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February 26, 1997

IOWA TAX CUT WOULD CREATE 44,000 NEW JOBS, GENERATE $1 BILLION IN NEW CAPITAL

A proposed 15% across-the-board cut in Iowa's income tax rates would create almost 44,000 new jobs and increase the state capital stock by about $1 billion. These findings, detailed in Table 1, are the results of econometric analysis performed by the Beacon Hill Institute.

Table 1
Economic Effects of a 15% Across-the-Board Cut in the Iowa Income Tax

Change in Personal Income	Change in Gross State Product	Change in Jobs	Change in Capital Stock	"Static" Tax Revenue Effect	"Dynamic" Tax Revenue Effect	Net Tax Revenue Effect
$1.809 billion	$2.086 billion	43,864	$1.007 billion	-$254 million	$101 million	-$152 million

BHI's analysis shows that real personal income in Iowa rises about .43% for every 1% decrease in the state's average tax rate.[1] On this basis, a 15% decrease in the personal income tax would bring about a 2.83% rise in gross state product, personal income, employment and the capital stock.

The tax cut would produce a net revenue loss of about $152 million. This is the net result of two effects: (1) the "static" revenue loss (the loss computed on the assumption that the tax cut would have no effect on the Iowa economy) and (2) the "dynamic" revenue gain (the revenue gained as a result of the increased production and personal income that the tax cut would bring about).[2]

The new jobs created by the tax cut would be filled by unemployed residents of Iowa as well as by persons not in the Iowa labor force, including persons from out of state. Because the Iowa unemployment rate is currently about 3.5%, it is likely that most of the new jobs would represent increases in the Iowa labor force.[3]

The tax cut would create new jobs and investment by lowering the cost of labor and of capital. Jobs would likely be created in the construction and manufacturing sectors, inasmuch as weekly earnings in those sectors have exceeded the national average.[4] The tax cut would alleviate or reverse the expected decline in the growth of employment.[5]

A change in state taxes can be expected, as here, to have a substantial effect on employment and production when those taxes are relatively high to begin with. Iowa is, by at least two measures, a high-tax state: (1) Its top marginal tax rate, 9.98% on personal income, is the fifth highest in the nation and higher than that of any of the surrounding seven states; and (2) it ranks eighth among all states in terms of the average annual growth in the ratio of total tax revenues to personal income, over the period 1985-1995.[6]

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[1] The average tax rate is defined as the ratio of all state taxes to state personal income.
[2] The difference between this equation and the reported net revenue effect is due to rounding (see p. 4 for exact calculation).
[3] Unemployment rate obtained from *Iowa Economic Trends,* February 1997, p. 1.
[4] Harvey Siegelman, *Iowa Economic Outlook: A View from the 4th Quarter*.
[5] See Ibid for projections of employment growth decline.
[6] Data obtained from the Tax Foundation.

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Methodology

The Beacon Hill Institute uses state-of-the-art econometric methods in the analysis of state and federal policy changes. It has applied its State Tax Analysis Modeling Program (STAMP) to the study of tax policy in Massachusetts and in Oklahoma.

Our purpose in performing this analysis is to determine the effects of a 15% tax cut on selected economic indicators. To this end we (1) estimate a regression equation to measure how personal income varies with changes in the state's average tax rate and (2) use the coefficients from our regression analysis to simulate the effects of the proposed tax cut.

Glossary

The following variables are used in the estimation of the regression model:

AR(1)	Correction for serial correlation
GDP	U.S. gross domestic product
IINC	Iowa personal income
ITR	Iowa tax ratio (= *T/IINC)*
K	Iowa nonresidential private capital stock
L	Iowa employment
LITR	Log of Iowa tax ratio
$LRIINC_t$	Log of real Iowa personal income in year *t* (at a seasonally adjusted annual rate)
LRUSINC	Log of real U.S. personal income (at a seasonally adjusted annual rate)
LRUSINC(-1)	Log of real U.S. personal income lagged one period (at a seasonally adjusted annual rate)
NCCPI	North Central consumer price index
Q	Iowa gross state product
RIINC	Real Iowa personal income (= *IINC/NCCPI)*
RUSINC	Real U.S. personal income (= *USINC/USCPI)*
T	Actual tax revenues (at a seasonally adjusted annual rate)
USCPI	U.S. consumer price index
USINC	U.S. personal income

Regression Estimation and Results

We estimate the following regression:

(1) $$LRIINC_t = Y_t = \beta_1 LRUSINC_t + \beta_2 LRUSINC_{t-1} + \beta_3 LITR_t + \mu_t .$$

Because of the presence of first-order serial correlation, such that,

(2) $$\mu_t = \rho\mu_{t-1} + \varepsilon_t ,$$

ordinary least squares could be expected to produce consistent but inefficient estimates. In order to obtain efficient results, we correct for serial correlation. Transforming (1), we obtain as our estimating equation:

(3) $$\tilde{Y}_t = \tilde{\beta}_0 + \tilde{\beta}_1 LRUSINC_t + \tilde{\beta}_2 LRUSINC_{t-1} + \tilde{\beta}_3 LITR_t + \rho^t \mu_o ,$$

where

(4) $$\tilde{\mu}_0 = Y_0 - \left(\tilde{\beta}_0 + \tilde{\beta}_1 LRUSINC_0 + \tilde{\beta}_2 LRUSINC_{-1} + \tilde{\beta}_3 LITR_0\right).$$

Ordinary least squares might be inconsistent as well as inefficient because one of the regressors *LITR* is correlated with the error term *e*. This is because the variable *IINC* appears in the denominator of this regressor and in the numerator of the dependent variable. We therefore use an instrumental variables method to estimate equation (3). The results are shown in Table 2.

Table 2
Results of Estimation

Two Stage Least Squares // Dependent Variable is *LRIINC*
Sample Range: 1971.1 - 1995.4
Number of Observations: 100
Instrument List: *C LRUSINC LRUSINC*(-1) *LITR*(-1)

VARIABLE	COEFFICIENT	STD. ERROR	T-STAT	SIG.
C	1.3164703	1.2379041	1.0634671	0.291
LRUSINC	0.6998054	0.2219181	3.1534396	0.002
LRUSINC(-1)	-0.0441245	0.2466847	-0.1788701	0.858
LITR	-0.4277415	0.1480946	-2.8882990	0.005
AR(1)	0.8120791	0.0610336	13.305450	0.000

R-squared	0.935317	Mean of dependent	10.38998
Adjusted R-squared	0.932594	S.D. of dependent	0.091415
S.E. of regression	0.023734	Sum of squared resid	0.053513
Durbin-Watson stat	2.036255	F-statistic	335.6977
Log likelihood	234.7566		

Simulation

We proceed first by estimating the baseline mid-year for FY 1997 values of each economic indicator, using data for Iowa and for the United States and using averages based on those data. Then, based on the coefficient for *LITR* reported in Table 2, we simulate the changes in those indicators that would result from the proposed tax cut.

Assumptions

We use Iowa data for recent years (1990-1992) to determine the ratio of gross state product *GSP* to personal income *IINC*. The baseline Iowa tax ratio *ITR*(0) is an average of recent values (1993-1995) of that ratio. The baseline Iowa capital stock *K*(0) is based on a forecast for Iowa from the REMI model.

(5) Ratio of *GSP* to *IINC* = 1.153.

(6) $ITR(0) = 5.995$.

(7) $K(0) = \$35{,}542{,}000{,}000$.

Determination of Effects

We use a forecast by the Iowa Forecasting Council to determine baseline Iowa personal income:

(8) $IINC(0) = \$63{,}845{,}416{,}000$.

Then, using the foregoing assumptions:

(9) $Q(0) = \$73{,}637{,}612{,}050$.

Iowa employment in December 1996 (seasonally adjusted) was 1,548,200. Thus,

(10) $L(0) = 1{,}548{,}200$.

Given also that the Iowa production function is of the form,

(11) $Q = K^{\alpha} L^{(1-\alpha)}$,

and that capital-to-labor ratio is constant, then

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(12) $\Delta L = \frac{\Delta Q}{Q} L$ and

(13) $\Delta K = \frac{\Delta Q}{Q} K$.

Our baseline tax revenue is $T(0)$ = 5.995*63,845,000=$3,827,739,318. Personal income taxes make up approximately 44.16% of total tax revenues.[7] Therefore, the change in tax revenue given a 15% cut in personal income taxes is $\Delta T(1)$ = .4416*(-.15)*3,827,739,318= -$253,539,000, the change in *ITR* = (-253.539/63,845)*100 = -.39711. Thus the after-tax *ITR* = 5.995 - .39711 = *ITR*(1) = 5.598.

The percentage change in *ITR* = [*ITR*(1)/*ITR*(0) -1]= -6.624. Given a tax elasticity of -.4277, the change in *IINC* is -.06624*(-.4277) = 2.833%. This amount multiplied by *IINC*(0) = $1,808,900,350.

The change in GSP is $\Delta Q(1) = 1.153 * \Delta IINC(1)$ =$2,086,309,440.

The change in employment is $\Delta L(1) = \frac{\Delta Q(1)}{Q(0)} L(0) =$ 43,864.

The change in the capital stock is $\Delta K(1) = \frac{\Delta Q(1)}{Q(0)} K(0) =$ $1,006,981,590.

Also, there is a "dynamic effect" on tax revenues. When personal income rises, more tax revenue is collected = $ITR(1)\Delta IINC(1)$ =$101,266,020. The net tax revenue is the difference between the "static" loss of tax revenues and the "dynamic" gain, or a loss of $152,273,630.

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[7] This is based on an average of estimated personal income tax revenue from FY 1994-1996. We assume that all tax returns are for personal income taxes since income tax returns are the largest portion of all tax returns. Therefore the percentage is actually slightly higher.

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