

Estimating Grocery Sales as a Proportion of Total Sales

Total sales tax receipts in Arkansas represent a mix of taxes on groceries (at a current tax rate of 2 percent) and taxes on non-groceries (at a tax rate of 6 percent). Changes in the mix of these two categories alter the effective tax rate on total sales.

Because it is written into the Arkansas constitution, the Conservation Tax was not altered by reductions in the tax rate on groceries in July 2007 (from 6 percent to 3 percent) and in July 2009 (from 3 percent to 2 percent). Instead, the lower sales tax on groceries is reflected in proportional reductions in the other three components of Arkansas' Sales and Use Tax (the General Sales Tax, the Educational Adequacy Tax, and the Property Tax Relief Tax).

It is possible to estimate the proportion of grocery sales relative to total sales by comparing the receipts from the Conservation Tax to one of the other components of overall sales taxes. Total tax receipts from any one of the three affected components of Arkansas' sales tax can be (approximately) represented as:

$$T = gG + nN$$

where T represents total tax collections, G represents grocery purchases, N represents non-grocery purchases, and g and n represent tax rates on grocery and non-grocery items, respectively.

In contrast, receipts from the Conservation Tax, C , are:

$$C = n(G + N)$$

(for the Conservation Tax, all sales are taxed at the statutory rate, $n=0.06$).

After some basic algebraic manipulation, these two expressions can be used to find the ratio of grocery sales to total sales, R , as:

$$R \equiv \frac{G}{G + N} = \left(\frac{n}{n - g} \right) * \left(\frac{C - T}{C} \right)$$

The chart of grocery sales as a percent of total sales presented in the Arkansas Economist post, *Arkansas Taxable Sales - Revised Data for 2010:Q2*, uses data for revenue collections from the Property Tax Relief Tax to represent T . The timing convention assumed for the relationship between actual sales and sales tax receipts (a one month lag) is incorporated in the application of tax-rate changes to the calculations.