State Rainy Day Funds and the State Budget Crisis of 2002-?

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1. Introduction

On paper, states entered the recession that began in March 2001 well prepared. Forty-seven states had established budget stabilization or "rainy day" funds. The funds contained over 5 percent of annual total state expenditures, which when added to general fund balances amounted to over 12 percent of annual expenditures. By comparison, when the recession of 1990-91 began only 35 states had rainy day funds, their rainy day balances amounted to less than 1 percent of expenditures, and total balances amounted to less than 5 percent of expenditures. During the recessions of 1980 and 1981, fewer than half of the states had rainy day funds.

Figures 1a and 1b depict the states' preparedness for the current fiscal contraction. Figure 1a plots the growing number of states with rainy day funds, from fewer than half in 1984 to virtually all today. Figure 1b plots rainy day fund balances and total general fund balances as a percent of annual expenditures. Both figures grew sharply during the latter half of the 1990s to unprecedented levels, both in absolute terms and as a percent of state expenditures.

Despite these preparations, state budgets appear to be in serious trouble. The National Governors Association (NGA) and the National Association of State Budget Officers (NASBO) issued a press release last November saying that "states face the most dire fiscal situation since World War II" (NGA, 2002a). The story, and that quote in particular, have been carried widely, and motivate this conference on "State Fiscal Crises."

What accounts for the discrepancy between the historic levels of state fiscal preparedness and the state budget crisis we face today? We can think of several explanations:

(1) The claim that current state budget difficulties are unusual may be overstated.
(2) There may have been structural changes in state finances related to education, Medicaid, homeland security, or tax receipts.
(3) The rainy day savings may represent fungible transfers from accounts that existed before the establishment of the rainy day funds, and not "new" savings.
(4) State savings, even with the added rainy day fund balances, may simply be insufficient to cover the recent revenue decline.
(5) The crisis may merely represent the reversal of an unusual tax revenue bubble of the late 1990s.

In this paper we focus on the last three of these explanations, but let us begin by briefly discussing the first two.

First, has this crisis been exaggerated relative to previous state budget crises? States are, to varying degrees, required to balance their budgets. This means that every time there is a national recession, states are supposed to raise tax rates or decrease spending. A quick scan of headlines from 1991 or 1982 exposes the consequences of these balanced budget rules.[1] In both previous national recessions, state budgets were squeezed by revenue shortfalls and increases in necessary entitlement expenditures.

The national recession of 2001 was not unusually severe. National unemployment rates have not risen above 6 percent, compared with rates over 7 percent for the early 1990s, over 8 percent for the mid-70s, and over 10 percent for 1982-83. Real gross domestic product fell during three successive quarters in 2001, by 0.15 percent, 0.4 percent, and 0.07 percent. By contrast, the early 1990s saw real GDP declines of 0.18, 0.82, and 0.49 percent, and the "double-dip" recession of the early 1980s saw quarterly declines as high as 1.18, 1.66, and 2.04 percent.

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[1]See, for example, "Bad Year for States' Budgets Expected to Lead to Worse One: Mandated Medicaid, Prison Construction Costs Cited," *Washington Post* October 30, 1991, and "Recession Giving States Nightmares: Taxes Are Raised, Payrolls Slashed," *Washington Post* May 13, 1982.

State budgets reflect the relative mildness of the recession. State general fund spending was budgeted to grow by 0.4 percent in real terms during fiscal 2003. While this is a drastic slowdown, real general fund spending *shrank* by 6.3 percent in 1983, by 1.1 percent in 1982, and by 0.6 percent in 1980. Moreover, some states are relatively unaffected. Eighteen states projected to end FY02 with year-end balances greater than 5 percent of expenditures (NGA, 2002b). Some states have continued to add to their rainy day funds or have refrained from drawing them down -- Texas's fund contained nearly $1 billion in 2002, 3 percent of annual expenditures.

Nevertheless, many states are slashing discretionary spending and enacting tax rate increases. Even if the current state budget crisis is not worse than during previous recessions, it remains an open question whether the states' unprecedented rainy day fund and general fund surpluses have ameliorated those states' problems, and if not why not.

What about the structural changes? The NGA report cites the costs of Medicaid, homeland security, the unfunded mandates regarding education ("No Child Left Behind"), and the changing tax base of states from easily administered sales tax receipts to elusive internet and service sector activities. While Medicaid expenses do increase during a recession, and they did increase 13.2 percent during 2002, that is a slower rate of growth than during 1992. In 1991, states faced increased costs of new prison construction and growing welfare rolls, neither of which seem severe this time around. During the recessions of the early 1980s, states confronted the "new federalism" policies of the Reagan administration, which shifted responsibility for funding many programs from Washington DC to the states. The new issues facing states --

homeland security, education mandates, and changing tax structures -- may not be so unusual from this historical perspective.

That leaves the last three explanations for why the states' balances as of 2001 may have been insufficient preparation for the current downturn: that they are merely re-labeled funds that were typically saved in other accounts, that even the new savings are small relative to state budget cycles, and that the crisis is a return to normalcy after a revenue bubble.

2. Are state rainy day funds "real" savings?

The growth of rainy day funds since the early 1980s does not necessarily mean that total state government savings have increased. Deposits into rainy day funds may have otherwise been saved in miscellaneous accounts in states' general funds. To cite but one example, from 1999 to 2002, as Texas built its rainy day fund from nearly nothing to almost 3 percent of expenditures, the state's general fund balances dropped from 14 percent of expenditures down to 5 percent, more than offsetting the rainy day fund accumulation. If states merely relabel general fund balances as rainy day funds, then they may be no more prepared for the current downturn than for previous downturns.

Figure 1b provides some initial evidence to the contrary. While overall rainy day fund balances increased in recent years, general fund balances have not decreased in an offsetting fashion. Rather, general fund surpluses have grown along with rainy day balances, suggesting that rainy day funds represent real savings.

More direct evidence is in Knight and Levinson (1999), which regresses total state balances (rainy day plus general fund) on state characteristics, including the existence and size of

4

states' rainy day balances and state fixed effects. The results suggest that states with rainy day

funds save more than states without them, that states that enact rainy day funds save more than

they did before the funds existed, and that rainy day savings are not offset by declines in general

fund balances. Rainy day fund balances appear to increase state savings dollar-for-dollar.

A contrasting set of findings is in Wagner (2002). That paper searches for "unit roots" in

the time series of state budget balances, and finds that state general fund balances decreased by

more than $0.50 for every dollar deposited into rainy day funds. While the paper concludes from

this that rainy day funds are only "the illusion of savings," one could equally well conclude that

rainy day funds increase state savings by almost $0.50 for every dollar deposited. An

intermediate case is presented in Sobel and Holcombe (1996). They measure the "fiscal stress"

of each state using the residuals from a long-run growth regression, and find that states that

mandate deposits to rainy day funds during flush years suffered less fiscal stress during the

1990-1991 recession.

In table 1 below we present a simple version of Knight and Levinson (1999), with

numbers updated through fiscal year 2002. The table contains two regressions covering 1984-

2002, and 48 states (omitting Alaska and Wyoming). In the first column, we regress total real

end-of-year balances on rainy day fund balances, state fixed effects, and time dummies.

$$Total\ Balance\ =\ \beta_1(RDF\ balance)\ +\ \delta_1(state)\ +\ \delta_2(year)\ +\ \epsilon \qquad\qquad (1)$$

The rainy day coefficient is 1.29. If the existence of rainy day funds were completely illusory, we

would expect its coefficient to be zero. If only 50 percent of rainy day fund contributions

increased overall savings, we would expect the coefficient to be 0.50. In column (1), however,

we can easily reject the hypothesis that the rainy day fund coefficient is less than 1.[2]

We cannot, of course, interpret the rainy day fund coefficient as a causal effect. Those

states that enact and contribute to rainy day funds may simply have greater preferences to save,

and do so in both general and specific accounts. Moreover, rainy day balances are a component

of the dependent variable, total balances, so the regression violates classical assumptions about

the error term. To address this latter issue in column (2) we regress general fund balances

excluding rainy day funds on the same right-hand-side variables. The rainy day coefficient is

0.34, and is statistically significantly not negative. If rainy day funds were merely substituting

for other savings, we would expect the coefficient to -1.0. Even if only 50 percent of rainy day

funds constituted new savings, the coefficient would be -0.50. Instead, rainy day funds appear to

represent real savings.

If rainy day funds represent real savings, that discounts another explanation for why states

appear so well prepared for the recession and yet are facing unprecedented shortfalls. Even if

only 50 percent of the 2002 rainy day fund balances represent real savings, that would be twice as

much savings as states had on hand prior to the 1990-91 recession, and 10 times as much as

before the 1980 and 1981 recessions. An alternative explanation, then, is that even these larger

amounts are trivial relative to the amplitude of state budget swings.

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[2]Note that dropping the state dummies, or the year dummies, or both, makes little
difference to the rainy day coefficient, β_1.

3. Are state savings sufficient?

Virtually every U.S. state has a balanced budget requirement of some sort, ranging from ineffective to quite restrictive. Some states merely require that their governors submit balanced budgets. Others require the legislature to pass a balanced budget, but can run a deficit if an unexpected shortfall arises. Stricter states require that the shortfall be corrected in the next fiscal year, and the strictest of all do not allow states to carry over a deficit into the next fiscal year.[3]

In principle these balanced budget rules mean that states will run pro-cyclical fiscal policy: raising taxes and cutting spending in recessions, lowering taxes and increasing spending in business cycle expansions. The only alternative would be to save enough in general fund balances and rainy day funds during expansions to offset the revenue declines and expenditure demands during contractions. While that is what rainy day funds are intended to do, they may be insufficiently large relative to the swings in state budgets. Most states cap the size of rainy day funds, typically at 5 percent of annual expenditures. Moreover, if some fraction of the funds represent substitutes for savings in other accounts, even 5 percent represents an overstatement of the overall savings.

To say whether the amount of state savings is sufficient requires an assessment of the size of state fiscal cycles. This is conceptually easy. We would like to know by how much the state deficit or surplus would change over the business cycle if states made no statutory changes in tax rates or discretionary spending. In other words, leave tax rates unchanged, finance entitlement programs as usual, and make no changes to the level of public good provision. States would then run automatic counter-cyclical fiscal policies: deficits in recessions and surpluses in expansions.

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[3]See, for example, ACIR (1987), Poterba (1994) and Bohn and Inman (1996).

The gap between the largest deficit and largest surplus would give us a measure of the natural amplitude of state budget cycles that needs to be covered by savings if states are prohibited from running deficits.

In practice, this is difficult to assess. States do raise taxes and lower expenditures to balance their budgets during downturns. Consequently, the actual gap between surpluses and deficits understates the natural size of state fiscal cycles. Some authors have tried to measure the amount of "fiscal stress" induced by these balanced budget requirements – *i.e*., the difference between the natural fiscal cycle amplitudes and the actual amplitudes. Poterba (1994) uses the difference between state budget forecasts for expenditures and revenues, and their realized values. This too will understate the amount of fiscal stress because state budget officials can forecast *some* of the shortfalls or surpluses. The Poterba measure only captures fiscal stress due to surprises that occur between the time the budget is passed and when the books are closed at the end of the fiscal year.

Sobel and Holcombe (1996) measure state fiscal stress by how much states' expenditures fall below their long-run growth. This understates fiscal stress for several reasons. First, to meet budget requirements states boost tax rates. The more they do so, the less fiscal stress will appear in state expenditure patterns, yet raising tax rates is one manifestation of fiscal stress. Second, many entitlement expenditures, such as Medicaid, grow during recessions. Even if spending remains steady, but entitlement spending increases while discretionary spending falls, that would arguably be fiscally stressful.

In the end, we follow a procedure similar to Sobel and Holcombe, recognizing that it is a conservative measure of the amplitudes of fiscal cycles. If we find that state rainy day funds are

smaller than the amplitude of the state fiscal swings measured as departures from long-run

expenditure growth, that will provide convincing evidence that those savings are insufficient to

counter the effect of balanced budget requirements. On the other hand, if we find evidence that

savings are comparable in size to the fiscal swings, that could mean either that the rainy day

funds are sufficient or that we have underestimated the natural size of the fiscal swings.

To assess the degree to which rainy day funds are sufficient to counter state budget

swings, we first estimate the long-run trend of state expenditures, by regressing the log of

expenditures on a trend.

$$\ln(\textit{Real state expenditures per capita}) = \alpha + \beta_1(\textit{year}) + \epsilon \qquad\qquad (2)$$

We then take the residuals from equation **(2)** and calculate the percentage deviation from the

predicted trend ($\exp(\hat{\epsilon})-1$). If rainy day funds are sufficient to offset fiscal cycles, they should

contain more funds than the typical deviation from long-run expenditure growth. To assess the

sufficiency of state savings, we compare the percent deviations from the trend, the transformed

residuals from equation **(2)**, to rainy day balances and general fund balances, also expressed as

percentages of annual expenditures.

For example, figure 2 plots the residuals from equation **(2)**, converted to percentage

deviations, for several states. California is having one of the most severe fiscal contractions.

The residuals are positive in the late 1980s, decline during and after the recession of the early

1990s, and grow steeply throughout the mid to late-1990s. From trough to peak, California's

expenditures grew from 16 percent below the fitted trend line in 1994 to 17 percent above the

trend in 2001. For comparison, we also plot the rainy day balance, which peaked at 13 percent of

9

annual expenditures in 2000, and the total balance, which peaked at 27 percent in 2000. Through

the late 1990s, California's expenditures were growing rapidly relative to their long-run patterns.

Texas, by contrast, saw relative expenditures beginning to fall especially rapidly starting

in 1996. Most recently, while Texas has continued to add to rainy day balances, it has spent

down surpluses in other state funds more rapidly. Virginia's graph clearly shows the cyclical

pattern of state expenditures. Moreover, it looks as though the high rainy day and total balances

in 2000 may be contributing to the smaller amplitude of Virginia's current fiscal swings.

Figure 3 plots the average residual, across all 48 states in the sample, against the average

rainy day balance and average total balance. In figure 3 we can clearly see the counter-cyclical

state fiscal policy, with expenditures growing faster than the trend during the economic

expansions of the late-1980s and late-1990s, and shrinking during recessions. In 1996 the states

spent on average about 1 percent less than would be predicted by their long-run expenditure

growth. In 2000, they spent about 2 percent more. However, the average state had on hand

about 5 percent of annual expenditures in rainy day accounts, and 11 percent of expenditures in

total balances. This seems to us like a considerable amount of savings, at least enough to offset

substantially the typical counter-cyclical state fiscal policy for several years.

If these rainy day funds and other state savings represent real savings, and are sizeable

relative to state business cycles, there is another possible explanation for the scope of the current

state budget crisis: a revenue bubble in the late 1990s.

4. Is the fiscal crisis the result of a revenue bubble?

The discrepancy between the apparent level of fiscal preparedness and the size of the current crisis may be because the crisis really represents a falloff of revenues after an unusual period of revenue growth in the late 1990s. Income tax revenues in particular grew quickly in the late 1990s, and if states made long-term commitments based on that revenue growth, they may be experiencing difficulty changing course now that the unusual revenues have dried up. According to the National Conference of State Legislatures (NCSL), "states that rely most heavily on income taxes have been hurt the worst."[4]

Distinguishing between income taxes and sales taxes is consistent with simple economic theory. If consumers behave according to life-cycle models, and recognize that their capital gains incomes of the late 1990s were temporary, then they will spend only a small fraction of their increased wealth. Sales tax revenues will not have increased as rapidly as income tax revenues. This conjecture is supported by the data. Figure 4 plots real state tax revenues from various sources for the past 15 years. Income tax revenues picked up quickly in the late 1990s, a pattern not seen in property taxes, corporate taxes or sales taxes.

This distinction suggests an empirical strategy. We could compare states with and without personal income taxes. In figure 2, for example, the two states without state personal income taxes are Texas and Washington. In neither state did expenditures increase during the late 1990s relative to their trend.

To compare all states, figure 5a plots the average expenditure residual for all states with and without state personal income taxes. The first line (with circles) plots the average residual

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[4]Corina Eckl, NCSL, cited in Von Sternberg (2002).

for the 43 states in our sample with a personal income tax.[5] The second line (with triangles) plots

states without an income tax. Interestingly, during the late 1990s state expenditures were rising

relative to long-run-trends for states with personal income taxes, while they were falling for

states without personal income taxes.

Figure 5b plots similar data for state revenue residuals from a regression similar to **(2)**,

but with state revenues as the dependent variable rather than expenditures. We see little

difference between states with and without personal income taxes. States with personal income

taxes seem to have experienced a later drop in revenues, and a steeper drop. States with personal

income taxes may have experienced a slightly larger trough-to-peak rise in revenues during the

late-1990s, but those differences are unlikely to be statistically meaningful.

If states' current fiscal problems can be seen as the consequences of a revenue bubble, we

would expect different patterns for expenditures and revenues for states with and without state

income taxes. The differences in figure 5a and 5b, especially in terms of state revenues, do not

appear large enough to be the primary source of states' current budget shortfalls.

5. Conclusion

We began by noting the discrepancy between the unprecedented level of public savings

held in states' general funds and rainy day balances at the start of fiscal year 2002, and the claim

that the current fiscal crisis is the worst since World War II. We suggested five potential

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[5]Only Florida, Nevada, South Dakota, Texas, and Washington in our sample of 48 states
do not have personal income taxes. We also count New Hampshire and Tennessee as having no
personal income tax, as their taxes are so minimal. The results are no different if we exclude
those two states.

12

explanations for the disparity: (1) hyperbole (2) structural changes in state finances, (3) illusory

rainy day savings, (4) insufficient state savings, and (5) a tax revenue bubble. Among these, we

find no standout candidate.

Several caveats deserve mention. First, it is difficult to quantify fiscal stress. We use the

difference between state expenditures and the long run growth path of state expenditures.

However, states face increased entitlement demands during recessions, and so expect *increased*

expenditures during recessions. Moreover, to balance their budgets, states raise taxes and cut

discretionary spending during recessions. A better measure of fiscal stress would be the degree

to which state expenditures fall short of what they would have been had states left tax rates and

discretionary expenditures constant. Our measure understates the amplitude of state fiscal cycles,

and thus overstates the degree to which state savings are sufficient to offset those cycles.

Second, we have estimated long-run growth of expenditures and revenues from 1984 to

2002. Both endpoints are years in which state finances were in poor shape due to a preceding

national recession. This can be seen in several of the state-specific graphs in figure 2. The

residual from the expenditure regression is below zero for both 1984 and 2002. It is also true in

aggregate, as can be seen in figure 3.

Nevertheless, it appears to us as though the recent increase in state savings is a real

phenomenon, that state savings have been at unprecedented levels in recent years, and that those

savings are substantial relative to swings in state budget cycles. Consequently, states entered the

recession of 2001 much better prepared than they would have been without those savings, and

much better prepared than for the recessions of the previous several decades.

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Table 1. Rainy Day Funds Represent Real Savings

	Dependent variable	
	Real total balances (including RDFs) per capita (1)	Real general fund balances (excluding RDFs) per capita (2)
Real rainy day fund balances per capita	1.29 (0.11)	0.34 (0.11)
N (48 states, 19 years)	912	910
R^2	0.71	0.62

Robust std. errors in parentheses.
Each regression includes state and year fixed effects.
Alaska and Wyoming are excluded, due to their resource dependent economies..
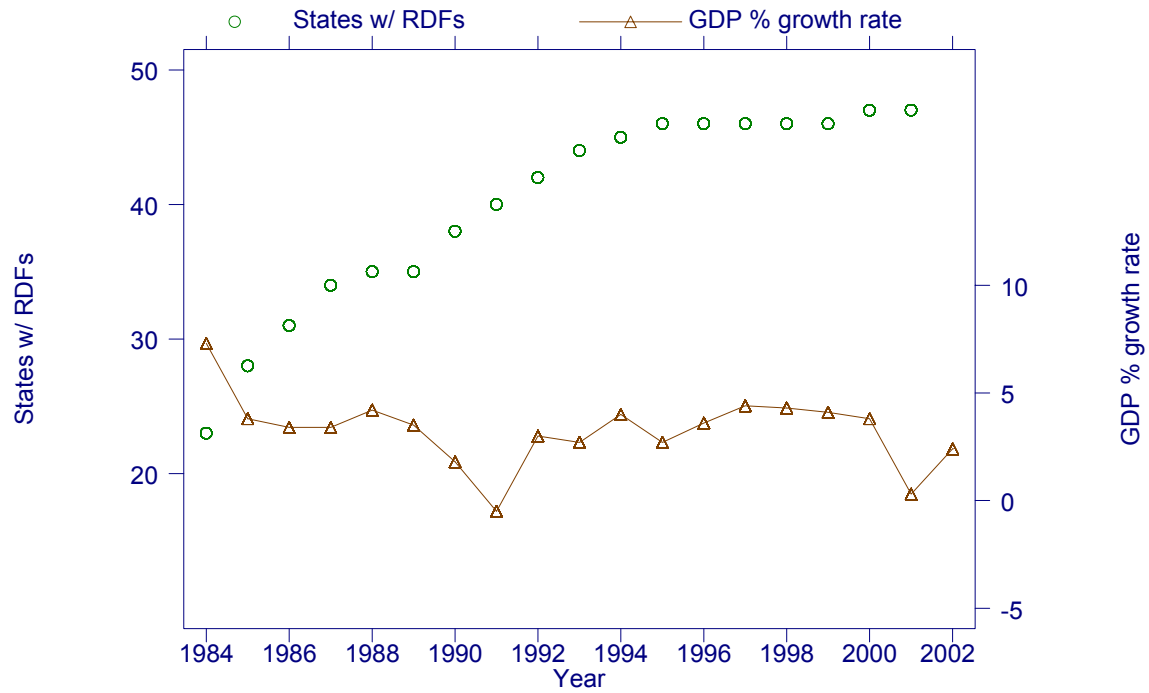
Fig. 1a. The number of States with RDFs
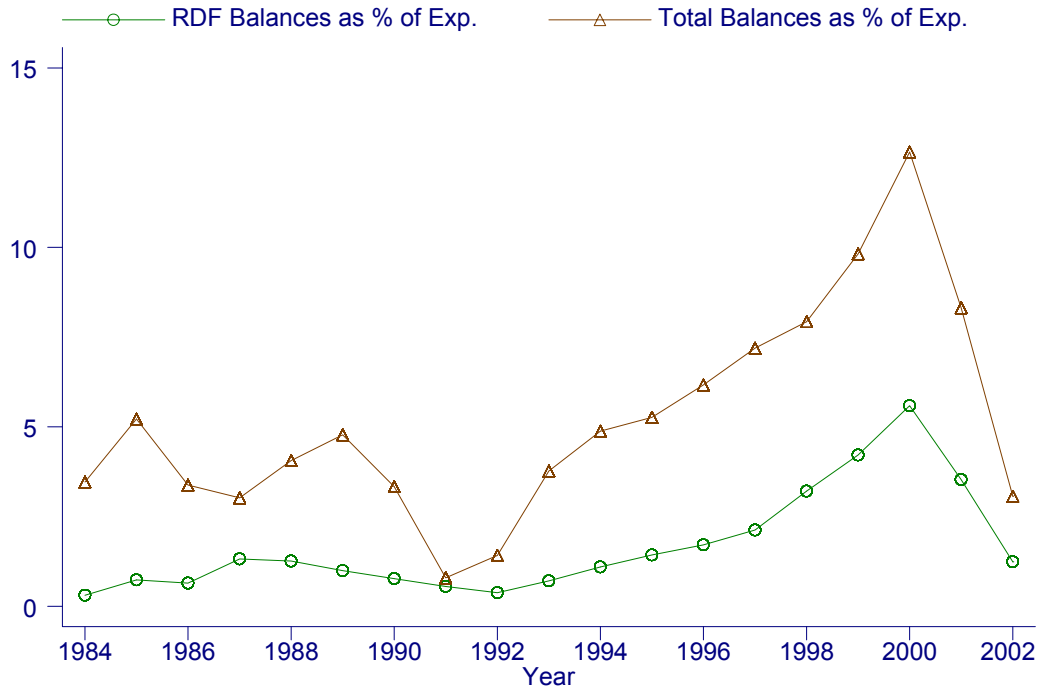
Fig. 1b. RDF and General Fund Balances as a Percent of Expenditures
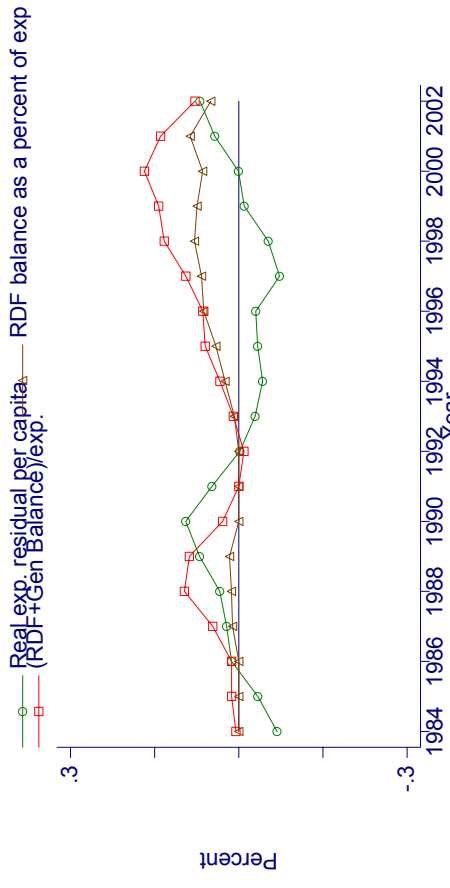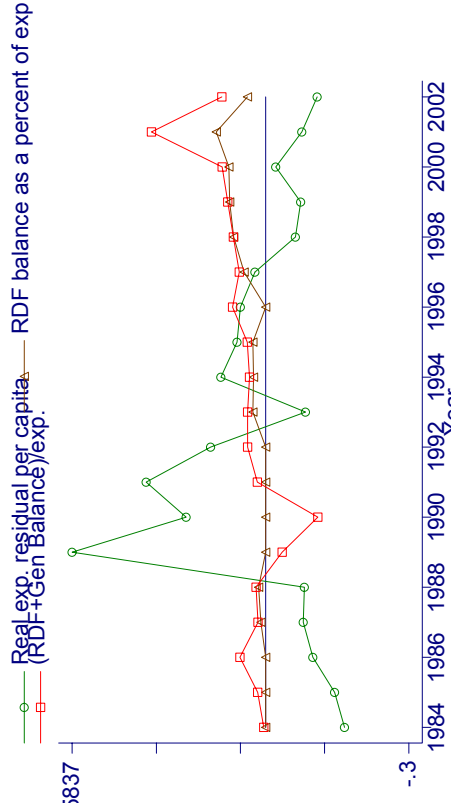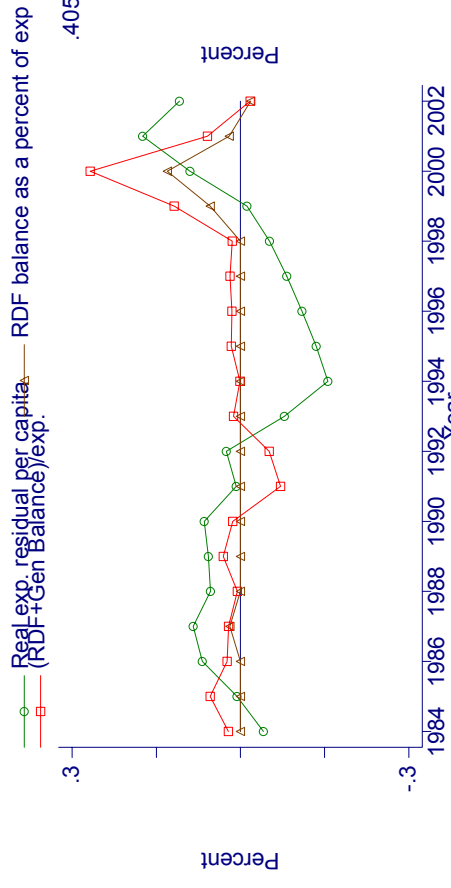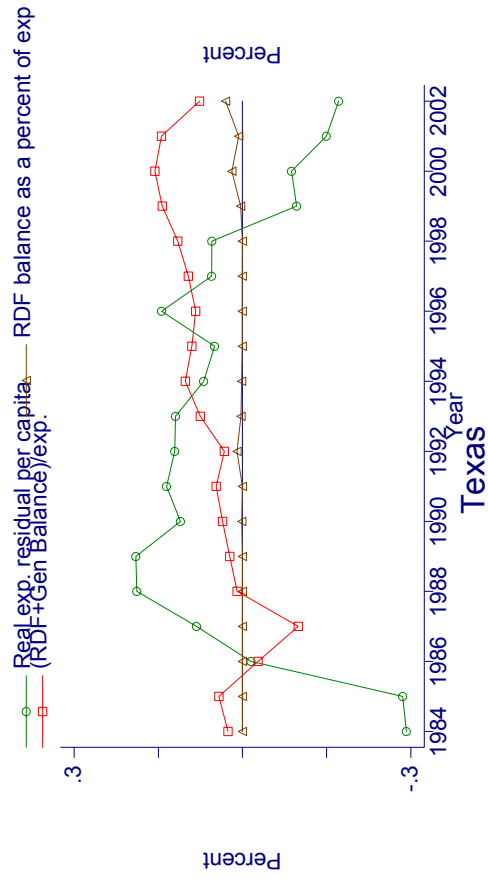
Figure 2
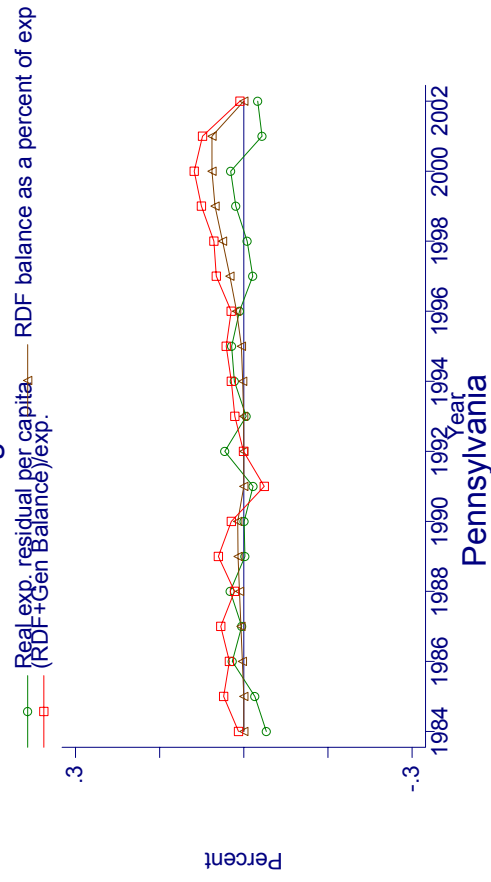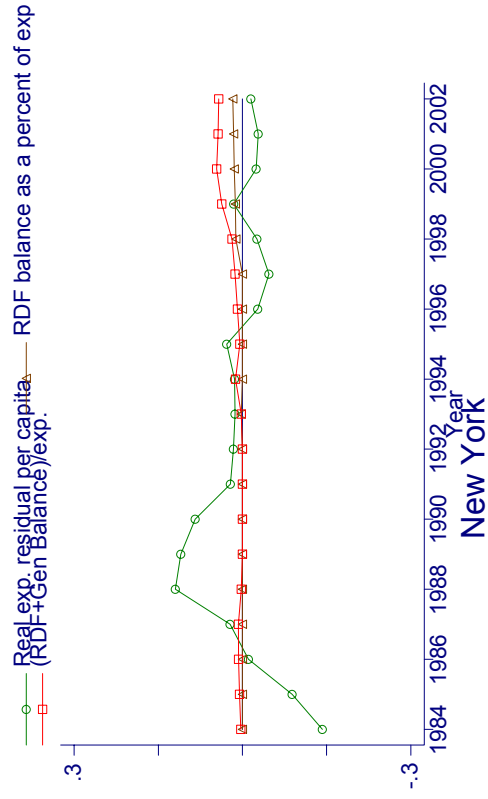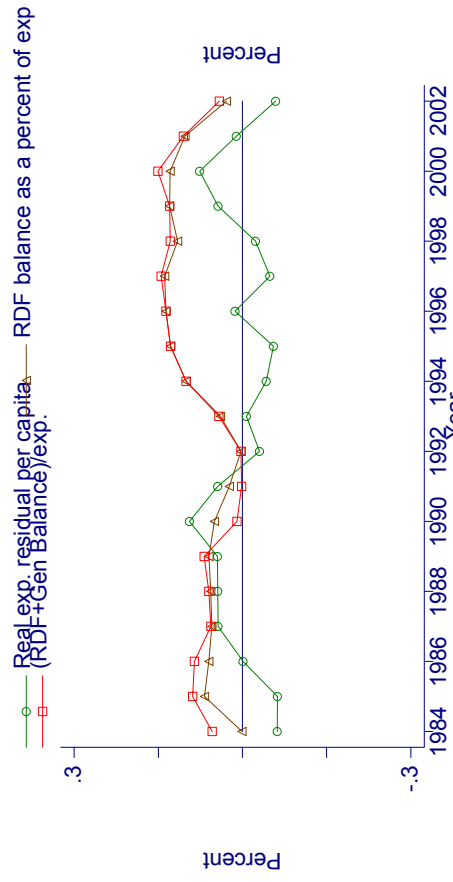
Figure 2 continued
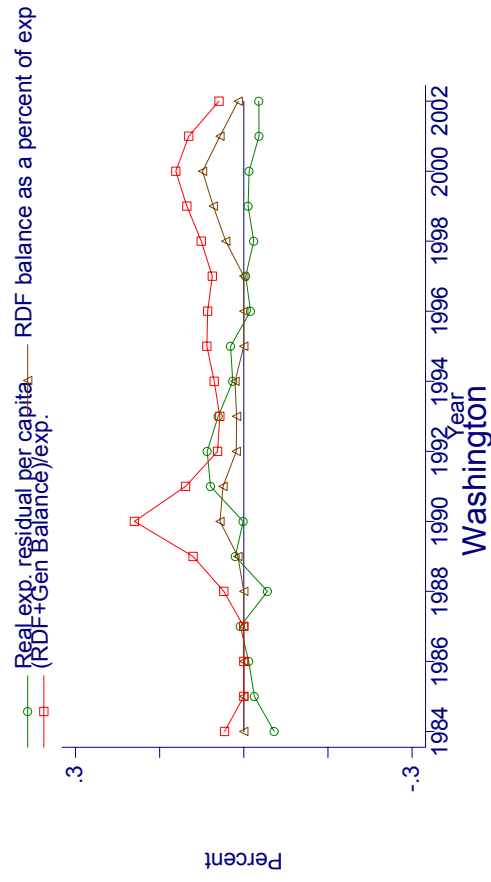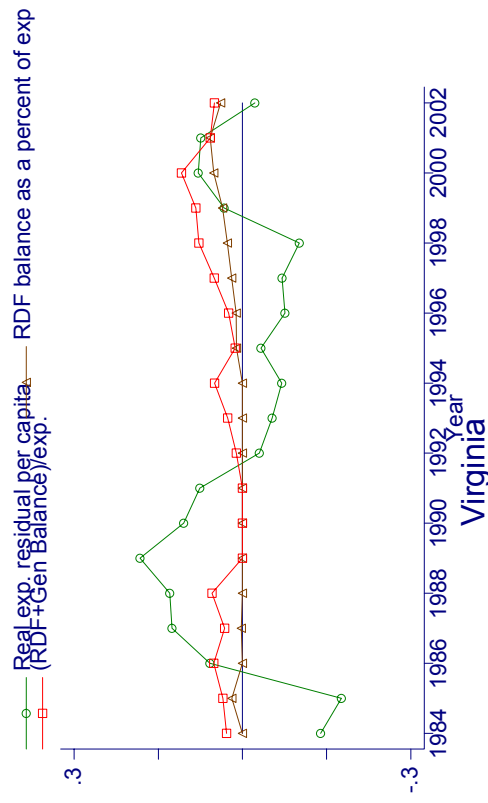
Figure 2 continued

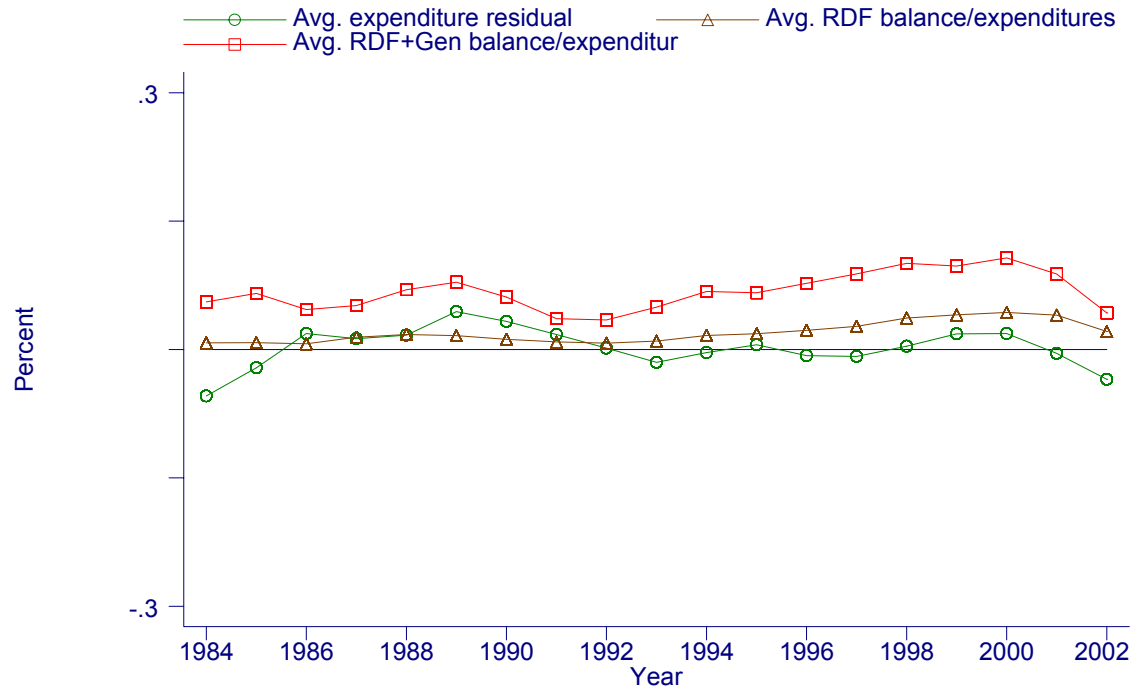Fig. 3. Average over all states

Figure 4. State and local revenue sources
1985-2000

Legend:
- Property taxes (magenta, ■)
- Sales tax (yellow, ▼)
- Income tax (cyan, ×)
- Corporate tax (purple, ✳)

Y-axis: $Billions (real 1996), scale 0.00 to 3.50
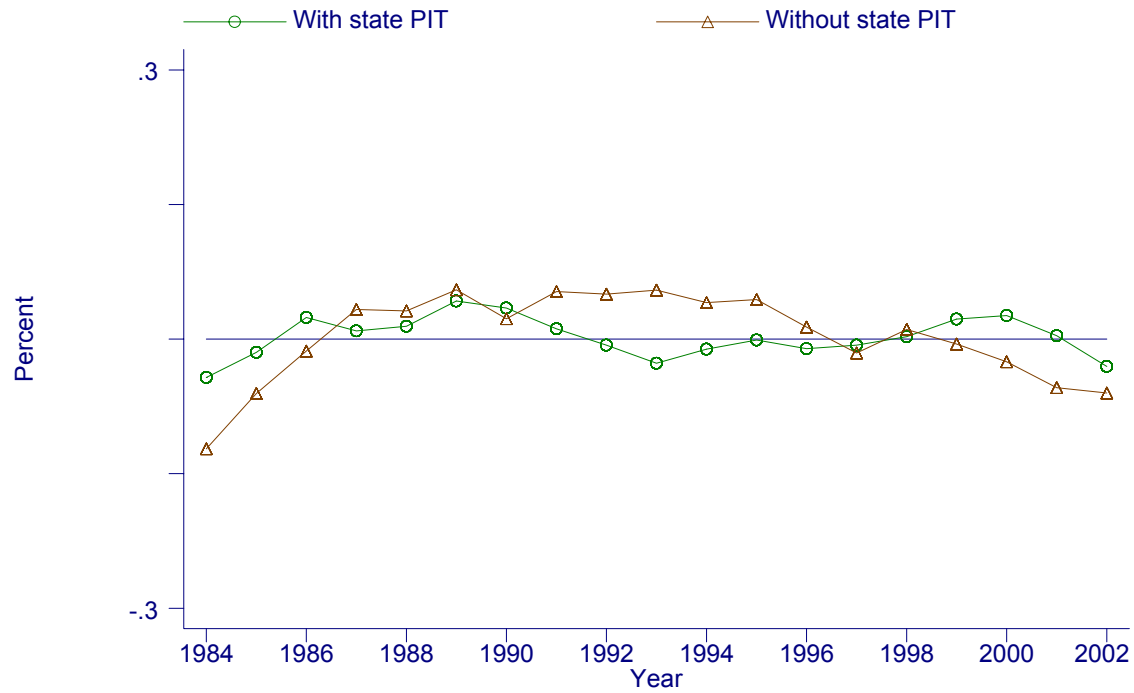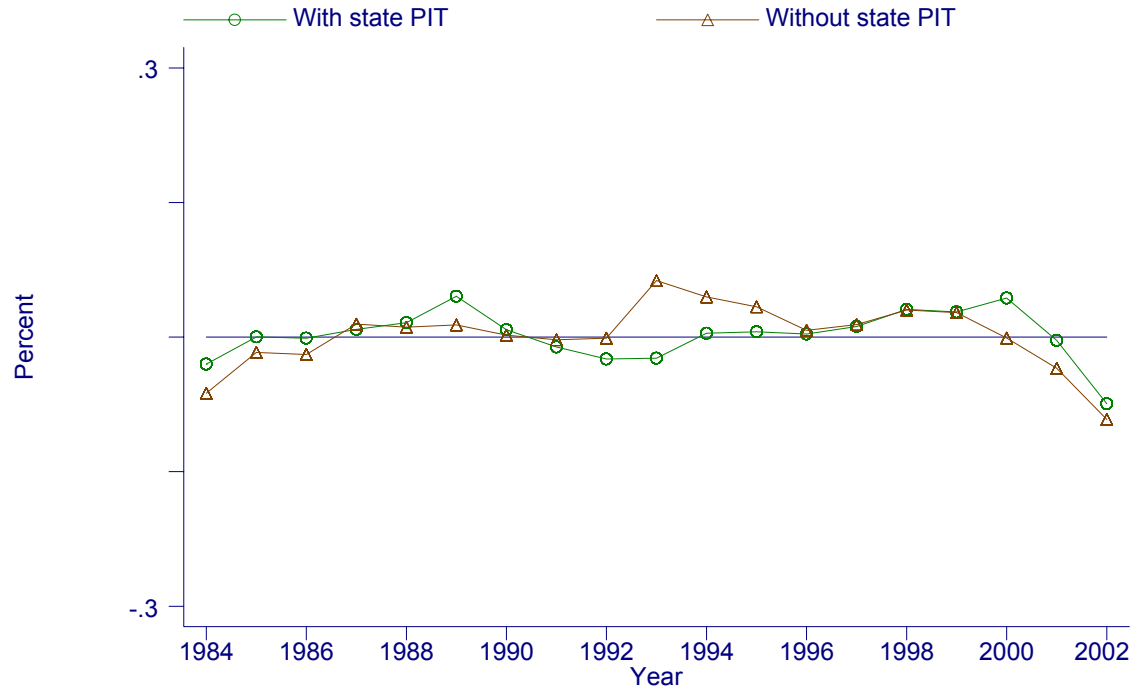X-axis: 1985-86, 1990-91, 1995-96, 1999-2000
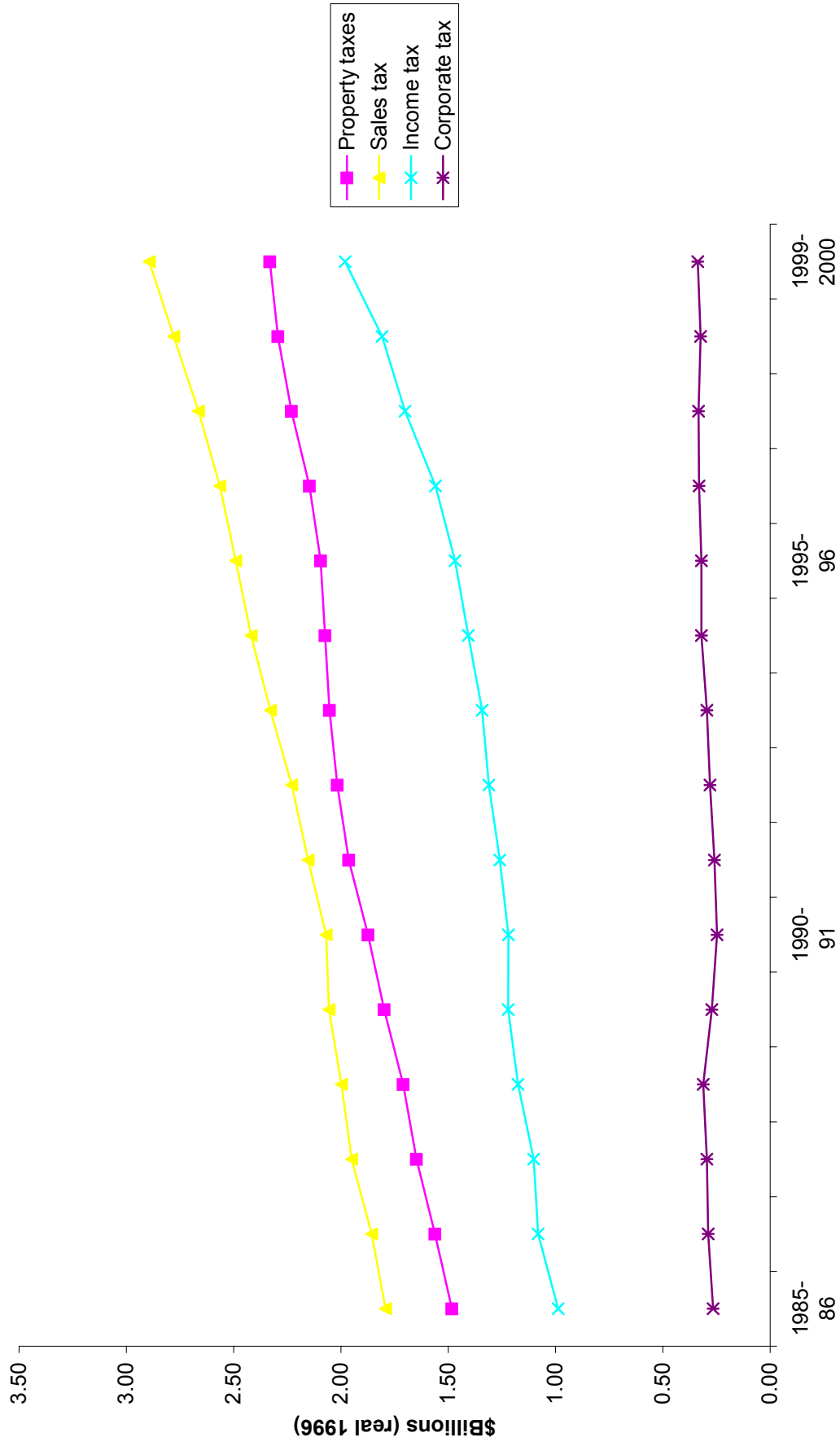
Fig. 5a. Average expenditure residual

Fig. 5b. Average revenue residual