

Mattoon, Richard; McGranahan, Leslie

**Working Paper**

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Working Paper, No. 2008-15

**Provided in Cooperation with:**

Federal Reserve Bank of Chicago

*Suggested Citation:* Mattoon, Richard; McGranahan, Leslie (2008) : Revenue bubbles and structural deficits: What's a state to do?, Working Paper, No. 2008-15, Federal Reserve Bank of Chicago, Chicago, IL

This Version is available at:

<https://hdl.handle.net/10419/70552>

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Federal Reserve Bank of Chicago

## **Revenue Bubbles and Structural Deficits: What's a state to do?**

*Richard Mattoon and Leslie McGranahan*

WP 2008-15

## Revenue Bubbles and Structural Deficits: What's a state to do?

The 2001 recession proved alarming to state government finances. A relatively shallow national recession led to a severe downturn in state revenues that took three years to unwind. In the current economic downturn, early signs of fiscal stress are already apparent. This raises several fundamental questions:

- Since the mid-1980s the U.S. macroeconomy entered into a period dubbed the “Great Moderation” in which economic volatility was reduced. Has state revenue volatility relative to the business cycle increased during this period?
- Has the composition of state revenues and expenditures made states more susceptible to economic downturns and less likely to rebound in recovery?
- Do states have the appropriate tools to address structural deficits or are they using budgeting techniques designed to address cyclical downturns to fix structural gaps?
- Do the states have appropriate early warning mechanisms to anticipate fiscal stress?

In this paper we will use state specific indicators of economic conditions to examine fiscal performance and budgeting practice over the economic cycle. In particular we will examine the interaction of policy choices in the states of Illinois and Iowa to see how these choices have impacted revenue collections and revenue productivity. Illinois and Iowa have significantly different economic structures and tax structures that should help illuminate what factors affect fiscal conditions. Finally we will offer some observations on how revenue and expenditure structures may need to change if states are going to avoid (or minimize) fiscal downturns.

Richard Mattoon  
Leslie McGranahan  
Federal Reserve Bank of Chicago<sup>1</sup>

Corresponding author contact:  
[Rick.mattoon@chi.frb.org](mailto:Rick.mattoon@chi.frb.org)  
312-322-2428

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<sup>1</sup> The opinions expressed in this paper are the authors' and do not reflect the opinions of the Federal Reserve Bank of Chicago or of the Federal Reserve System.

Throughout the 1990s macro-economists took note of the relative stability of the U.S. business cycle. This seeming reduction in the boom-bust economic cycle that characterized previous U.S. economic history was termed “the great moderation”. Yet against this benign macro-economic backdrop, state governments faced their “greatest crisis since World War II” during the relatively shallow recession of 2001. How was this so? Have broad measures of economic activity somehow become disconnected from state revenue and expenditure performance? Have the state revenue systems evolved into a structure that over-reacts to economic downturns and under responds to recoveries? Is this in fact a self-inflicted wound? Did the trials the states faced in 2001 suggest similar or potential worse strains will emerge in the current economic environment?

In this paper, we will use state specific economic indicators to examine the revenue response of individual states over the business cycle. In doing so we hope to be able to differentiate how the individual state’s economic condition and revenue structure responds to the business cycle. In particular we will trace the history of the tax structure in the states of Illinois and Iowa in an attempt to disentangle how differing industrial structure and public policy choices related to tax structure have affected these states. In doing so we hope to shed light on whether state revenues structures are currently poorly matched to meet the expenditure pressures in the sector.

### **Review of the State response to the 2001 recession**

The 2001 recession represented something of a watershed event for state governments. Maag and Merriman (2003) note that this shallow recession precipitated a fiscal crisis from 2002-2004 that was characterized by a revenue drought rather than

being caused by a rapid expansion in expenditures. As they note, state tax revenue behavior had been strongly correlated with the pattern of recession in 1990 downturn. In that recession, state tax revenues initially fell less than GDP and then recovered about 2 quarters after GDP began to bounce back. In the ensuing quarters of the recovery revenues grew even faster than GDP. This mirrors the more traditional pattern that fiscal analysts expect of state response to the business cycle. Given the lag in tax collections, revenues initially are somewhat protected from a downturn in economic activity. Once the full brunt of the recession is felt, states pass tax changes and the effects of these rate increases cause revenues to surge when the economy recovers. This was not the case in 2001. Revenues fell either as fast or faster than declines in GDP and continued to fall even when GDP growth resumed. Even after 5 quarters of GDP growth revenues continued to lag.

What explains this unusual pattern? A primary culprit was the drop in income tax returns (particularly in capital gains income) that was more pronounced in its effect in 2001 than in 1990. This in turn was blamed on the bursting of the speculative bubble in the stock market. Sjoquist and Wallace (2003) suggest that as states moved to favor raising revenue from income taxes over sales, they have made themselves more susceptible to highly volatile capital gains income. As a percentage of total state tax revenue they find that the individual income tax has gone from 19.1% in 1970 to 36% by 2000. In contrast general sales and gross receipt revenue has stayed reasonably steady ranging from 29.6% in 1970 to 32.2% in 2000. The capital gains component of the income tax is particularly tricky. Not only is it five times as volatile as wage income, it is highly concentrated in high income households. In 2000, 75% of all realized capital

gains were reported by households with federally adjusted gross incomes of over \$200,000. In contrast this income group only accounts for 16% of wage and salary income. As the authors note, the key question is did states that experienced an increase in per capita capital gains larger than the average state increase their susceptibility to the economic downturn?

To test this hypothesis the authors correlated the decline in state tax collections with the per capita 1999 capital gains realizations. The results of this exercise found that states with the more capital gains per capita were more likely to be face declines in tax revenues in FY2001 to FY2002. The correlation coefficient was 0.583 and significant at the 0.01 percent level.

States that had high levels of capital gains reflected in their personal income tax collections in 1999 included California (26.3% of personal income tax collections were from capital gains), Iowa (18.4%), Montana (27.21%), New Jersey (19.4%), New Mexico (18.98%), and New York (16.24%).

### **Other factors at work that might explain revenue performance**

Maag and Merriman also find that states were reluctant to increase major taxes during the 2001 budget crisis. The authors found that states used rainy day funds, money from the tobacco settlement and expenditure cuts to balance their budgets. As figure 1 shows net changes in the three major tax bases (sales, personal income and business income) were exceedingly modest in comparison to the pattern demonstrated in 1990. Figure 2 illustrates net tax changes in smaller tax bases such as tobacco, motor fuel and

other state excise taxes. As can be seen, increases in tobacco taxes were overwhelmingly popular in response to the recession.

Figure 3 illustrates the percentage change in revenues due to tax changes during the 1990-91 period and the 2002-03 period. As can be seen tax changes played a much more active role in closing the fiscal gap across almost all tax bases in the 1990-91 period.

The authors suggest three factors contributed to this behavior: 1) new political constraints; 2) new legal constraints; and 3) unusual access to and appeal of short-term methods of coping. By 2000, no-new tax pledges had become popular with state leaders. Many Governors who had pushed for major tax increases such as James Florio of New Jersey lost re-election campaigns to candidates who promised tax cuts. By the end of the 1990s the level of economic prosperity made tax cutting easy and made the idea of new taxes difficult to sell to the electorate. Second, some states had acted during this period to curb government growth. In 1992, Colorado passed the Taxpayers Bill of Rights that limits revenue growth after adjustments for inflation and population growth. This sort of legal constraint limited any legislative response to an economic downturn. Finally, policy makers found that they had accumulated general account and rainy day fund balances during the late 1990s that allowed them to spend down these resources before having to make tax adjustments. These resources were further augmented by money from the tobacco settlement with many states choosing to securitize their share of the settlement allowing them to spend the money immediately to close budget gaps.

The one problem that this caused is that it may have papered over structural imbalances in state revenue and expenditure systems. While this one-time money

(reserve balances and tobacco money) could balance the budget in the short-run it did not force states to examine whether their revenue structure was in fact productive enough to meet expenditure demands.

### **Other changes to tax bases to consider**

Fox (2003) identifies three characteristics of state tax structures that exacerbated the fiscal crisis of 2001. The factors are: 1) the inelasticity of most tax sources; 2) erosion of the tax base; and 3) tax revenue volatility. In terms of elasticity of major taxes, Fox finds that the overall state tax structure was approximately unit elastic for the aggregate of states primarily due to the highly elastic performance of the personal income tax. These elasticity measures were computed during the business cycle measured from peak to peak from 1988 to 2000 and trough to trough from 1991 to 2002. (table 1) Fox notes that these estimates are not true elasticities since the effects of policy changes such as changes in tax rates or bases have not been excluded. Fox suggests that while recent history is not a good indicator of the future, a reasonable presumption is that tax revenue will grow more slowly in the coming years or at least that the elasticities will be lower than during the last business cycle. The rationale behind this statement includes the probability that personal income tax will see a smaller relative contribution from capital gains and stock options that was the case in 2001 and that the reluctance to raise the general sales tax rate and the trend toward narrowing the base will mute sales tax elasticity.

Tax base erosion is also a factor at play. Fox suggests that sales and corporate tax inelasticity has been significantly affected by tax base changes. This has caused the two



tax bases to perform particularly poorly during economic slowdowns. Fox finds that sales tax revenues fall during recessions and then flatten or rise slightly during recoveries but do not recover to their pre-recession share of personal income. This can be attributed to four causes: 1) cross-border shopping; 2) technological changes; 3) legislated exemptions; and 4) changing purchasing patterns.

Cross-border shopping, as represented through catalog or internet shopping, acts to narrow the sales tax base. Bruce and Fox (2001) estimated that states would lose \$14 billion in 2003 sales tax revenues because of electronic commerce sales. While in theory most of these transactions should be subject to the use tax, evidence suggests that particularly for individuals, use tax compliance is virtually non-existent. Technological changes have also had the effect of moving some previously taxable goods purchases into non-taxed service categories. For example books and music when purchased at a store are taxable but when digitized and downloaded are often tax free. Similarly canned software is taxable but software downloaded from the internet often is not. Also certain new technologies such as e-mail, on-line information and on-line gaming often escape the same tax treatment that their more traditional counterparts might receive.

States have also chosen self-inflicted damage through sales tax exemptions. Popular exemptions include food (30 states) and sometimes clothing exemptions as well as prescription drugs. Some states have experimented with sales tax holidays often timed to coincide with back to school purchases. Perhaps most notable is not the exemptions but the inability to expand the sales tax base to include many services. Fox reports that service consumption grew from 47.8% in 1979 to 58.8% in 2002. When previously taxed goods consumption is replaced by a service, the tax base shrinks and creates inequity in

the treatment of goods relative to services. In particular states have had difficulty expanding sales taxes to growing professional and personal services.

Tax erosion goes beyond the sales tax base and can also be found in corporate income taxes. Fox and Luna (2002) found that the effective corporate income tax rate fell by one-third since the late 1980s even while the simple average nominal rate rose slightly. Corporate income tax base erosion has been caused by legislative base changes, federal tax base shrinkage and corporate tax planning. For example, a popular change has been the elimination of the traditional three factor apportionment formula (sales, property and payroll) in favor of hybrids such as single sales or double-weighted sales factors in the name of promoting in-state economic development. Fox and Luna also find that changes in the federal tax code could account for as much as 30 percent of the erosion in the state corporate effective rate. Since state definitions of taxable income almost always start with the federal definition of profits, changes in the treatment of book income versus taxable income have lowered the federal reporting of company profits which automatically reduces the level of profits subject to state taxation. Finally, tax sheltering behavior particularly related to depreciation and the exercise of stock options has also adversely affected the corporate base.

The final factor cited by Fox is tax revenue volatility. In examining the behavior of the three major tax bases, it is clear that volatility in the income tax base was much to blame for state conditions in response to the 2001 recession. This was due to both the timing of the slowdown relative to the tax years and the importance of non-labor income as a share of the income tax base. Fox notes that one of the challenges in determining the

volatility of tax bases is that the behavior of long-run elasticity measures and short-run elasticities can often vary and are highly sensitive to the time period measured.

## **Empirical Investigation**

Analysts who have examined state revenue performance over the 2001 recession have clearly identified several factors that help explain the sharp drop in revenues that occurred during a relatively mild economic downturn. This poor revenue performance comes during the period of time dubbed by macro-economists as “the great moderation” where fluctuations in the business cycle became less pronounced. As such a principle goal of our empirical work is to consider whether the sensitivity of state revenues has changed when it is directly related to a state specific indicator of economic conditions. We propose to do this across three dimensions—all states aggregated, across time, and by individual state.

## **A word about data**

We investigate the relationship between economic variables and state revenue performance from 1979-2008. For state revenues we use the U.S. Census quarterly data on state government revenues for each state. The series is available from 1962:Q1 to 2008:Q2. The series originally covered only general sales and gross receipts, motor fuel sales, individual income, and motor vehicle taxes. In recognition of the changing revenue structure of the states, the series now covers 25 revenue sources. Appendix A contains further information about this data source.

We select two measures for state specific economic cycles. The first is the coincident indicators index produced by the Federal Reserve Bank of Philadelphia. The coincident indexes combine four state-level indicators to summarize current economic conditions in a single statistic. The four state-level variables in each coincident index are nonfarm payroll employment, average hours worked in manufacturing, the unemployment rate, and wage and salary disbursements deflated by the consumer price index (U.S. city average). The trend for each state's index is set to the trend of its gross domestic product (GDP), so long-term growth in the state's index matches long-term growth in its GDP. The index is produced monthly but for our purposes it has been converted to a quarterly series and is available from 1979:Q1 to 2008:Q2.

The second series we use is nonfarm payroll employment, seasonally adjusted. This provides us with a longer data series that is also state specific and is available from 1947:Q1 to 2008:Q2. For the tables presented in this paper, we only use the employment data for the period from 1979:Q1 to 2008:Q2; in other words for the same period as covered by the coincident indicators.

### **Model Specification**

The model is designed to examine the change in real (GDP deflated) per capita revenue as a function of the change in economic conditions as measured by either the coincident indicators or payroll employment. All changes are measured relative to the same quarter a year prior. We do this because revenue collections for numerous taxes vary dramatically across quarters due to factors related to collection cycles. The model

adds a time trend, and incorporates state specific fixed effects. The equation estimated for state  $i$  at time  $t$  is:

$$\left( \% \Delta \frac{revenue}{population} \right)_{i,t} = \alpha_i + \beta \left( \% \Delta (economic\ conditions)_{i,t} \right) + \delta (year)_t + \varepsilon_{it}$$

We drop observations where year over year changes in collections exceed 500% in absolute value to reduce the role of outliers, the introduction of taxes, or major timing changes. We use the model to estimate the sensitivity of different revenue sources — total sales, income, and other — to changes in the state specific economic conditions for all 50 states. In later tables, we also incorporate some measures of national economic conditions as control variables.

Table 2 displays variable means for the variables used in the analysis. Note revenue amounts are in 2007 GDP deflated dollars. From the table, we observe that states raise approximately \$500 per person per quarter. Revenues have been growing over time. In the average state, revenues grew by 2.8% per year. The state coincident indicators have also been trending up over this period by approximately 3% a year. Payroll employment growth has been somewhat slower. The table also breaks the data into the period before and after 1998. Prior to 1998, income taxes were growing by 5.5% a year, while they slowed to 3.5% in the later period. Revenue from tax sources other than income and sales began to grow more quickly in the later period.

The table includes two indicators of national economic conditions – GDP growth and capital gains reported to the IRS. Capital gains grew by 12% in the average year while the economy grew by 2.9%.

## Findings

In Table 3, Panel A, we present findings measuring economic conditions using the coincident indicators. In Panel B, we present findings based on state payroll employment. We will focus our discussion throughout the remainder of the paper on the findings for the coincident indicators. Each column of each panel represents a different regression where the dependent variable is state per capita revenue from the source listed in the column heading. For instance, the number 0.783 in column 1 of panel A indicates that we find that a 1 percentage point change in the coincident indicator yields a total per capita revenue change of roughly 0.8. The point estimate for the income tax (in column 3) is slightly larger than that for the sales tax (in column 2) or for other revenue (in column 4). The state coincident indicator change has a statistically significant relationship with the change in revenues for all four revenue sources.

One issue with this finding is that revenue may be reacting to national economic conditions that are likely to be highly correlated with state trends rather than state trends themselves. In Table 4, we add two measures of national economic conditions. First we add the previous year's change in total capital gains reported to the IRS.<sup>2</sup> We use data from the previous year because income tax receipts are based on the previous year's gains. Second, we add the year over year change in real GDP over the same quarter a year prior. This controls for general national economic conditions. We find that the coefficients on the change in the coincident indicator fall relative to those presented in Table 3. We also find that capital gains changes predict income tax revenues and total revenues, while GDP changes predict revenue changes for all tax sources – although the results are not statistically significant for the income tax or for other revenues.

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<sup>2</sup> In the future, we hope to add state specific information on capital gains.

These results generate a clearer picture of the nature of the cyclical sensitivity in states. In particular, state revenue growth is sensitive to both national economic conditions and state economic conditions. While we chose to look at two measures of economic conditions that we believed were likely to be related to state specific revenues, we could investigate any number of national measures. In Table 5, we replace the national measures with a full set of state-quarter dummy variables. This allows us to capture all national attributes that affect all states simultaneously. The results are consistent with those in the prior table, namely the sensitivity of all revenue sources to the change in coincident indicators falls with the coefficient in the income tax revenue equation falling by the largest amount.

We have established the link between revenues and economic conditions. Next we turn to the issue of whether this relationship changed as we approached the 2001 recession. To investigate this issue, we incorporate an interaction between the change in state economic conditions and an indicator for whether the observation covers the period from 1998 and after. We do this to see whether the interaction between state economic conditions and revenues is different in the last years of our sample. We choose 1998 because it represents the peak of the previous economic cycle. We obtain similar results for other years of the mid-1990s. The results for the four different measures of revenues and two measures of the economic cycle are presented in Table 6.

We see that overall revenues are more sensitive to economic conditions in the later period than they were in the earlier period. While sales tax revenue sensitivity and other tax revenue sensitivity has been essentially unchanged, income tax revenue sensitivity has nearly doubled. While a one percentage point change in economic

conditions led to a 0.9 percentage point change in income tax revenues prior to 1998, it corresponds to a 1.6 percentage point change during the 1998-2007 period. This confirms the findings of other studies that a change in income tax receipts has dominated revenue patterns. The increase in income tax receipts translates into a statistically significant change in total tax revenues as well.

In Table 7, we add the two measures of national economic conditions that were also included in the regressions presented in Table 4. Controlling for these measures of the national economy, we continue to find an increase in the sensitivity of the income tax. In Table 8, we incorporate an interaction between the change in capital gains and the indicator for whether the data cover a period 1998 or later. We find that income tax revenues and total tax revenues have grown more sensitive to capital gains realizations in the later period. Once we allow for the effect of capital gains to differ, we no longer find a large increase in the sensitivity of income tax revenues to the economy in the coincident indicator regression. In other words, the change in responsiveness to capital gains realizations absorbs the effect of changes in economy sensitivity. From this we conclude that state revenues became more sensitive to state economic conditions in 1998 and after and that this difference can largely be explained by increased sensitivity of the income tax to capital gains realizations.

### **Mapping Individual State Response**

We next investigate these relationships within each of the 50 U.S. states. We estimate the following relationship separately for each state:

$$\left( \% \Delta \frac{revenue}{population} \right)_t = \alpha + \beta \left( \% \Delta (economic\ conditions)_t \right) + \delta (year) + \varepsilon_t$$



We present the estimates of  $\beta$  where economic conditions are measured by the coincident indicators, and indicators of statistical significance, separately for each state by tax revenue source in Table 9.

For total tax revenues, we find that tax revenues increase as coincident indicators increase in all 50 states – the results are statistically significant in 42 of the 50 states. In Table 10, we perform separate regressions by state, adding in the interaction between the state coincident indicators and the 1998 and after dummy. We present results for total tax revenues and income tax revenues. For total tax revenues, we find increased cyclical sensitivity in the form of positive point estimates in 37 states. These increases are statistically significant in 10 states. The results are similar for the income tax: point estimates measuring increased cyclical sensitivity are positive in 36 of the 43 states with an income tax. These positive point estimates are statistically significant in 10 states. A negative statistically significant estimate is found for one state – Mississippi, probably due to a large revenue change in 2002:Q1 resulting from a change in withholding patterns. The ten states with positive and statistically significant increases are Arizona, California, Georgia, Massachusetts, North Carolina, New Jersey, New York, Ohio, Pennsylvania, and Virginia. On first glance, these appear to be among the richer most urbanized states in the country. In the future we aim to look more closely at the group of states where these large increases have occurred.

## **Iowa and Illinois**

### **Charting the tax structures of Illinois and Iowa**

One of the primary problems analysts have in measuring the performance of state tax revenues is the constantly changing revenue structure. States have a tendency to adjust tax rates and bases in good times and bad and this makes consistent comparisons very difficult given that these changes can have a profound impact on the size of the tax base and the sensitivity of revenues to particular economic conditions. As part of this paper, we wanted to take a closer look at the tax structure of the states of Illinois and Iowa in an effort to compare the findings presented in the empirical work with the tax histories of these two states to better identify when significant policy changes influenced revenue collections. In each case we will describe the history of the 3 major tax bases—corporate income, personal income and general sales. We then compare these histories with regression results for these two states.

## **Illinois**

Figure 4 presents a graphical depiction of the revenue history of Illinois based on the quarterly tax data. The following sections go through a more detailed history of the evolution on the tax system for the 3 major bases.

***Corporate income tax (graphed as part of other taxes).*** The tax was enacted in 1969 at a rate of 4%. In response to the double dip recession of the early 1980s, the rate was given a temporary hike to 4.8% from January 1, 1983 to June 30, 1984. The rate then reverted to 4% until July 1, 1989 when it again was raised to 4.8%. This increase was intended to be temporary and was scheduled to be rolled back to 4.4% but on July 1, 1993 the rate was made permanent at 4.8%.

A relatively unique feature of the corporate income tax rate in Illinois is that under the state constitution, the corporate rate cannot exceed the personal income tax rate by a ratio of more than 8 to 5. Illinois has also followed other states in moving away from the traditional UDIPTA three factor apportionment method (equal weights for in-state sales, in-state personnel and in-state property) for reporting multi-state tax liability to a single weighted in-state sales factor. This was phased-in over a two year period from 1998 to 2000.

Other major events in the history of the corporate tax included the 2003 “decoupling” from the federal bonus depreciation (which had been applied to 30% of the cost of some capital assets purchased between September 10, 2001 and September 11, 2004). While Illinois taxpayers were required to add back the depreciation bonus on their Illinois returns, they were permitted to deduct the bonus depreciation in the following years. In 2004, the definition of business income was expanded to include all income that may be treated as apportionable business income under the U.S. Constitution. FY2004 also instituted a tax amnesty program that waived penalties and interest and boosted collections by \$271 million. Like most corporate income taxes, collections have been volatile (Appendix Table B-1).

***Personal Income Tax.*** Illinois individual income tax was also enacted in 1969 in conjunction with the corporate income tax. While the initial rate was a flat 2.5% it also had a number of temporary increases including a bump to 3% from January 1, 1983 to June 30, 1984 before dropping back to 2.5% on July 1, 1984. On July 1, 1989 it rose

back to 3% and while it was scheduled to fall back to 2.75%, it was made permanent at 3% on July 1, 1993. Like the corporate income tax, a tax amnesty program was created in FY2004 that increased collections by \$40 million. The performance of the personal income tax has been smoother than the corporate tax but it is clearly linked to economic conditions with a lag. In fiscal year 2002, the impact on tax collections clearly reflect the 2001 recession's impact with a 6% decline in revenues. (Appendix Table B-2)

***General Sales and Use Tax.*** Illinois has a Sales and Use Tax. The tax actually consists of 2 taxes—the retailers occupation tax and use tax and the service occupation and service use tax. It is applied at a 6.25% of the purchase price except on food and drugs and certain other exemptions. The tax was introduced in 1933 at a rate of 2% and only applied to the retailers' occupation portion of the base. It rose to 3% in 1935 before being reduced to 2% in 1941. The use tax was added in 1955 and the rate for both taxes was initially set at 2.5% before rising to 3% in 1959. The service use and occupation tax was introduced in 1961 and in the ensuing time, the rate for both taxes has rose to 4.25% in 1967, down to 4% in 1969, up to 5% in 1984 before reaching the current rate of 6.25% of 1990. However, of the 6.25% rate 5% represents the state portion with the remaining 1.25% going to localities. The most significant exemption to the tax base occurred on January 1, 1984 when all food not for consumption on the premises and all drugs were exempt from taxation. However when the combined state and local tax rate of 6.25% went into effect in 1990, a 1% tax was imposed on food and drugs with the proceeds going to local governments. Like the other two major taxes a sales tax amnesty was

enacted in FY2004 raising \$101.3 million. Sales tax collections have been less volatile than the other two major bases over recent years (Appendix Table B-3).

### ***Iowa***

Figure 5 depicts Iowa's tax revenues over time. The most striking difference between Iowa and Illinois in terms of tax structure is Iowa's consistent use of graduate rate structures for both the individual income and corporate income tax in contrast to Illinois flat rate structure. The sales tax has similar attributes and is levied at a rate of 6%.

***Corporate income tax.*** The tax is imposed at a rate of 6% on the first \$25,000 of net income from corporations doing business in state or receiving income from property in the state: 8% on the next \$75,000; 10% on the next \$150,000; and 12% on all income over \$250,000. The state also instituted an alternative minimum tax equal to 7.2% of Iowa tax preferences in 1987. The tax also applies to unrelated business income of nonprofits beginning in 1998. (Tax rate history, see Appendix Table C-1)

Iowa is similar to Illinois in using a single factor sales base for apportioning multi-state corporate income. Net tax revenue from the Corporate income tax has been highly volatile (Appendix Table C-2).

In analyzing the corporate income tax performance, the state's legislative research group<sup>3</sup> suggests that volatility in collections has been affected during recession years by provisions that allow firms to take loss carry back and carry forward provisions. In addition declines in FY2002 appeared related to the change in the Federal depreciation allowance (Illinois decoupled from this). Other suggested reasons for reduced performance included:

- Greater use of corporate tax credits including enterprise zones and research credits.
- Incorrect fiscal note assumptions that often fail to fully account for all costs associated with tax law changes
- Slower population growth than the nation as a whole which could act to reduce Iowa sales relative to the rest of the nation that in turn reduces the numerical value of the single weighted apportionment factor.
- Out-of-state purchases particularly internet sales
- Changing corporate tax structure, particularly increased numbers of "C" corporations relative to "S" corporations. This and other limited liability structures allow corporate profits to be taxed as individual income.
- Changes in corporate accounting structure that permits firms to shelter more income from corporate income tax liability.
- Corporate acquisitions that allow the acquiring firm to "net out" the profit of the Iowa firm against the new combined reporting structure.

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<sup>3</sup> Dennis Prouty, Iowa Legislative Service Agency, "Iowa Corporate Income Tax Revenue", <http://www.legis.state.ia.us/Isadocs/IssReview/2004/IRJ WR000.PDF>

***Individual Income Tax.*** The tax is imposed on Iowa net income of individuals, estates and trusts. The threshold for filing is \$9,000 for individuals and \$13,500 for married taxpayers. Iowa has a graduated tax rate structure that since 1998 has ranged from .36% to 8.98%. (Appendix Table C-3). There are 9 brackets starting at .35% on the first \$1,343 of taxable income and ending at 8.98% on taxable income of \$60,436 and above.

The individual income tax is Iowa's single largest tax revenue source. Its performance has demonstrated some volatility. (Appendix Table C-4)

***State Sales Tax.*** The state sales tax rate was raised to 6% on July 1, 2008. The tax is levied on gross receipts from the sales of taxable tangible property and taxable enumerated services. Major exemptions include certain food, prescription drugs, medical devices, farm and industrial machinery, equipment and computers. Since enacted the tax rate has ranged from 2% to the current 6% (Appendix Table C-5)

Revenue performance has been reasonably stable. (Appendix Table C-6). The most notable fluctuation appears to be related to the 2001 recession. This also is evident in the personal income tax collections.

***Other Iowa tax issues.*** Iowa passed a sweeping tax amnesty provision covering all fees and taxes administered by the Department of Revenue for tax liabilities incurred on or before December 31, 2006. The amnesty period ran from September 4 to October 31,

2007. In all the amnesty program raised \$28.3 million with the virtually all of it coming from the three major tax bases.<sup>4</sup>

- Corporate income--\$11.6 million (41% of total)
- Individual income--\$6.6 million (23%)
- Use tax--\$6.1 million (21%)
- Sales tax—2.7 million (9.5%)

### **Comparing Illinois and Iowa.**

The most striking difference between the two states is Iowa's use of progressive tax structures for both corporate and personal income compared to Illinois' flat rate structure. This is a historically persistent in each state. Another difference is Iowa's broader application of sales taxes to service activities. Iowa applies the sales tax to 94 types of services versus Illinois 17. (Table 4)

### **A Tale of Two States**

To better illustrate how the specific tax structure of a particular state has interacted with the economic cycle as measured in this model we will again return to our

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<sup>4</sup> Iowa Department of Revenue, <http://www.state.ia.us/tax/educate/TaxAmnestyReport.pdf>



examination of Illinois and Iowa. Illinois tax structure is biased toward flat rate taxation on both personal and business income. The rates are relatively low (3% on personal income and 4.8% on corporate income) and adjustments to the tax rates are politically difficult given a state constitutional requirement that the rates cannot exceed an 8:5 ratio. In addition Illinois is relatively less reliant on income taxes than Iowa. A breakdown of the three major tax bases finds that 27% of revenues come from sales taxes, 33% from individual income taxes and 10% from corporation income taxes.

In contrast, Iowa has a history of progressive taxation. The current rate for individual income taxes ranges from .36% to 8.98%, while the corporate income tax rate runs from 6% to 12%. The sales tax rate was recently raised to 6% and unlike Illinois, Iowa includes many services in the tax base (94 vs. 17). These differences in tax structure yield a different distribution of total revenues based on source. In Iowa 41% of revenues come from the personal income tax, 27% from sales taxes and only 5% from the corporation tax.

If we return to Table 9, we observe that Illinois has a slightly higher level of revenue responsiveness of 0.762 as compared to Iowa's 0.614. Iowa's sales tax is slightly more responsive than Illinois' while income taxes are similar.

When we look at changes in tax responsiveness over time, we find that Illinois revenues appear to have gotten more responsive to the business cycle while Iowa's have not. This is counterintuitive because Iowa is a higher income tax state with more progressive income taxes. This progressive should allow their income tax to capture more of the income increases that accompanies strong economic conditions. However, Illinois is a wealthier state than Iowa. In 2008:Q2 state per capita income in Illinois was

\$42,000 as opposed to \$36,000 in Iowa. Illinois residents also realize more capital gains than Iowa residents. For tax year 2006, net capital gains in Illinois represented 9% of adjusted gross income as compared to 5% in Iowa. (Internal Revenue Service, 2008). This explanation is consistent with the earlier results for all states in that it points to increased sensitivity to capital gains. We explain to explore these issues further.

### **Interpreting the Results for Making State Budgeting Policy**

The overall results from the model suggest that the revenue crash associated with the 2001 recession should not have been unexpected. As a group the move to favor income taxes as a revenue source has made states far more likely to react to the business cycle. In addition the increasing sensitivity to capital gains led to a drop in revenues corresponding to the 2001 drop in the stock market. This would explain why the state reaction to the relatively mild 2001 recession was so severe. This also can explain why many commentators and state government officials are concerned about recent drop in stock market indices. The 16% drop in the S&P 500 index and 46% drop in the NASDAQ in 2001 corresponded to a 47% drop in capital gains reported to the IRS for tax year 2001. As of the end of October 2008, the NASDAQ was down 40% over the prior October and the S&P 500 down 37%.

One key question is what could policymakers do about this? The states have some options. One possibility is to reduce the responsiveness of the overall tax base. To an extent Iowa is already pursuing this option by raising its sales tax rate this year. Increasing the relative revenue importance of this more stable tax base will act to reduce some of the overall responsiveness. A second option is to recognize that this more

responsive tax system could be a benefit if you take measures to guard against a downturn. A mechanism such as a properly funded Rainy Day Fund could be a perfect tool for a state with highly responsive tax structures. Since revenues will surge during an upswing in the business cycle the state simply needs to put away enough reserves to protect against a downturn. Rainy day funds have always been intended to serve as cyclical insurance for states. States could also appeal to capital market innovations to hedge against their risk.

## **Conclusion**

In this paper we have found that state revenues have become more responsive to changes in economic conditions and this has been driven by an increasing reliance on the income tax. This is neither good nor bad assuming that states recognize this trend and establish appropriate cyclical circuit breakers to protect against revenue downturns.

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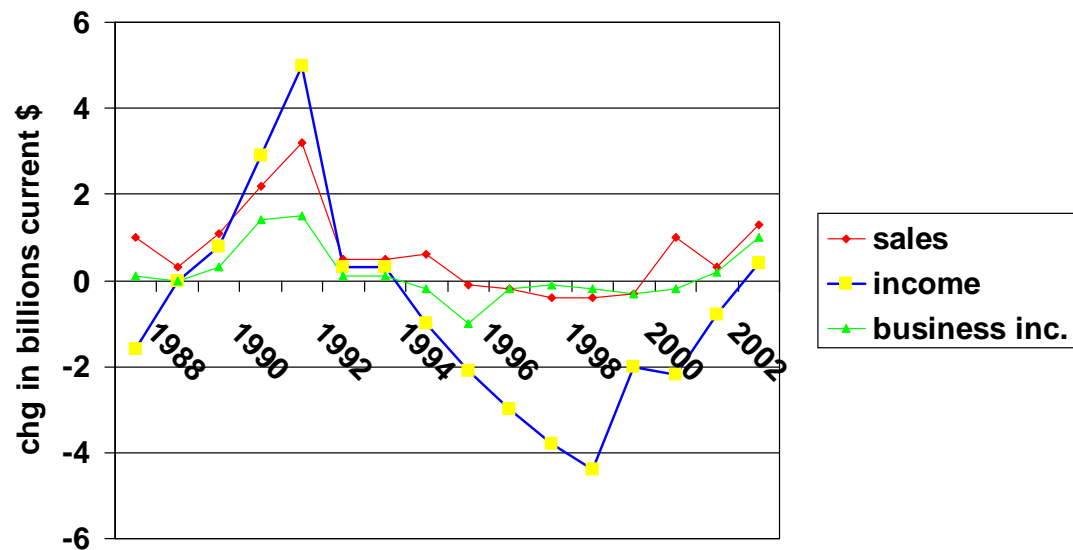
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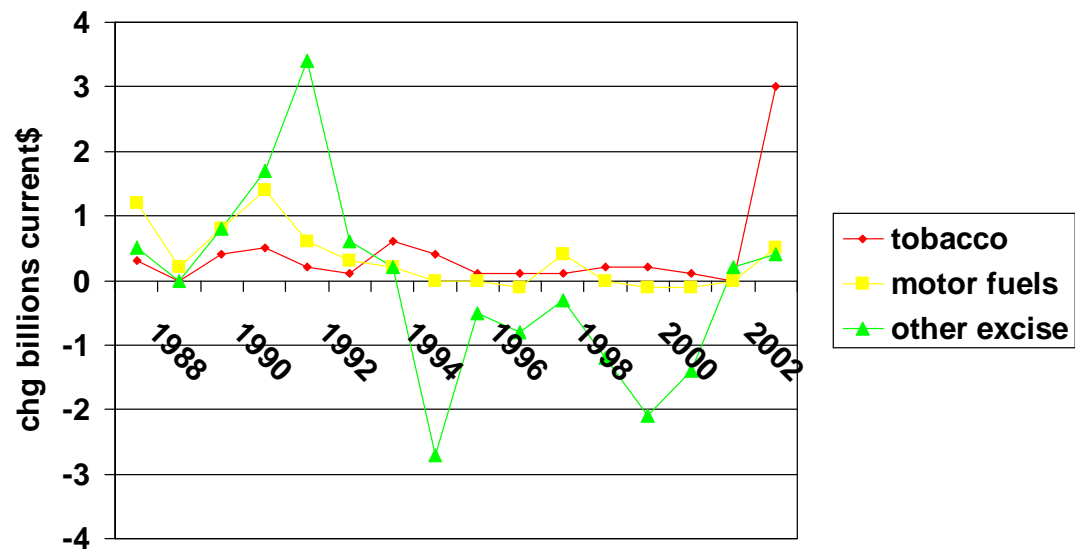
U.S. Census Bureau, State Government Finances, various years,  
<http://www.census.gov/govs/www/state.html>

Figure 1. Net Policy Changes in State Sales and Income Taxes FY1988-FY2003



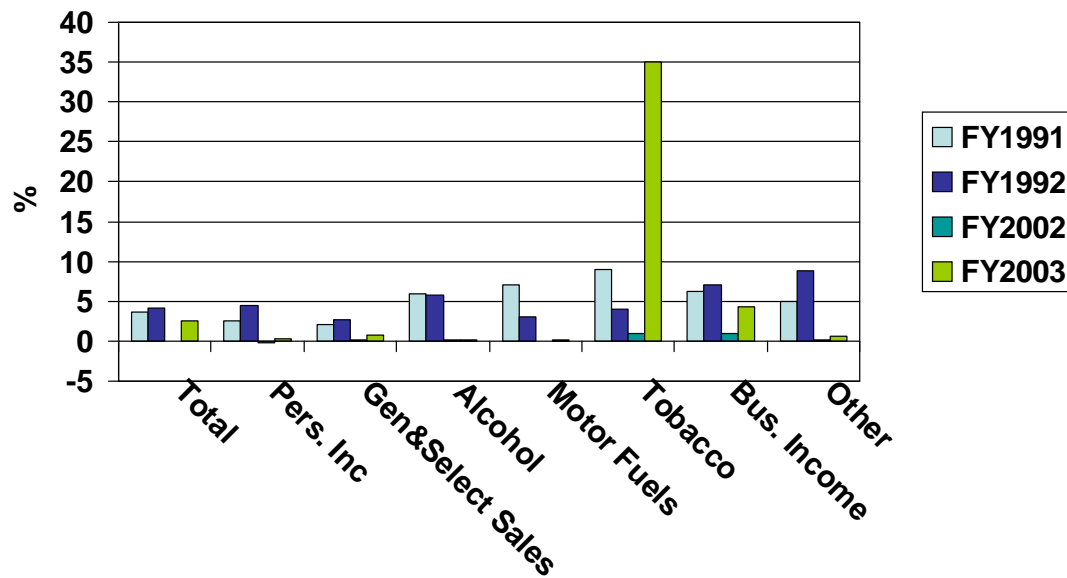
Source: Elaine Maag and David Merriman, "Tax Responses to Revenue Shortfalls", State Tax Notes, November 3, 2003 p. 399.

Figure 2. Net Policy Changes in Tobacco, Motor Fuel, and Other State Excise Taxes, FY 1988-FY2003



Source: Elaine Maag and David Merriman, "Tax Responses to Revenue Shortfalls", State Tax Notes, November 3, 2003 p. 400.

Figure 3. Fiscal Year Net Tax Changes as a Share of Prior Calendar Year Revenue in Two Recessions, FY1991, FY1992, FY2002, FY2003



Source: Elaine Maag and David Merriman, "Tax Responses to Revenue Shortfalls", State Tax Notes, November 3, 2003 p. 401.

Figure 4: Tax History of Illinois

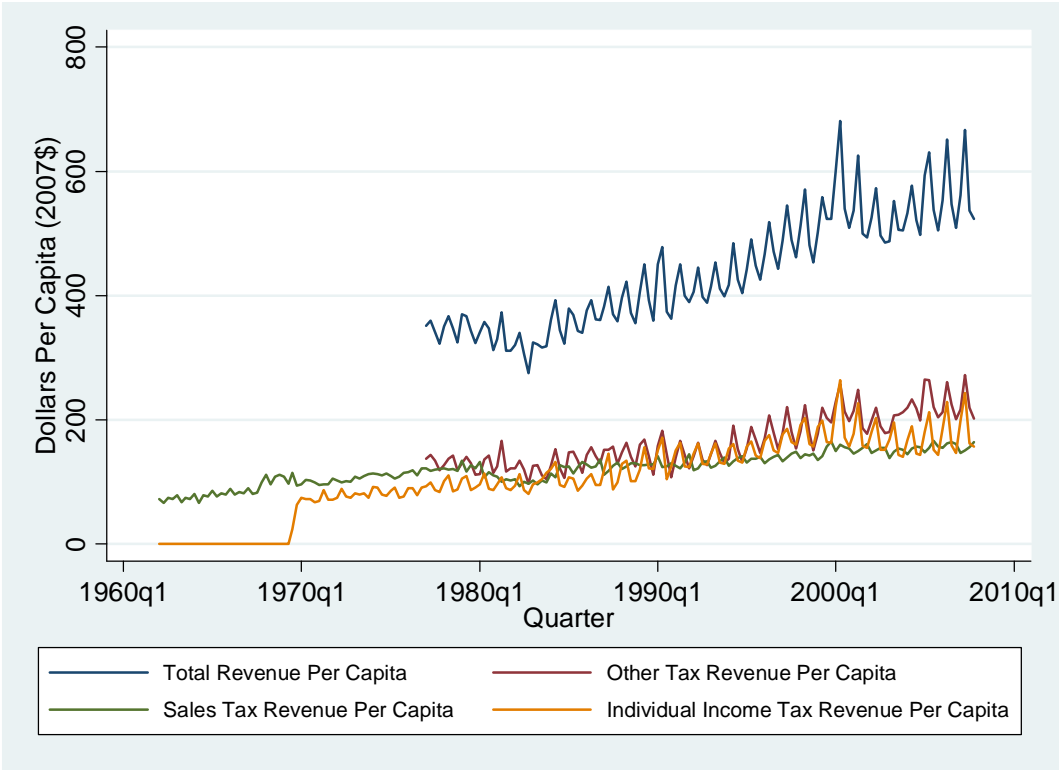




Figure 5: Tax History of Iowa

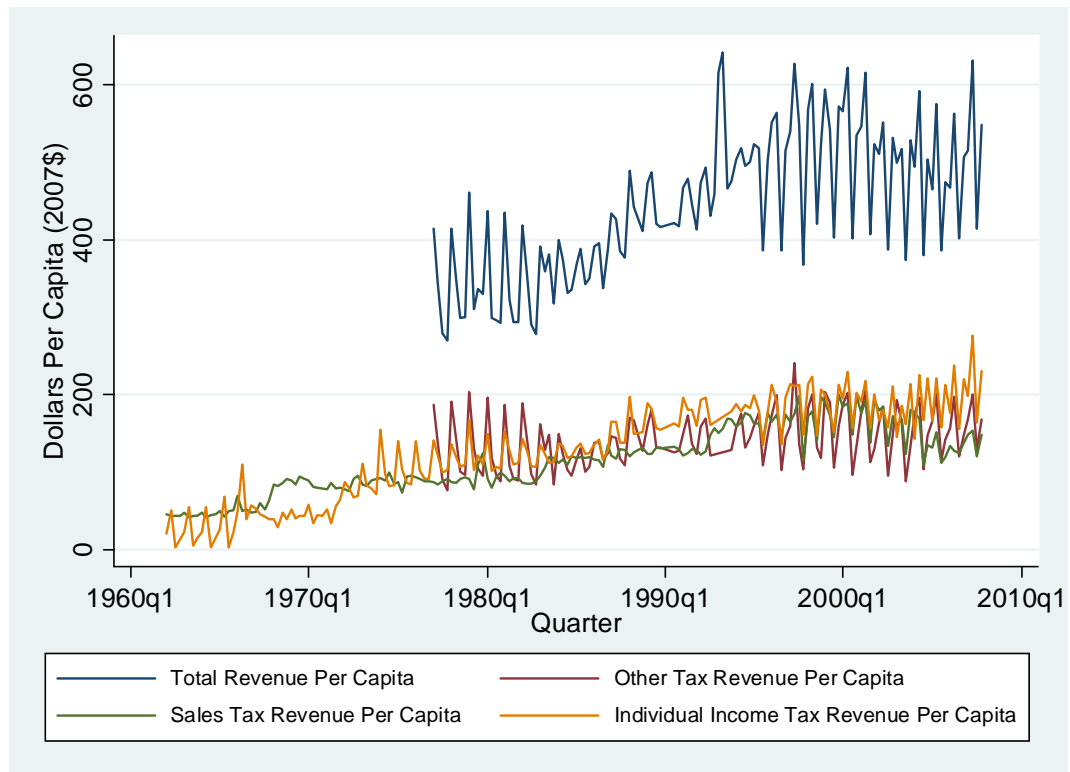


Table 1. Aggregate State Revenue Elasticities

Year	1998-2000	1991-2002
Total Tax Revenue	1.06	0.93
Personal Income	1.32	1.12
General Sales	1.03	0.96
Selective Sales	0.86	0.75
Corporate Income	0.59	0.45

Source: William F. Fox, "Three Characteristics of Tax Structures Have Contributed To the Current State Fiscal Crisis", State Tax Notes, November 2003, p. 374.

Table 2: Variable Means

Table of Means: 1980:Q1-2007:Q4

	Full Sample	Through 1997	1998 and After	Iowa	Illinois
Total Revenue Per Capita	\$ 494.19	\$ 441.60	\$ 584.69	\$ 455.57	\$ 446.19
Sales Tax Revenue Percapita	\$ 149.78	\$ 133.22	\$ 178.18	\$ 140.22	\$ 134.10
Income Tax Revenue Per Capita	\$ 146.15	\$ 122.57	\$ 186.34	\$ 168.14	\$ 143.68
Other Revenue Per Capita	\$ 198.63	\$ 185.96	\$ 220.16	\$ 144.36	\$ 168.41
Percent Change in Total Revenue Per Capita over Same Quarter a Year Prior	2.80	2.78	2.83	1.96	1.93
Percent Change in Sales Tax Revenue Per Capita over Same Quarter a Year Prior	2.52	2.69	2.23	2.23	0.95
Percent Change in Income Tax Revenue Per Capita over Same Quarter a Year Prior	4.79	5.52	3.53	2.65	2.87
Percent Change in Other Tax Revenue Per Capita over Same Quarter a Year Prior	1.61	2.28	3.16	1.75	2.50
Percent Change in State Coincident Indicators over Same Quarter a Year Prior	2.96	3.14	2.66	2.29	2.25
Percent Change in State Payroll Employment Over Same Quarter A Year Prior	1.61	1.83	1.24	0.99	0.75
Percent Change in Capital Gains Reported in AGI for Prior Year	12.06	11.16	13.60	13.25	12.09
(St. Dev. Of Percent Change in Capital Gains)	24.68	22.84	27.51	25.03	24.99
Percent Change in GDP	2.92	2.97	2.85	2.98	2.92
(St. Dev. Of Percent Change in GDP)	1.93	2.23	1.25	1.91	1.93

Differences in National Variables in Illinois and Iowa are due to missing data for Iowa

Table 3: Overall Sensitivity of Revenue Sources to Change in Economic Conditions

Panel A: State Coincident Indicators

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Coincident Indicator	0.783*** (0.0666)	0.846*** (0.0793)	0.944*** (0.171)	0.714*** (0.0855)
Constant	-14.60 (51.29)	92.77 (59.45)	274.7** (125.5)	-114.0 (70.04)
Observations	5442	4900	4696	5360
Includes year trend, state dummies newey-west standard errors				
*** p<0.01, ** p<0.05, * p<0.1				
Standard errors in parentheses				

Panel B: State Payroll Employment

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Employment	1.255*** (0.113)	1.263*** (0.149)	1.456*** (0.294)	1.186*** (0.146)
Constant	-62.27 (50.74)	48.17 (59.78)	219.3* (123.4)	-157.3** (68.77)
Observations	5442	4900	4696	5360
*** p<0.01, ** p<0.05, * p<0.1				
Includes year trend, state dummies newey-west standard errors				
Standard errors in parentheses				

Table 4: Sensitivity of Revenue Sources to Change in Economic Conditions, Incorporating National Level Data  
Panel A: State Coincident Indicators

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Coincident Indicator	0.583*** (0.111)	0.560*** (0.109)	0.455 (0.290)	0.617*** (0.151)
Prior Year's Percent Change in Capital Gains in AGI (Real)	0.0201** (0.00789)	0.000391 (0.0125)	0.0723*** (0.0171)	-0.0108 (0.0117)
Year over Year Percent Change in Real GDP	0.440*** (0.169)	0.782*** (0.177)	0.826 (0.543)	0.368 (0.247)
Constant	-7.823 (50.59)	95.24 (58.02)	300.1** (124.8)	-115.6* (69.43)
Observations	5442	4900	4696	5360

Includes year trend, state dummies, newey-west standard errors  
Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel B: State Payroll Employment

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Employment	0.908*** (0.175)	0.750*** (0.200)	0.603 (0.443)	1.013*** (0.240)
Prior Year's Percent Change in Capital Gains in AGI (Real)	0.0214*** (0.00779)	0.00296 (0.0127)	0.0746*** (0.0168)	-0.0103 (0.0116)
Year over Year Percent Change in Real GDP	0.509*** (0.157)	0.919*** (0.170)	0.945* (0.501)	0.412* (0.234)
Constant	-41.41 (49.80)	69.81 (59.12)	278.1** (124.3)	-152.1** (67.08)
Observations	5442	4900	4696	5360

Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Includes year trend, state dummies, newey-west standard errors

Table 5: Sensitivity of Revenue Sources to Change in Economic Conditions, Year-Quarter Dummy Variables

Panel A: State Coincident Indicators

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Coincident Indicator	0.644*** (0.130)	0.632*** (0.128)	0.469 (0.346)	0.687*** (0.175)
Constant	0.754 (3.191)	0.551 (2.692)	14.60 (9.304)	3.479 (4.092)
Observations	5442	4900	4696	5360

Includes year-quarter dummies, state dummies, newey-west standard errors  
Standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel B: State Payroll Employment

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Employment	1.052*** (0.212)	0.951*** (0.240)	0.683 (0.545)	1.191*** (0.293)
Constant	2.574 (2.707)	5.456 (5.492)	-32.22** (13.90)	0.202 (3.334)
Observations	5442	4900	4696	5360

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Standard errors in parentheses  
Includes year-quarter dummies, state dummies, newey-west standard errors

Table 6: Sensitivity of Revenue Sources to Change in Economic Conditions, Before 1998 and 1998 and After

Panel A: State Coincident Indicators

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Coincident Indicator	0.750*** (0.0685)	0.829*** (0.0856)	0.856*** (0.180)	0.709*** (0.0884)
Change in Coincident Indicator 1998 and After	0.270** (0.115)	0.138 (0.198)	0.736*** (0.220)	0.0377 (0.175)
Constant	49.75 (61.93)	128.5* (69.84)	448.4*** (137.2)	-106.4 (79.84)
Observations	5442	4900	4696	5360

Includes year trend, state dummies, newey-west standard errors

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel B: State Payroll Employment

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Employment	1.187*** (0.118)	1.246*** (0.161)	1.262*** (0.315)	1.172*** (0.157)
Change in Payroll Employment 1998 and After	0.493** (0.213)	0.113 (0.379)	1.387*** (0.398)	0.100 (0.287)
Constant	-8.598 (56.27)	62.26 (67.12)	360.8*** (129.3)	-149.4** (70.39)
Observations	5442	4900	4696	5360

Standard errors in parentheses

Includes year trend, state dummies, newey-west standard errors

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 7: Sensitivity of Revenue Sources to Change in Economic Conditions, Before 1998 and 1998 and After, Incorporating National Level Data

Panel A: State Coincident Indicators

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Coincident Indicator	0.564*** (0.111)	0.546*** (0.111)	0.416 (0.294)	0.608*** (0.152)
Change in Coincident Indicator 1998 and After	0.205* (0.120)	0.154 (0.200)	0.465** (0.223)	0.0944 (0.183)
Prior Year's Percent Change in Capital Gains in AGI (Real)	0.0160* (0.00832)	-0.00273 (0.0126)	0.0630*** (0.0174)	-0.0128 (0.0123)
Year over Year Percent Change in Real GDP	0.454*** (0.170)	0.792*** (0.176)	0.851 (0.544)	0.374 (0.249)
Constant	39.99 (62.50)	134.8* (70.06)	407.4*** (135.0)	-94.55 (80.88)
Observations	5442	4900	4696	5360

Standard errors in parentheses  
Includes year trend, state dummies, newey-west standard errors  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel B: State Payroll Employment

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Employment	0.711*** (0.160)	0.613*** (0.128)	0.839** (0.342)	0.732*** (0.218)
Change in Payroll Employment 1998 and After	0.364* (0.220)	0.449 (0.383)	1.304*** (0.433)	0.221 (0.295)
Prior Year's Percent Change in Capital Gains in AGI (Real)	0.0213*** (0.00810)	0.00376 (0.0109)	0.0435** (0.0210)	-0.00610 (0.0120)
Year over Year Percent Change in Real GDP	0.523*** (0.156)	0.793*** (0.134)	0.705** (0.340)	0.430* (0.234)
Constant	-59.61 (55.53)	214.2*** (46.44)	506.2*** (92.35)	-188.2** (74.46)
Observations	5848	7781	7364	5766

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Standard errors in parentheses  
Includes year trend, state dummies, newey-west standard errors



Table 8: Sensitivity of Revenue Sources to Change in Economic Conditions, Before 1998 and 1998 and After, Incorporating National Level Data, Change in Capital Gains

Panel A: State Coincident Indicator

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Coincident Indicator	0.582*** (0.111)	0.549*** (0.113)	0.436 (0.296)	0.620*** (0.153)
Change in Coincident Indicator 1998 and After	-0.0500 (0.159)	0.121 (0.285)	0.184 (0.255)	-0.0788 (0.235)
Prior Year's Percent Change in Capital Gains in AGI (Real)	-0.00542 (0.0103)	-0.00542 (0.0178)	0.0405* (0.0236)	-0.0273* (0.0164)
Change in Capital Gains 1998 and After	0.0548*** (0.0178)	0.00697 (0.0283)	0.0584* (0.0348)	0.0371 (0.0257)
Year over Year Percent Change in Real GDP	0.501*** (0.169)	0.798*** (0.181)	0.900* (0.541)	0.406 (0.248)
Constant	43.32 (61.87)	135.1* (69.64)	411.6*** (135.6)	-92.38 (80.52)
Observations	5442	4900	4696	5360

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Includes year trend, state dummies, newey-west standard errors

Panel B: State Payroll Employment

VARIABLES	(1) totrev_pop	(2) salesrev_pop	(3) incomerev_pop	(4) otherrev_pop
Year over Year % Change in Employment	0.885*** (0.177)	0.739*** (0.203)	0.530 (0.459)	1.001*** (0.250)
Change in Payroll Employment 1998 and After	0.0263 (0.279)	0.0639 (0.542)	0.521 (0.425)	-0.00871 (0.370)
Prior Year's Percent Change in Capital Gains in AGI (Real)	-0.00143 (0.0100)	-0.00213 (0.0175)	0.0448* (0.0231)	-0.0235 (0.0160)
Change in Capital Gains 1998 and After	0.0465*** (0.0173)	0.00885 (0.0297)	0.0486 (0.0323)	0.0276 (0.0244)
Year over Year Percent Change in Real GDP	0.571*** (0.158)	0.933*** (0.174)	1.027** (0.500)	0.448* (0.236)
Constant	14.58 (55.24)	89.93 (64.96)	387.0*** (133.1)	-123.3* (70.23)
Observations	5442	4900	4696	5360

Includes year trend, state dummies, newey-west standard errors

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Standard errors in parentheses

Table 9: State by State Estimates of Sensitivity to Coincident Indicators

		Total Tax Revenues	Sales Tax Revenue	Income Tax Revenue	Other Tax Revenue
		Year over Year % Change in Coincident Indicator	Year over Year % Change in Coincident Indicator	Year over Year % Change in Coincident Indicator	Year over Year % Change in Coincident Indicator
	State				
(1)	AK	1.122	No Tax	0.710	1.104
(2)	AL	0.547***	0.721***	0.322	0.499**
(3)	AR	1.073***	1.731***	0.489	0.911
(4)	AZ	1.067***	1.798***	0.155	0.738**
(5)	CA	1.634***	0.847**	2.649***	0.877**
(6)	CO	1.571***	1.704***	1.538**	0.926
(7)	CT	0.424	1.134***	-1.243	0.310
(8)	DE	0.833***	No Tax	0.648	1.091***
(9)	FL	1.117**	1.074	No Tax	1.207***
(10)	GA	1.167***	1.096***	1.040***	1.291***
(11)	HI	1.350***	1.269***	1.500	1.386*
(12)	IA	0.614**	1.010***	0.744**	0.350
(13)	ID	1.081***	-0.774	1.400**	1.011***
(14)	IL	0.762***	0.877***	0.769***	0.636**
(15)	IN	1.239***	0.853***	1.834***	1.436***
(16)	KS	0.687***	0.513**	0.542	0.779**
(17)	KY	0.544***	0.799***	0.544**	0.680
(18)	LA	0.848**	0.168	1.285	0.961**
(19)	MA	0.820*	1.492***	0.910***	0.856*
(20)	MD	0.643**	0.852	0.858	0.908**
(21)	ME	0.845***	0.653***	0.837***	0.865***
(22)	MI	0.965***	0.959***	1.188***	0.838***
(23)	MN	0.705***	1.078	0.525	0.842***
(24)	MO	0.923***	1.073***	0.795***	0.848***
(25)	MS	0.802**	0.894*	-0.378	0.773**
(26)	MT	0.903*	No Tax	0.525	0.833
(27)	NC	1.010***	0.792***	1.141***	1.010***
(28)	ND	3.385***	2.042**	4.989	4.504***
(29)	NE	0.432	0.0902	0.411	0.448
(30)	NH	0.277	No Tax	3.663**	0.173
(31)	NJ	0.452	0.594*	0.628	-0.0451
(32)	NM	1.702***	1.716***	4.377	0.948
(33)	NV	0.334	0.929	No Tax	-0.0712
(34)	NY	0.809**	0.710***	1.653***	-1.080
(35)	OH	0.361**	0.626***	0.180	0.0137
(36)	OK	1.371***	1.390***	1.680***	1.261***
(37)	OR	0.640**	No Tax	0.684	0.667**
(38)	PA	0.178	0.441***	0.157	-0.135
(39)	RI	0.454*	1.307***	0.299	-0.594
(40)	SC	0.825***	0.773**	0.690	0.816**
(41)	SD	0.877**	-1.544	No Tax	2.062
(42)	TN	1.200***	1.360***	0.0158	1.112***
(43)	TX	1.240***	1.098***	No Tax	1.353***
(44)	UT	1.385*	1.905*	1.073	2.099**
(45)	VA	1.123***	0.813**	1.053**	1.178***
(46)	VT	0.752*	0.564*	0.598*	1.069
(47)	WA	0.353*	0.563*	No Tax	0.192
(48)	WI	0.916	0.282	2.011*	0.130
(49)	WV	0.536***	0.303	0.863	1.030**
(50)	WY	1.637***	1.669***	No Tax	2.331*

Table 20: State by State Estimates of Sensitivity to Coincident Indicators, Over Time:  
Total Tax Revenue and Income Tax Revenue

		Total Tax Revenues		Income Tax Revenues	
	State	Year over Year % Change in Coincident Indicator	Change in Coincident Indicator 1998 and After	Year over Year % Change in Coincident Indicator	Change in Coincident Indicator 1998 and After
(1)	AK	1.443	-10.41	0.710	Repealed
(2)	AL	0.483***	0.648*	0.165	1.578
(3)	AR	1.024***	1.343**	0.450	1.050
(4)	AZ	1.021***	0.295	-0.316	3.055***
(5)	CA	1.399***	0.814*	2.050***	2.079**
(6)	CO	1.508***	0.201	1.223	0.987
(7)	CT	0.352	0.317	-1.694	1.911
(8)	DE	0.765**	0.389	0.629	0.106
(9)	FL	1.080**	0.163	No Tax	
(10)	GA	1.096***	0.374*	0.824***	1.136***
(11)	HI	1.280***	0.346	1.383	0.578
(12)	IA	0.600*	0.223	0.743**	0.0194
(13)	ID	1.082***	-0.0140	1.383**	0.266
(14)	IL	0.722***	0.294	0.671**	0.721
(15)	IN	1.242***	-0.0401	1.887***	-0.640
(16)	KS	0.726***	-0.217	0.347	1.072
(17)	KY	0.514**	0.377	0.543**	0.0174
(18)	LA	1.117***	-1.026	0.703	2.214
(19)	MA	0.694	0.615	0.627**	1.373**
(20)	MD	0.633**	0.0995	1.057	-2.020
(21)	ME	0.857***	-0.0880	0.716**	0.865
(22)	MI	0.958***	0.0698	1.056**	1.250
(23)	MN	0.651***	0.593	0.513	0.131
(24)	MO	0.962***	-0.401	0.760***	0.358
(25)	MS	0.850**	-0.630	0.155	-7.029*
(26)	MT	0.974*	0.430	0.544	0.114
(27)	NC	1.012***	-0.00988	0.978***	0.861**
(28)	ND	3.450***	2.928**	4.909	2.408
(29)	NE	0.437	-0.595	0.409	0.205
(30)	NH	0.339	-0.559	4.022**	-3.083
(31)	NJ	0.149	1.625***	0.0389	3.161***
(32)	NM	1.699***	0.363	4.437	-1.847
(33)	NV	0.135	0.914	No Tax	
(34)	NY	0.324	1.405**	0.768	2.560***
(35)	OH	0.292*	1.171**	0.0630	1.971**
(36)	OK	1.372***	-0.00348	1.702***	-0.121
(37)	OR	0.521*	0.721	0.528	0.948
(38)	PA	0.151	0.414	0.0876	1.063*
(39)	RI	0.430*	0.217	0.205	0.852
(40)	SC	0.768***	0.287	0.448	1.211
(41)	SD	0.883**	-0.612	No Tax	
(42)	TN	1.196***	0.104	-0.142	3.745
(43)	TX	1.183***	0.271	No Tax	
(44)	UT	1.330*	0.934	0.997	1.283
(45)	VA	0.946***	0.957*	0.721	1.792**
(46)	VT	0.453	2.403**	0.500	0.782
(47)	WA	0.285	0.391	No Tax	
(48)	WI	0.882	0.347	1.817*	1.995
(49)	WV	0.537***	0.485	0.864	0.177
(50)	WY	1.623**	0.210	No Tax	

Table 11. Service Taxation in Illinois and Iowa

Type of Service	Illinois	Iowa
Utilities	12	13
Personal Services	1	15
Business Services	1	18
Computer Services	1	1
Admissions/ Amusements	0	13
Other	1	20
Total	17	94

Source: Federation of Tax Administrators, "Are you being served?" Tax Administrators News, May 2005.

## APPENDIX A: Detailed Information about the Quarterly Summary of State and Local Tax Revenues

The Quarterly Summary of State and Local Tax Revenues was first collected by the Census Bureau in 1962:Q1. For 1962: Q1- -1963:Q3, state revenues are reported for five revenue sources: General sales and gross receipts, Motor fuel sales, Individual income, Corporation net income, and Motor vehicle and operators' licenses. (1962:Q4 Corporate Tax Revenues are not reported, but can be backed out from annual 1962 numbers). For 3-4 of the 36 states with both a corporate and individual income tax, a breakdown between individual and corporate income taxes is not available, only a combined income tax number.

Beginning in 1963: Q4, the corporation income tax number is no longer reported. From 1963:Q4-1976:Q4, four revenue sources continue to be reported (General sales and gross receipts, Motor fuel sales, Individual income, and Motor vehicle and operators' licenses.) For a couple states, the reported income tax number include corporate income tax revenues as well:(Alabama: 1963:Q4-1969:Q1; Arizona: 1963:Q4;Georgia: 1963:Q4; Louisiana 1964:Q2-1964:Q4; Missouri: 1963:Q4-1969:Q1; New Mexico: 1963:Q4-1967:Q1; North Dakota: 1963:Q4-1964:Q3; 1966:Q1-1968:Q1). By 1969: Q2 no state income tax numbers include corporate income taxes.

In 1977:Q1 the survey was expanded to cover seven tax sources (General sales and gross receipts, Motor fuel sales, Individual income, Motor vehicle and operators' licenses, Corporate Income, Alcoholic Beverages, Tobacco Product Sales). The survey also reports Total tax collections which combines the seven listed sources and other tax

revenue sources. This coverage continues through 1992:Q2. We have similar data for 1993:Q3 and 1993:Q4.

From 1992:Q3-1993:Q2 this data is not reported by the Census Bureau due to “staff shortages”. However, the Census sent us unpublished data for 1992:Q3 and we are able to back out approximations, and in some cases data from year to date and year-end totals from the 1993 and 1994 releases.

From 1994:Q1-present. The Census Bureau reports data for 26 revenue sources. Data for 22 of these 26 sources is also available in the 1992:Q3 data sent to us.

## Appendix B: Information about the Tax Structure in Illinois

Table B1. Illinois Corporation Income Tax Collections

Fiscal Year	Receipts (millions)	Change
1997	\$1,361.4	12.7%
1998	1,402.0	3.0
1999	1,384.7	-1.2
2000	1,527.4	10.3
2001	1,279.1	-16.3
2002	1,042.7	-18.5
2003	1,011.6	-3.0
2004	1,426.0	41.0
2005	1,548.1	8.6
2006	1,784.3	15.3

Source: Illinois General Assembly, Legislative Research Unit, "Illinois Tax Handbook for Legislators" 23<sup>rd</sup> edition, July 2007. p.55.

Table B2. Illinois Personal Income Tax Collections

Fiscal Year	Receipts (millions)	Change
1997	\$6,551.5	7.9%
1998	7,268.4	10.9
1999	7,778.0	7.0
2000	8,264.2	6.3
2001	8,606.9	4.1
2002	8,085.9	-6.1
2003	7,979.3	-1.3
2004	8,236.1	3.2
2005	8,872.5	7.7
2006	9568.0	7.8

Source: Illinois General Assembly, Legislative Research Unit, "Illinois Tax Handbook for Legislators" 23<sup>rd</sup> edition, July 2007. p. 59

Table B3. Illinois General Sales and Use Tax Collections

Fiscal Year	Receipts (millions)	Change
1997	\$5,313.6	1.3%
1998	5,768.9	8.6
1999	6,124.1	6.2
2000	6,602.0	7.8
2001	6,531.8	-1.1



2002	6,617.0	1.3
2003	6,563.4	-0.8
2004	6,922.6	5.5
2005	7,190.3	3.9
2006	7,763.1	8.0

Source: Illinois General Assembly, Legislative Research Unit, "Illinois Tax Handbook for Legislators" 23<sup>rd</sup> edition, July 2007. p. 114.

## Appendix C: Information about the Tax Structure in Iowa

Table C1. Iowa Corporation Income Tax Rate Structure

1934	Tax enacted at	2%
1955	Tax rate changed to	3%
1957	Rate changed to	2%
1959	Rate changed to	3%
1965	Rate changed to	4%
1967	Rate changed to	4%-8%
1971	Rate changed to	6%-10%
1981	Rate changed to	6%-12%

Source: Iowa Department of Revenue, <http://www.iowa.gov/tax/taxlaw/TaxHistory.html>

Table C2. Iowa Corporate Tax Revenue Collections

Year	Net Tax Revenue (Millions)	Change
1996	\$202.9	
1997	221.0	8.9%
1998	196.8	-10.9
1999	81.4	-58.6
2000	109.2	34.1
2001	166.7	52.6
2002	88.3	-47.0

2003	140.0	58.5
2004	89.8	-35.8
2005	186.5	107.7
2006	284.9	52.8

Source: BEA, State Government Finances

Table C3. Iowa Individual Income Tax Rate History

1934	Tax enacted at	1%-5%
1953	Rate changed to	.75%-3.75%
1955	Rate changed to	.8%-4%
1957	Rate changed to	.75%-3.75%
1967	Rate changed to	.75%-5.25%
1971	Rate changed to	.75%-7%
1975	Rate changed to	.5%-13%
1987	Rate changed to	.4%-9.98%
1998	Rate changed to	.36%-8.98%

Source: Source: Iowa Department of Revenue,

<http://www.iowa.gov/tax/taxlaw/TaxHistory.html>

The individual income tax is Iowa's single largest tax revenue source. Its performance has demonstrated some volatility. (Table)

Table C4. Iowa Individual Income Tax Revenue Collections

Year	Revenues (millions)	Change
------	---------------------	--------

1996	\$1,588.1	
1997	1,719.6	8.2%
1998	1,838.5	6.9
1999	1,715.1	-6.7
2000	1,890.4	10.2
2001	1,888.9	-.07
2002	1,769.3	-6.3
2003	1791.1	1.2
2004	1,958.7	10.6
2005	2,254.1	15.1
2006	2,413.7	7.1

Source: U.S Census Bureau, State Government Finances, authors calculations

Table C5. History of Iowa Sales and Use Tax Rate

1934	Sales tax enacted at	2%
1937	Use tax enacted at	2%
1955	Rate changed to	2.5%
1957	Rate changed to	2%
1967	Rate changed to	3%
1983	Rate changed to	4%
1992 (July 1)	Rate changed to	5%
2008 (July 1)	Rate changed to	6%

Source: Iowa Department of Revenue, <http://www.iowa.gov/tax/taxlaw/TaxHistory.html>

Table C6. Iowa Sales Tax Revenue Collections

Year	Revenues (millions)	Change
1996	\$1,456.2	
1997	1,500.2	3.0%
1998	1,528.8	1.9
1999	1,646.0	7.6
2000	1,772.8	7.7
2001	1756.2	-0.9
2002	1747.0	-0.5
2003	1,589.9	-8.9
2004	1,617.5	1.7
2005	1,721.7	6.4
2006	1,800.8	4.5

Source: U.S. Census Bureau, State Government Finances, authors calculations

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