VARIANCES IN CONNECTICUT MUNICIPAL REVENUES

WESTERN CONNECTICUT COUNCIL OF GOVERNMENTS

EXECUTIVE SUMMARY

Using data from the Municipal Fiscal Indicators collected by the Connecticut Office of Policy and Management (see report titled "Trends in Connecticut Municipal Finance"), we investigate unexpected changes in municipal revenues from state transfers. These unexpected deviations appear to be tightly correlated with changes in the US and Connecticut economy. Additionally, there is no evidence that towns respond to these deviations with changes to the tax rate. Instead, town revenues and tax rates appear to rely on an independent mechanism related to housing prices, albeit with a several year delay.

1. INTRODUCTION

Connecticut municipalities, unlike local governments in other states, rely entirely on the property tax to generate revenue. In addition, they receive about 20-30% of their revenue from the state in the form of intergovernmental transfers. While the property tax rate (known as the "mill rate" in Connecticut) can be adjusted based on projected revenues to smooth out year-to-year tax receipts, state transfers have—particularly in recent years—a certain degree of unavoidable volatility. For towns which rely heavily on these transfers, small changes in transfer formulas can have massive implications for municipal finances. When budget shortfalls are unacceptably large, it is believed that towns have no choice but to make up the difference with higher mill rates.

We investigate this hypothesis using the data collected as part of the "Trends in Connecticut Municipal Finance" report. In particular, we seek to determine whether unexpected changes in state transfer levels appear to impact tax receipts in concurrent or following years, which would indicate reactionary behavior from towns.

2. METHODOLOGY

The primary method of evaluating unexpected changes in spending levels is the LOESS residual. From the state transfer and property tax data[1] we perform LOESS[2] regression, then take the residuals between the actual data points and the regression curve. This gives us an approximation of how "unexpected" each year's state transfers and tax receipts are, relative to the previous few years. Figure 1 shows the initial fitting.

[1] After initial analysis, we made the choice to remove 2008 from the data due to its unusual circumstances.

[2] Span was chosen as 0.75 for the initial model and 0.35 for the later analyses.

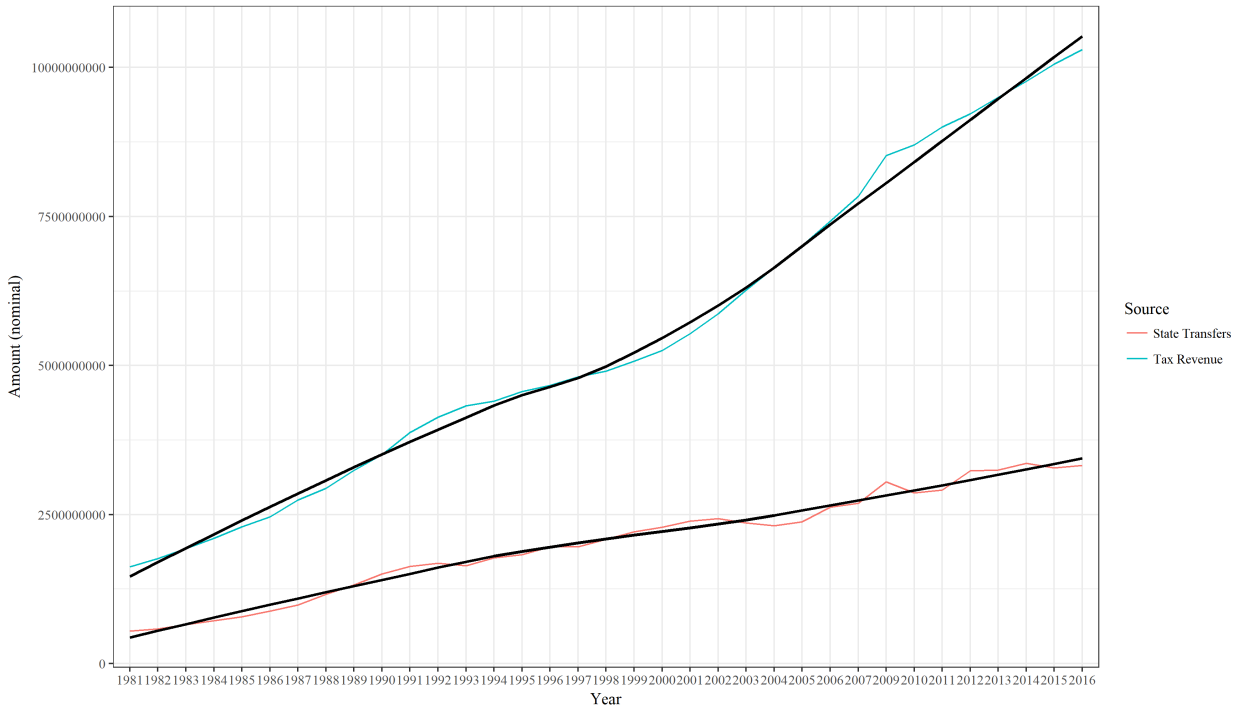

FIGURE 1. Revenues Over Time with Regression

The residuals over time for both state transfers and tax revenues are then plotted. The residual plot is shown below, in Figure 2.

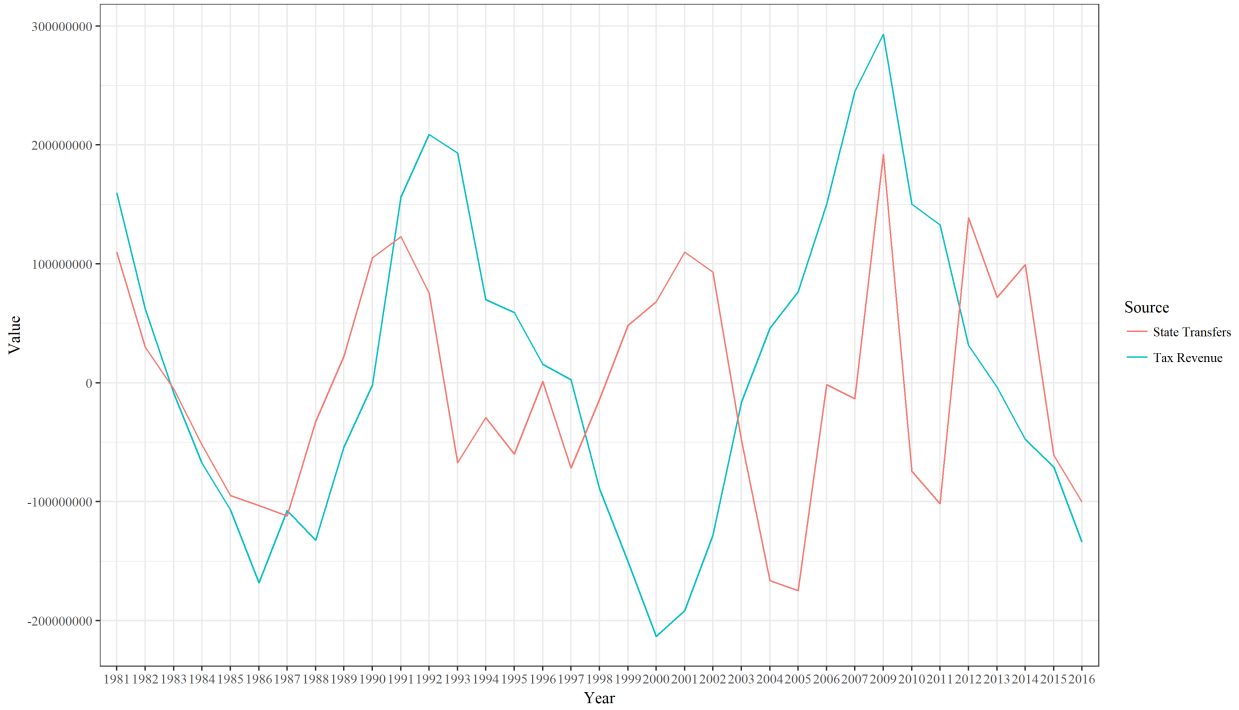

FIGURE 2. Residuals Over Time

3. ANALYSIS

Examining the residual graph reveals no apparent relationship between tax residuals and state transfer residuals, even when testing for potential lags between the relationship. Notably, both exhibit cyclic behavior but with cycles of different lengths. We examine each of the two plots separately, beginning with the state transfers residuals in Figure 3. The figure is overlain with a LOESS regression to make analyzing the cyclic behavior easier.

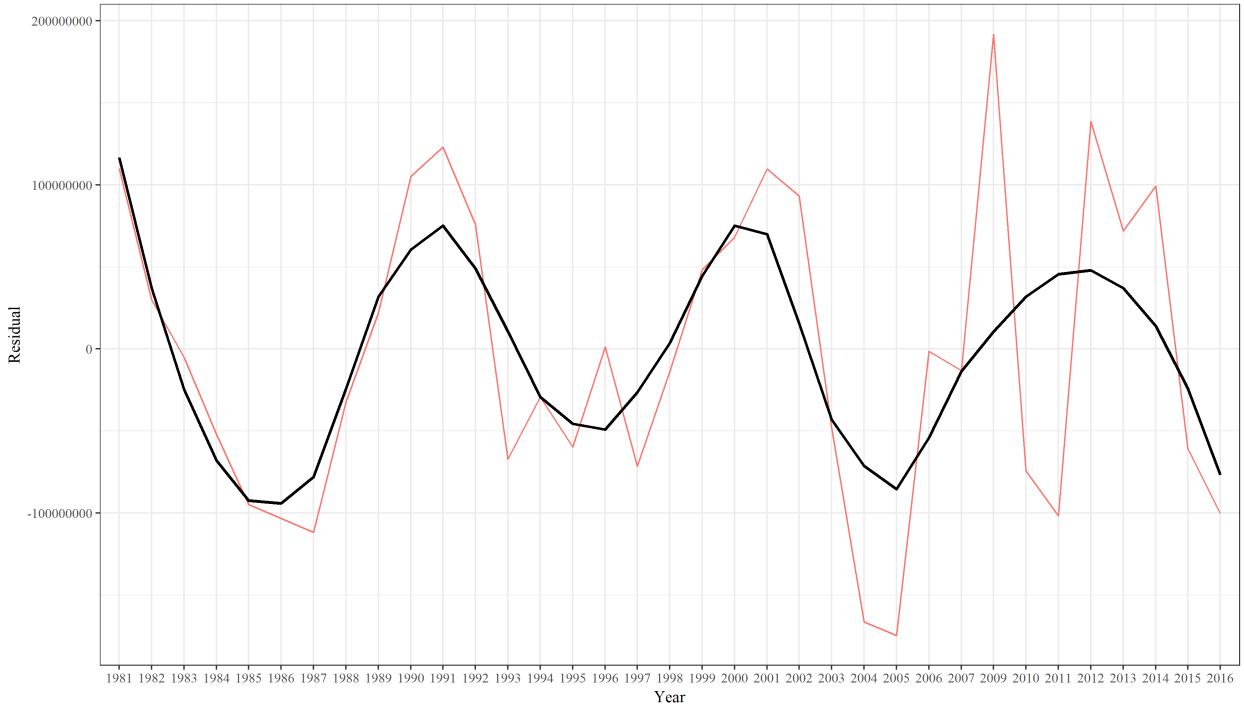

FIGURE 3. State Transfers Residuals Over Time

3.1. **State Transfers.** It appears that these residuals are tightly related to the performance of the national and state economies. Notice the first two spending peaks are at FY1991 and FY2000, both short recessions, while the more extended 08-09 recession results in an extended peak across FY2008-2014. Note that the graph excludes FY2008 data; if included, the peak would be significantly more dramatic.

The state appears to increase its spending in good times (notice the prolonged runs leading up to the 1991, 2001, and 2008 recessions), peak its spending when the recession hits, and then drop off afterwards. This may reflect a desire of the state to help towns weather financial difficulties—as was clearly the case in 2008—or simply a delayed reaction to tougher financial conditions requiring the state to eventually reduce spending.

3.2. **Property Tax Revenues.** We now turn our attention to residuals for the property tax, shown in Figure 4. Our first observation is that, in spite of the 2008 recession, property tax receipts actually accelerated during this time. This is a result of the delayed revaluation—properties were

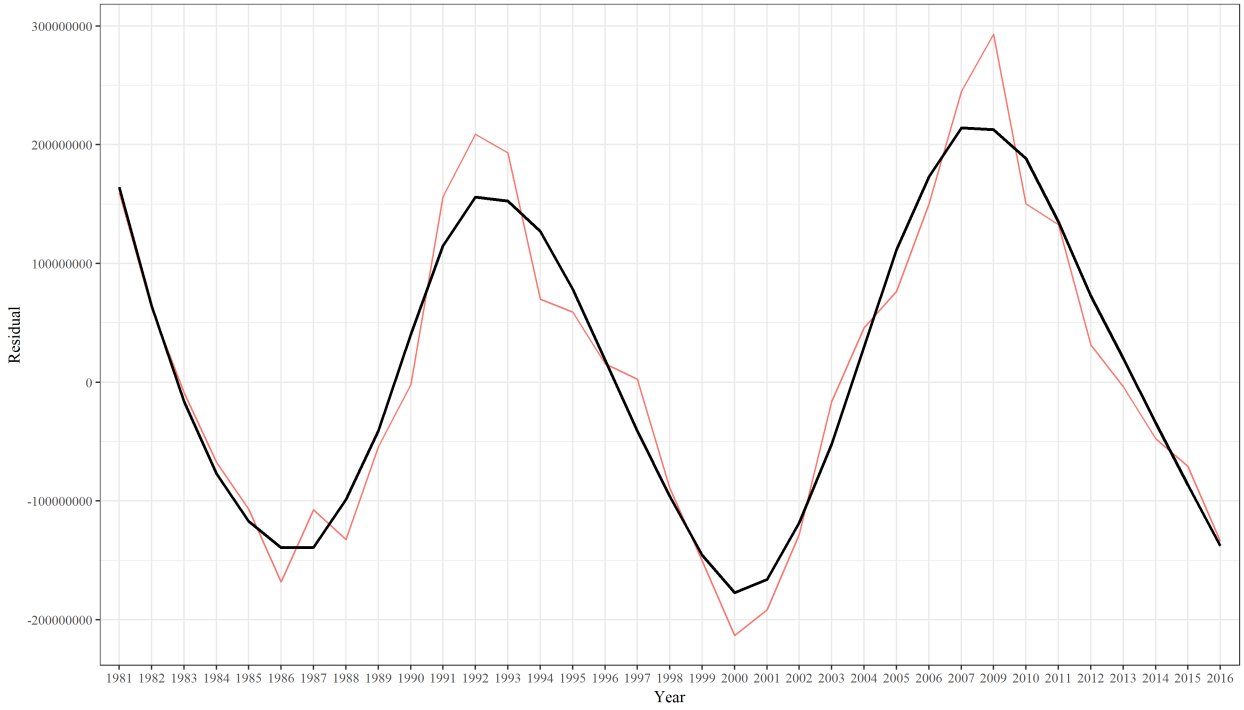

FIGURE 4. Property Tax Residuals Over Time

appraised at inflated rates during 2003-2008, and residents continued to pay taxes on those inflated values through the recession.

This same explanation can also be used for the 1991-92 peak, which again occurs during a recession. The Case-Shiller National Home Price index peaked in 1988, and properties appraised between 1983-1988 would have continued paying taxes on these inflated values throughout the recession. We can also use the housing market to explain why there is no peak in 2001, in spite of a recession similar in severity to that of 1991. Although there was a recession in 2001, there was no noticeable peak and decline in home values. These years actually show up as a trough in the graph due to the housing bubble which follows.

4. CLOSING REMARKS

The reliance of Connecticut municipalities on state transfers and the property tax leaves them vulnerable to large annual shifts in revenues. It is reasonable to propose that towns may react to changes in state transfers by adjusting tax rates in an attempt to smooth out revenues curves. Although we are working with limited time spans in the context of economic cycles, our data does not support this hypothesis. While variations in state transfers are closely related to economic performance, housing market volatility on a 5-year delay (the length of time between property appraisals) appear to drive tax receipts and mill rate decisions. The 2001 recession, in which the housing market and national economy diverge, clearly illustrates this behavior, and suggests that municipal revenues from these two sources may at times move in apparently contradictory ways.