied tax rate, which is the tax rate that will make the corporate bond yield equal to the tax-free state and local bond yield after taxes. Multiplying the corporate bond rate by the implied tax rate yields a value, which when subtracted from the corporate bond rate equals the state and local bond rate. Thus, an investor with the implied tax rate will be indifferent between investing in a corporate bond or a state and local bond.

The average Moody’s Aaa state and local bond rate over the last 18 year period was 7.33 percent. The average Moody’s Aaa corporate bond rate during the same 18 year period was 9.84 percent, thus the average implied tax rate was 25.40 percent. These relationships give some indication of interest rate changes that could occur under a flat tax, when all interest rates will be on an after-tax basis. A flat tax would eliminate the deduction for interest paid on debt and the taxability of interest earned on savings, thus placing all interest rates on a tax exempt (after-tax) basis. This removal of the deduction for interest paid would likely have an effect on interest rates. John Golob, an economist with the Kansas City Federal

Reserve Bank, estimates that the elimination of the taxation of interest would cause interest rates to drop close to 25 percent. This study considered three interest rate scenarios; no change in pre-tax rates (an increase of 33 percent in after-tax rates), a 25 percent decrease in pre-tax rates (no change in after-tax rates), and a 12.5 percent decrease in pre-tax interest rates (an increase of 17 percent in after-tax rates).

Regression analysis was used to examine the total tax liability net of alternative interest savings assumptions and the fairness of the flat tax system under the three interest rate scenarios, including any interest savings resulting from decreases in pre-tax interest rates. Table 3 compares regression results for the flat tax under the three interest rate scenarios and also for the current tax system.

Results indicate that net farm income as a percent of total assets was positive and significant in all three interest rate scenarios implying that the tax liability net of interest savings increases as profitability increases. Results show total assets was positive and significant when pre-tax interest rates remain constant and drop up to 12.5 percent. This implies that as farm size increases the tax liability increases as long as pre-tax interest rates do not decline by more than 12.5 percent. The debt-to-asset ratio was positive and significant when the pre-tax interest didn't change but was negative and significant when rates declined by 12.5 and 25 percent. These results imply that highly leveraged farms will pay higher taxes when pre-tax interest rates remain constant, but will be actually better off if interest rates decline by more than 12.5 percent.

Examining the parameter estimates indicates the movement from the current tax system to the flat tax decreases the effect of the net-income-to-total-assets ratio on total taxes by approximately 45 percent. As interest rates drop, the effect remains fairly stable, implying that the effect of the net-income-to-total-assets ratio on total taxes changes very little as interest rates change under the flat tax. The effect of total assets on the total tax liability decreases by 41 percent when moving from the current system to the flat tax system. The parameter estimate for total assets decreases another 45 percent as interest rates decline by 12.5 percent, implying a change in total assets is correlated with a smaller change in total taxes as pre-tax interest rates decline. The effect of a change in the debt-to-asset ratio on the total tax liability changes

tax interest rates drop by 12.5 percent or more, the after-tax capital recovery charge falls below that of the current 15 percent tax bracket, leading producers to invest more. Producers in the current 28 percent tax bracket face higher after-tax capital recovery charges under the flat tax unless interest rates decline by roughly 25 percent. This higher cost will lead them to invest in less capital equipment under the flat tax than under the current system. For the producers in the current 28 percent tax bracket, the switch from the current tax system to a flat tax system, even with a decline in pre-tax interest rates, causes capital investment to decline due to the removal of the deduction for interest and because assets are fully taxed when sold unless rates fall by nearly 25 percent.

CONCLUSIONS

This study evaluated the effect that a Flat Tax proposal would have on Kansas agriculture by comparing the tax liability under the current federal system to that under the flat tax system. The study examined the shift in the tax burden on Kansas farmers from a switch in the tax system, and it evaluated the fairness, the progressivity, and the winners and losers under a flat tax system. The study also assessed the impact of the flat tax on interest rates and capital investment.

Results show the flat tax is progressive as it increased the Federal tax liability at an increasing rate as farm profitability and farm size increased. Results also indicate that the average federal tax paid by farm families would drop from \$10,323 to \$8,181, or approximately 21 percent, under the flat tax proposal and that 63 percent of the producers would benefit from a movement to the flat tax system. Under the flat tax, larger farms and more profitable farms would be relatively better off, while farms with higher leverage ratios would be relatively worse off.

The study examined the effects of a flat tax on interest rates and capital investment by considering three interest rate scenarios: no change, a 12.5 percent decline, and a 25 percent decline in pre-tax interest rates. Results indicate that land values decline by 12.9 percent if pre-tax interest rates are unchanged. Land values increase by 4.4 percent under a 12.5 percent decline in pre-tax interest rates, and land values

increase by 30.4 percent in response to a 25 percent decline in pre-tax rates. Results also show that producers in the 28 percent tax bracket reduce their investment in equipment, on an after-tax basis, in response to the three interest rate scenarios. Producers in the 15 percent tax bracket increase investment if pre-tax interest rates decline by 12.5 percent or more.

Further research into the effects of changes in the Federal income tax system on agriculture could be performed. This research could include allowing investment to vary under the flat tax system and further examining the effects of a flat tax on interest rates. Finally, the amount of revenue raised by the two tax systems could be examined to determine whether the flat tax system, which has lower marginal tax rates, can maintain the same level of revenue as the current tax system.

REFERENCES

- Adams, Roy D., and Neil E. Harl. "The Flat Tax: Some Effects in Agriculture." *Tax Notes* June 5, 1995: pp. 1378-79.
- Armey, Richard. "H. R. 2060." As Introduced in the House of Representatives, July 19, 1995.
- Carmen, Hoy and Michael Boehlje. "Agriculture's Stake in the Federal Income Tax Reform." *Choices* Third Quarter, 1996: pp. 4-7.
- Duncan, Marvin, Won W. Koo, and Richard D. Taylor. "Overhauling the Federal Tax System." *Choices* Second Quarter, 1997: pp. 28-31.
- Elffner, Del A. *The Impact of Proposed Federal Tax Changes on Kansas Agriculture*, Unpublished M.S. Thesis, Department of Agricultural Economics, Manhattan, KS, 1996.
- Featherstone, Allen M. "Taxes and the Market for Farmland." Proceedings from the Competition for Land Seminar. Center for Agriculture in the Environment, De Kalb, IL, February 1997: pp. 3-21.
- Fellows, James A. "A Conceptual Analysis of the Flat Tax." *The CPA Journal* July 1995: pp. 18-22.
- Friedman, Milton. *Free to Choose*. New York: Harcourt Brace Jovanovich, 1980.
- Golob, John E. "How Would Tax Reform Affect Financial Matters?" Federal Reserve Bank of Kansas City, *Economic Review*, 1995, Fourth Quarter, pp. 19-39.
- Hall, Robert E., and Alvin Rabushka. *The Flat Tax*. Stanford, California: Hoover Institution Press, 1985.
- Kansas State University Department of Agricultural Economics. K-State Research and Extension. "Kansas Farm Management Marketing Handbook, KSU Farm Management Guide MF-836.
- National Commission on Economic Growth and Tax Reform. *Unleashing America's Potential*. Washington DC, January 1996.
- Schuh, G. Edward. "The New Macroeconomics of Agriculture." *American Journal of Agricultural Economics*, 58(December 1976):802-11.
- United State Department of Agriculture. *Agricultural Real Estate Taxes*, Updates on Agricultural Resources and Environmental Indicators, Number 11, October 1996.

Table 1. Tax Calculations for the Current and Flat Tax Models

	Current Tax System	Flat Tax System
Without Nonfarm Wages		
Gross Farm Income (Schedule F)	\$392,923.00	\$392,923.00
Plus: Sales of breeding livestock		3,519.00
Plus: Sales of capital assets		5,800.00
Plus: Sales of land		0
Less: Cost basis of livestock sold	214,266.00	
Less: Operating expenses	96,747.00	96,747.00
Less: Depreciation	18,591.00	
Less: Interest paid	2,553.00	
Less: Real estate taxes	1,056.00	1,056.00
Less: Purchases of livestock for resale		221,402.00
Less: Purchases of breeding livestock		1,200.00
Less: Purchases of capital assets		19,549.00
Less: Purchases of land		0
Net farm income	59,710.00	62,288.00
Less: Capital loss	(3,000.00)	
Plus: Other gains	1,310.00	
Less: Net operating losses	0	0
Total Income	58,020.00	62,288.00
Less: Half of self-employment tax	3,924.45	
Adjusted gross income	54,095.55	
Less: Standard deduction	5,450.00	18,370.00
Less: Personal exemptions	12,300.00	17,160.00
Taxable income	36,345.55	26,758.00
Federal income tax	5,958.25	5,351.60
Self-employment tax (15.3%)	7,848.90	5,436.09
Total income and self-employment tax	13,807.15	10,787.69
With Nonfarm Wages		
Nonfarm wages	\$2,890.00	\$2,890.00
Taxable income	39,235.55	29,648.00
Federal income tax	6,767.45	5,929.60
Self-employment tax (15.3%)	7,848.90	5,436.09
Total income and self-employment tax	14,616.35	11,365.69

Table 2. Results for Sole Proprietors in the Current and Flat Tax Models (1990 to 1994)

	Mean	Standard Deviation
Current Model:		
With Nonfarm Wages		
Federal income tax	\$5,945.48	\$10,318.01
Self-employment tax (15.3%)	3,736.74	3,115.80
Social security tax	640.57	1,096.12
Total Tax	10,322.79	12,622.18
Flat Tax Model:		
With Nonfarm Wages and Land Transactions		
Federal income tax	\$5,257.76	\$9,543.74
Self-employment tax (15.3%)*	2,283.11	1,797.37
Social security tax	640.57	1,096.12
Total Tax	8,181.44	10,528.02

*Tax amount stops at the maximum deductible income.

Table 3. Evaluating "Fairness" of each Tax Plan

Variable ¹	-----Flat Tax System-----			
	Current Tax System	No Change in Pre-tax Interest Rates	12.5% Drop in Pre-tax Interest Rates	25% Drop in Pre-tax Interest Rates
R-squared	0.3264	0.3179	0.2725	0.2555
RMSE	10379.53	8712.31	8687.46	8948.25
Intercept	2079.61 (1,446.50)	2621.23 1,183.74	3592.24 (1,180.37)	4563.26 (1,215.80)
DTA	-1627.04* (678.05)	2304.87* (571.27)	-1594.11* (569.64)	-5493.10* (586.74)
NTA	53933* (1,999.48)	29848* (1,002.67)	29637* (999.81)	29425* (1,029.82)
ASSET	0.013724* (0.0006)	0.00816* (0.0005)	0.004547* (0.0005)	0.000934 (0.0005)
AGE	-34.51 (20.20)	-23.00 (16.84)	-11.70 (16.80)	-0.40 (17.30)
DEPD	55.48 (165.60)	-123.06 (139.17)	-104.81 (138.77)	-86.57 (142.94)
ICROP	-474.34 (770.04)	-249.38 (646.29)	-396.70 (644.45)	-544.02 (663.80)
BEEF	-1005.19* (495.05)	-366.75 (414.96)	-665.92 (413.78)	-965.09* (426.20)
DAIRY	-1035.55 (992.98)	-1117.62 (833.72)	-1221.83 (831.34)	-1326.04 (856.30)
HOG	-68.55 (1,334.54)	-1664.64 (1,120.23)	-1512.27 (1,117.04)	-1359.90 (1,150.57)
OTHER	-523.58 (861.12)	456.04 (722.38)	216.24 (720.32)	-23.56 (741.95)

*Denotes variables that are significant at the 5% level.

**Standard errors are in parentheses.

¹Variables are debt-to-asset ratio (DTA), net-farm-income-to-total asset ratio (NTA), total assets (ASSET), age of the operator (AGE), number of dependents (DEPD), and the type of farm operation (ICROP, BEEF, DAIRY, HOG, OTHER).

Table 4. Historical Moody's Aaa Bond Averages and Implied Tax Rates

Year	State and Local Bonds	Corporate Bonds	Implied Tax Rate
1980	7.85%	11.94%	34.25%
1981	10.43	14.17	26.39
1982	10.88	13.79	21.10
1983	8.80	12.04	26.91
1984	9.61	12.71	24.39
1985	8.60	11.37	24.36
1986	6.95	9.02	22.95
1987	7.14	9.38	23.88
1988	7.36	9.71	24.20
1989	7.00	9.26	24.41
1990	6.96	9.32	25.32
1991	6.56	8.77	25.20
1992	6.09	8.14	25.18
1993	5.38	7.22	25.48
1994	5.77	7.97	27.60
1995	5.80	7.59	23.58
1996	5.52	7.37	25.10
1997	5.32	7.27	26.82
Mean	7.33%	9.84%	25.40%

Source: Federal Reserve Bulletin, Various Issues.

Table 5. Capital Investment Results under the Current and Flat Tax Systems

Land Investment		
Interest Rate Assumption	Break-even Land Price	Nominal After-tax Interest Rate
Current 15% Federal tax bracket	\$569.00	7.38%
Current 28% Federal tax bracket	611.00	5.94%
<i>20% Flat Tax</i>		
No change in pre-tax interest rates	532.00	9.00%
12.5% decrease in pre-tax rates	638.00	7.875%
25% decrease in pre-tax rates	797.00	6.75%
Equipment Investment		
Interest Rate Assumption	After-tax CRC	Pre-tax CRC
Current 15% Federal tax bracket	\$2,282.55	\$2,685.35
Current 28% Federal tax bracket	1,778.18	2,469.69
<i>20% Flat Tax</i>		
No change in pre-tax interest rates	2,344.81	2,931.01
12.5% decrease in pre-tax rates	2,105.79	2,632.23
25% decrease in pre-tax rates	1,874.69	2,343.36