

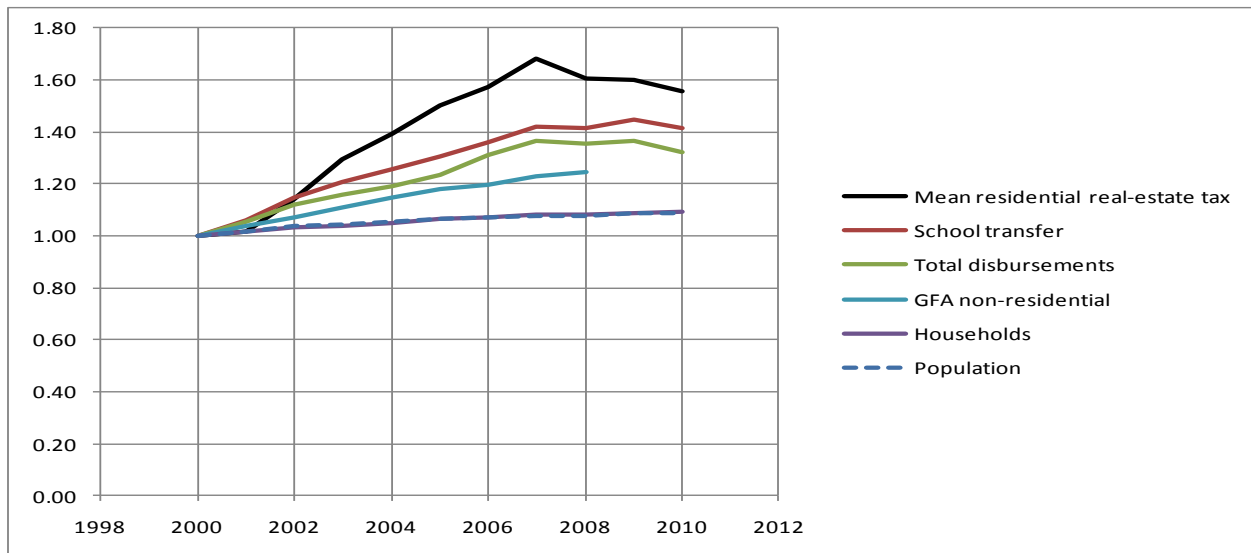
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**Introduction:** We often hear that commercial development increases tax revenues so that residential taxes can be reduced and/or amenities can be increased, so I decided to look at the historical data. The purpose of this report is to present the data and the conclusions to which the data point. Data for commercial development extends only to 2008; however, we included data for 2009 and 2010 for the other factors. The years 2000 to 2010 were chosen as our primary focus because the data is readily available at the County web site. Data for previous years must be obtained by perusing books. In the following, financial data is for County fiscal years, corrected to 2009 dollars using the CPI-U.

**Summary:** Data from the years 2000 to 2010, as shown in the following graph, reveal the following:

1. The number of households has increased at the same rate as the population. There continue to be 2.75 persons per household. Perhaps the population has been estimated using this 2.75 figure.
2. The non-residential GFA (gross floor area) increases at a significantly faster rate than the number of residences. If this rate continues, more people will come to work from outside the County; therefore, traffic will increase.
3. The rate of increase in County expenditures (“Total disbursements”) is far greater than the population growth and the GFA growth, indicating a disturbing diseconomy of scale.
4. The rate of expenditures for the schools increases faster than the Total disbursements.
5. Residential taxes increase at a far greater rate than any of the other factors, implying that the increased expenditures are carried more and more by the residents rather than the commercial sector.

Although we were unable to find complete sets of data back to 1980, this earlier data is consistent with that for the last decade. In the graph, the legend labels correspond from top to bottom to the curves so those viewing in black-and-white can follow the traces. For example, the top curve is for the Mean residential real-estate tax.



Further study shows that almost all of the increase in “Total disbursements” is due to labor costs, both in the schools and in the County offices. Over the nine-year period, the number of County non-school employees increased 9%, slightly more than the 8% population increase. (If there were an economy of scale, the increase in County employees would be less than the increase in population.) Because the number of employees changed little, the increase in labor costs appears to be due to increases in salaries, even after correction for the CPI. The number of Public-School employees increased 22% over this same period, much less than the 45% rate of increase in the school funding (“School transfer”). (School enrollment increased 11% over this same time period, so we again see a diseconomy of scale.) The increase in public-school labor costs appears to be half due to increases in the number of employees and half due to increases in salaries, even after correction for the CPI.

**Discussion:** The data were taken from the Fairfax County website (<http://www.fairfaxcounty.gov/>). The various sources are listed in the **Sources** section of this report (see below). Some of the reported data extends only to 2008; most, to 2010.

We hoped to develop a regression equation that would relate “Total disbursements”, the amount the County spends per year, to two factors: the number of residences (housing units, hu) and the non-residential gross floor area (GFA). The regression equation obtained was:

$$\text{Total} = \$2,500,000,000 * (0.137 - 2.634 * \text{hu}/400000 + 3.386 * \text{GFA}/200,000,000)$$

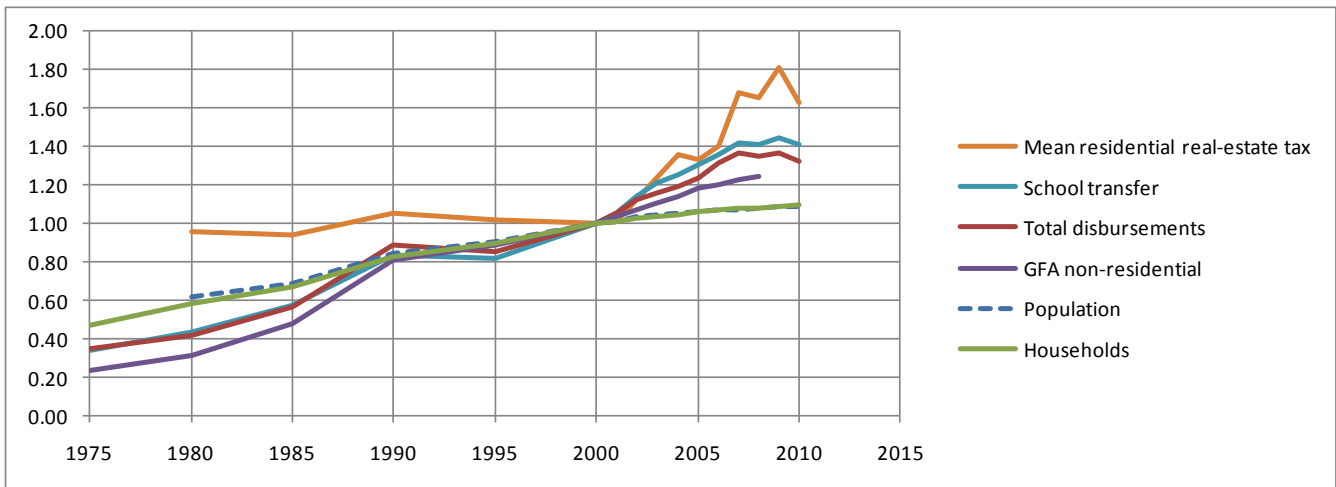
A comparison between this equation and the data is shown in the following graph. The R-squared is a respectable 0.96; however, the negative coefficient for hu is unrealistic because Total expenditures should increase if housing units increase, if only because infrastructure costs would increase. The regression results are unrealistic because hu and GFA are nearly linearly related. A linear regression between hu and GFA gives an R-squared greater than 0.99; therefore, the two are too closely related to consider them separately as done in the regression equation above. (The slope of the GFA vs. hu curve indicates that, for every housing unit built, 1460 sq.ft. of non-residential GFA were built.)



Because the regression failed, we undertook a more detailed analysis. The total County expenditure is the sum of the “Direct expenditures” and the “Transfers Out.” “Direct expenditures” is the cost of the labor of County employees, excluding school employees, plus approximately 75% overhead (approximately 50% operating expenses plus 25% benefits, with little variation from year to year). This is not overhead the way private industry calculates, because the salaries of managers are included in the County’s cost of labor. The funds in “Transfers Out” flow directly to other County organizations. For example, the public schools accounted for 76.9% of the transfers out in 2009. “Direct expenditures” plus “Public school operating” expenses amount to approximately 82% (37% plus 49%, respectively, in 2009, for a total of 86%) of the “Total disbursements,” with little variation from year to year. Included in the other 18% is the school debt service of 7.3%, the County debt service, 5.3%; the Falls Church Community Services Board, 4.9%; and public transit, 1.7%. The remaining 3.9% is scattered among 15 other categories (County insurance fund, County construction, Consolidated Community Funding Pool, etc.), with less than 0.5% for each. So not much of the budget goes for amenities, but much goes for County employees.

Of the school funding, between 2000 and 2009, labor-related expenses have increased by a factor of 1.74, whereas the non-labor expenses have increased by a factor of 1.24. Labor-related expenses (salaries plus benefits) amounted to 83% of school expenses.

The trends seen in the graph in the Summary persist over a longer period of time. Arthur Purves of the Fairfax County Taxpayer Alliance has long been tracking the County budget. He has manually copied the data from the County books for the years that are not available on line. He has generously sent me the data, which is displayed in the following



graph for the years before 2000<sup>1</sup>. Notice that, before 2000, the School transfer and Total disbursements changed at the same rate. The order, from top curve to bottom, is the same before 2000 as after 2000, although the differences are greater after 2000 and the School transfer has exceeded the Total disbursements after 2000. The large increase in the residential tax after 2000 differs from the relatively constant tax (in constant dollars) before 2000, probably because of the housing bubble after 2000. Apparently the County used the windfall from the housing bubble to increase salaries, as stated in the Summary section of this report. Before 2000, the increases in total expenditures was close to the increase in GFA non-residential. Certainly, the rate of increase in expenditures (the slopes of the curves) exceeded the rate of increase in population – before and after 2000.

The same data as shown in the foregoing graph can be displayed in a table, which shows the ratio of the values in the curve at the end of the decade to that at the beginning. The table shows that there is no obvious relationship among the four factors. The factors are listed from the slowest changing to the most rapidly changing in the decade 1980-1990. Notice that the order is entirely different in the “decade” 2000-2008.

Ratio of amount at end of decade to that at the beginning of decade			
	1980-1990	1990-2000	2000-2008
Residential real estate tax ratio	1.096	0.952	1.605
Population ratio	1.371	1.185	1.078
School-transfer ratio	1.932	1.189	1.414
GFA ratio	2.598	1.235	1.244

Disbursements from the pension fund are not included because these are taken from the contributions to the pension fund during the working careers of the employees. We do not have the data on The pension funds are currently underfunded, having only approximately 80% of the actuarially computed liability. We can expect a new item in the County budget that will cover the added cost of bringing the pension fund up to at least 90% of the actuarially computed liability.

We expected to find some justification for the increase in County expenditures from the increase in minorities in the County; however, the increase in minorities has not been great for the past ten years. Although there was a significant

<sup>1</sup> The data from 1980 to 2007 was provided by Fairfax County’s Sue Smith in the form of an Excel file. Sue obtained the file from the County’s Office of Management and Budget.

change in the fraction of public-school minority students from 19% in 1990 to 30% in 2000, there has been little change after 2000 (32% in 2009)<sup>2</sup>. These percentages are approximately the same as for the general population in the County (see <http://www.fairfaxcounty.gov/demogrph/gendemo.htm>).

An examination of the FY 2009 budget reveals that approximately 60% of the tax and fee revenues comes from the residents (see the following table). We did not find the residential component separately itemized. For the real property tax, we estimated the value by multiplying the residence assessed values by the number of residences<sup>3</sup> and the tax rate (\$0.92/\$100). For the personal property tax we assumed that single-family homes have \$15,000 worth of automobiles; townhouses, \$10,000; and multifamily units, \$6,000 and multiplied the totals by a tax rate of \$4.57/\$100. For the license fees, we assumed 2.0, 1.5 and 1.0 automobiles for the same three dwelling types, respectively, and used a \$28 registration fee. We see from the following table that the residential component is 60% of the taxes and fees.

Revenue per FY 2009 Adopted Budget Plan	Residential component		Budget Total	
	Value	Pct	Value	Pct of total revenue
Real Property Taxes	\$1,509,760,873	74%	\$2,046,377,538	62%
Personal Property Taxes	\$205,067,416	68%	\$303,014,994	9%
General Other Local Taxes			\$498,010,954	15%
Permit, Fees & Regulatory Licenses	\$17,796,534	64%	\$27,907,777	1%
Subtotal taxes and fees	\$1,732,624,823	60%	\$2,875,311,263	87%
Fines & Forfeitures			\$18,275,488	1%
Revenue from Use of Money & Property			\$32,268,252	1%
Charges for Services			\$62,469,561	2%
Revenue from the Commonwealth			\$295,945,009	9%
Revenue from the Federal Government			\$28,874,721	1%
Recovered Costs/Other Revenue			\$7,482,007	0%
Total Revenue			\$3,320,626,301	100%

There are significant differences between the CAFR reports<sup>4</sup>, the data listed for 2009 on the County web page<sup>5</sup>, and the General Fund Revenue Overview<sup>6</sup> documents as to the mean assessed value of residences, with the last being 20% higher than the other two for the year 2009. If the GF document value is used, the residential component of the real-estate taxes is greater than 100%; therefore, the first two sources are more reliable. The CAFR reports show that the fraction of the real-estate taxes that is from residential units is consistently on the order of 75%, as shown in the following graph. (We could not find CAFR data prior to 1997). The residential component did decrease from 1997 to

<sup>2</sup> On January 6, 2011, Superintendent Jack D. Dale presented to the School Board a \$2.2 billion FY 2012 Proposed Budget with a projected enrollment of 177,416 students. The proposed budget includes an additional 258.4 positions to support changes in student demographics and projected membership growth of 2,120 students as well as market scale adjustments and step increases for all eligible employees following two years of frozen salaries.

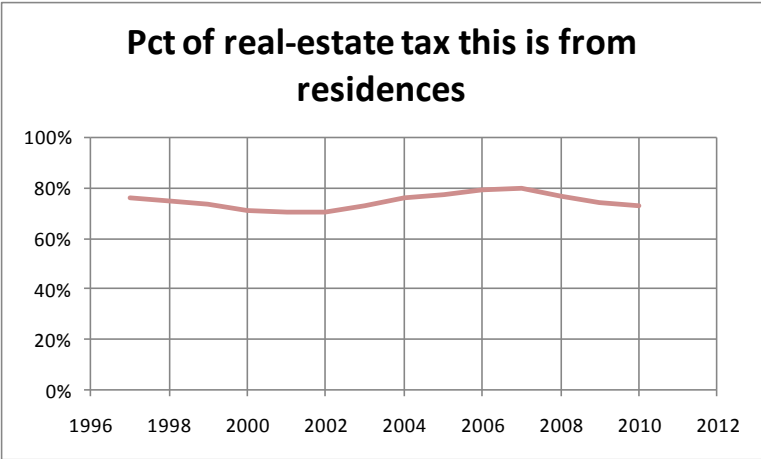
<sup>3</sup> Both found at <http://www.fairfaxcounty.gov/demogrph/gendemo.htm#pop 2000-2007>

<sup>4</sup> <http://www.fairfaxcounty.gov/finance/pdf/fy2007cafr.pdf>

<sup>5</sup> <http://www.fairfaxcounty.gov/demogrph/gendemo.htm> under Housing

<sup>6</sup> [http://www.fairfaxcounty.gov/dmb/archives/FY\\_2001/OVERVIEW/GF\\_Revenue\\_Overview.pdf](http://www.fairfaxcounty.gov/dmb/archives/FY_2001/OVERVIEW/GF_Revenue_Overview.pdf)

2001, while the commercial GFA was increasing slightly; however, the residential component did not decrease, but rather increased significantly, while the commercial increased dramatically from 1985 to 1990.



Consider the total revenue – not only the real-estate revenue. If the revenue from the residential sector increases 65% in eight years and the non-residential, 25%, as indicated in the graph in the Summary for the years 2000 to 2008, then in another eight years (in 2016), the residential component will have risen to  $(60\% * 1.65) / (60\% * 1.65 + 40\% * 1.25) = 66\%$  from the current 60%. Therefore, the percent residential tax burden will have increased, not decreased as has been hypothesized.

## Sources:

1. Mean residential real-estate tax: Usually, the values can be found by searching for “mean assess” to get the mean price and “per \$100” to get the real-estate tax rate. A stormwater tax was added in 2009. One file for each year must be interrogated. There are sometimes small inconsistencies in the mean price as quoted for the previous year. A representative file with the data is:  
[http://www.fairfaxcounty.gov/dmb/archives/FY\\_2002/overview/GF\\_Rev\\_Overview.pdf](http://www.fairfaxcounty.gov/dmb/archives/FY_2002/overview/GF_Rev_Overview.pdf)
2. School transfer: [http://www.fairfaxcounty.gov/dmb/archives/budget\\_archives.htm](http://www.fairfaxcounty.gov/dmb/archives/budget_archives.htm)
3. Total disbursements: [http://www.fairfaxcounty.gov/dmb/archives/budget\\_archives.htm](http://www.fairfaxcounty.gov/dmb/archives/budget_archives.htm)
4. GFA non-residential: <http://www.fairfaxcounty.gov/demogrph/demrpts/report/section10.pdf> . At <http://www.fairfaxcountypeda.org/sites/default/files/publications/my10rer.pdf> the EDA reports approximately 10% less GFA.
5. Households: [http://www.fairfaxcounty.gov/demogrph/gendemo.htm#pop\\_2000-2007](http://www.fairfaxcounty.gov/demogrph/gendemo.htm#pop_2000-2007)
6. Population: [http://www.fairfaxcounty.gov/demogrph/gendemo.htm#pop\\_2000-2007](http://www.fairfaxcounty.gov/demogrph/gendemo.htm#pop_2000-2007)
7. County employee positions: There is one file for each year. For example,  
[http://www.fairfaxcounty.gov/dmb/archives/FY\\_2003/overview/GF\\_supp\\_ot\\_fnds\\_psn\\_sch.pdf](http://www.fairfaxcounty.gov/dmb/archives/FY_2003/overview/GF_supp_ot_fnds_psn_sch.pdf)
8. Public-school enrollment and employee positions: <http://www.fcps.edu/fs/budget/wabe/2000.pdf> and <http://www.fcps.edu/fs/budget/wabe/>
9. Public-school expenditures were obtained from <http://www.fcps.edu/fs/budget/> with the data for 2011 being taken from <http://www.fcps.edu/fs/budget/documents/approved/2011/ApprovedBudget11.pdf>. This latter document is considerably difficult to analyze because the tables of data frequently, but inconsistently, have spaces in the middle of numbers (e.g., 1 ,234,567 as compared to 1,234,567) so that pdf translators become confused. In addition, simple Ctrl-C copying has not been allowed by the person that generated the pdf file.
10. The stormwater addition to the real-estate tax rate was obtained at [http://www.fairfaxcounty.gov/dta/realestatetax\\_taxrates.htm](http://www.fairfaxcounty.gov/dta/realestatetax_taxrates.htm)

## **Appendix A: Comments from Those Who Reviewed the Summary Section of This Report**

The following summarize the comments I received from four people from among the large number of people to whom I sent the Summary section of this report for their review and comment:

1. My studies revealed that wages, benefits, and time worked are the primary causes of high rates of increase in government expenditures. The claims of underpayment of public employees are absurd. Also, there are NO economies of scale in government. I have done considerable research on this. Larger governments, pure and simple, tend to spend more per capita than smaller governments.
2. I doubt that the diseconomy has anything to do with scale. We have the same problem in places with no growth and negative growth. I suggest it is more related to the lack of constraints on promises of benefits to public sector employees, the politicians being in the business of bringing home the "pork" to powerful constituencies and suchlike.
3. I did some preliminary work on this in late 2006. I wrote about density's impact on per capita public safety costs in a paper entitled "Future Reston Development: A First Look at Some Implications for Quality of Life" (see pp. 11-13). The conclusion both from other research and my first look is that public safety costs (at least) per capita increase with increased density. I suggest that, in addition to the look at functional sources of cost increases (e.g., labor), you take a look at allocation across departments as well. My guess is that the County has added expenditures in areas that are less justifiable in a now-tight budgetary environment. These expenditures may also need trimming.