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SUBJECT: Estimated Effects of Population Growth on Atlanta Public School's Revenue and Expenditures

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The population of the city of Atlanta is expected to grow over the next 25 years. This memorandum explores the likely effect of this growth on property tax revenue and school expenditures for the Atlanta Public School system.

The forecasted expenditures and revenues are built off the ARC's forecast for population, households, and employment for 2030 for the City of Atlanta. However, the *Atlanta Journal-Constitution* reported that Cousins Properties has predicted that the City's population will increase by 350,000 over the next 15 years, while ARC forecasts an increase of only about 67,000 over that period. We use the more conservative ARC forecast.

The population forecast is the net increase in population. Each year a sizable number of residents leave the city and are replaced by others, but we focus on just the net increase.

Education Expenditures

All evidence points to a decrease in the ratio of public school students to population. In 2000, APS enrollment accounted for 13.9 percent of the city's population. That declined to 11.3 percent in 2005. Population per household was 2.53 in 1990, 2.47 in 2000, and is projected to be 2.32 in 2030. Furthermore, population per household of those who are expected to move into the city by 2030 is 2.07. Using Census information on households that moved into the city between 1995 and 2000, we find that children in public schools account for 6.9 percent of these households and that there are 0.17 students per household.

ARC forecasts an increase in the number of households to be 74,982 and the increase in population to be 155,463 between 2005 and 2030. (Essentially, we assume this increase will equal the net increase over the next 25 years. Thus,

this analysis applies to the period 2007 to 2032.) Assuming that 6.9 percent of the population increase is public school children implies that there will be 10,727 additional students at the end of the 25 years. Assuming that each new household has 0.17 students implies that there will be 12,747 new students. We take the larger figure as the forecasted number of additional students in 2030.

We assume that the incremental local expenditures per student are \$6,233, which is based on previous research by one of the authors. This is lower than the current APS general fund expenditure of about \$10,000 per student. The \$6,233 per student is a result of the removal of special, vocational, and alternative education costs from the general fund expenditure. We did not attempt to adjust expenditures for inflation.

Column 2 of Table 1 shows the additional education expenditure by year. To determine the annual expenditures we allowed the number of students to increase at the rate that ARC assumes the population will increase.

Property Tax Revenue

The Atlanta Regional Commission is forecasting that the number of households in the city of Atlanta will increase by 74,982 between now and 2030. These new households will require housing, and we assume that a new housing unit will be necessary for each household. (This does not mean that the new residents will all occupy a new housing unit. Rather it means that the increase in the number of households will require a corresponding increase in housing units.) However, many of these new housing units will be built in area designated as Tax Allocation Districts, and thus, APS will generate no additional property tax revenue until the TAD is ended. Using the location of TADs and a census tract map, we attempted to identify those census tracts that contain part of a TAD. Based on this exercise, we estimate that about 25 percent of the growth in households will occur in TAD areas. Thus, we assume that by 2030 there will be 56,236 new housing units that will generate new property tax revenue for APS.

From SmartNumbers we obtained the average price of a new single-family home (\$357,972) and the price of a new multi-family housing unit (\$259,173). However, the land is currently in the tax base, thus only the improvements are new tax revenue. Based on analysis of individual property tax parcel records we

assume that land accounts for 20 percent of the value of these prices. We assume that the average value of a new rental unit is \$200,000, exclusive of land value.

According to the 2000 Census, 43.7 percent of housing units are owner occupied (this is the same as in 1990). Thus, we assume that 43.7 percent of new units will be owner occupied. In 1990, 90.3 of owner occupied housing units were in one-unit buildings, while in 2000, it was 86.7 percent. We assume that 80 percent of the new owner occupied units will be homes, while the remainder will be in multi-family units.

Each of the households will own cars. We assume that each household will have an average of 1.8 cars, with a value of \$10,000 (which is the current average value for motor vehicles in the property tax digest for the city of Atlanta. Motor vehicles are not counted in TADs, and thus the value of all new cars is included in the property tax base.

We assume that the property will be taxed on 40 percent of this value.

The ARC also forecasts an increase in employment of 130,963 workers over the 25 year period. These workers will require office space, etc. Using the commercial property value from the 2005 property tax consolidation sheet for the city of Atlanta and dividing it by the total number of workers working in the city of Atlanta, we get a property tax base per worker of \$17,762. Because this includes land value, we take 80 percent of this value. We did not include any other non-residential property, including industrial property and utility property, which together are about 17 percent of commercial property. We assume that each new worker will add \$14,210 to the property tax base. We assume that 25 percent of this additional property base will locate in TAD areas and thus will not generate property tax revenue for APS.

We assume an operating millage rate of 22.649 mills (the current General Fund property tax rate) and a homestead exemption of \$15,000. (This ignores the small millage rate levied for bonds.) We assumed that 98 percent of the revenue will be collected; this is higher than the current average for Fulton County, but the properties that are likely to not pay property taxes are old, low value parcels.

Column 3 of Table 1 shows the resulting additional property tax revenue from new housing and automobiles for each of the next 25 years based on the growth path forecasted by ARC, while column 4 shows the property tax revenue associated with the increase in employment. Column 5 gives the total property tax revenue. All values are in 2006 dollars, that is, we did not inflate the revenues for increases in housing values.

TABLE 1. FORECASTED EXPENDITURES AND REVENUES

	Expenditures	Revenue from Housing	Revenue from Employment	Revenue Total	Net Revenue
2007	\$1,279,591	\$1,964,767	\$498,922	\$2,463,689	\$1,184,098
2008	\$2,559,182	\$3,929,534	\$997,845	\$4,927,378	\$2,368,196
2009	\$3,838,774	\$5,894,300	\$1,496,767	\$7,391,067	\$3,552,294
2010	\$5,118,365	\$7,859,067	\$1,995,689	\$9,854,757	\$4,736,392
2011	\$6,397,956	\$9,823,834	\$2,494,612	\$12,318,446	\$5,920,490
2012	\$9,369,335	\$14,386,282	\$3,653,175	\$18,039,457	\$8,670,122
2013	\$12,340,715	\$18,948,730	\$4,811,739	\$23,760,468	\$11,419,753
2014	\$15,312,095	\$23,511,177	\$5,970,302	\$29,481,480	\$14,169,385
2015	\$18,283,474	\$28,073,625	\$7,128,866	\$35,202,491	\$16,919,017
2016	\$21,254,854	\$32,636,073	\$8,287,430	\$40,923,502	\$19,668,649
2017	\$24,226,233	\$37,198,521	\$9,445,993	\$46,644,514	\$22,418,280
2018	\$27,802,847	\$42,690,284	\$10,840,542	\$53,530,826	\$25,727,979
2019	\$31,076,843	\$47,717,389	\$12,117,098	\$59,834,487	\$28,757,644
2020	\$34,350,840	\$52,744,495	\$13,393,654	\$66,138,149	\$31,787,309
2021	\$37,624,837	\$57,771,600	\$14,670,211	\$72,441,811	\$34,816,974
2022	\$41,574,017	\$63,835,426	\$16,210,026	\$80,045,452	\$38,471,435
2023	\$45,523,197	\$69,899,251	\$17,749,841	\$87,649,093	\$42,125,896
2024	\$49,472,377	\$75,963,077	\$19,289,657	\$95,252,734	\$45,780,357
2025	\$53,421,557	\$82,026,903	\$20,829,472	\$102,856,375	\$49,434,818
2026	\$57,370,737	\$88,090,729	\$22,369,288	\$110,460,016	\$53,089,279
2027	\$61,787,000	\$94,871,743	\$24,091,222	\$118,962,965	\$57,175,966
2028	\$66,203,263	\$101,652,758	\$25,813,157	\$127,465,915	\$61,262,652
2029	\$70,619,525	\$108,433,772	\$27,535,091	\$135,968,864	\$65,349,338
2030	\$75,035,788	\$115,214,787	\$29,257,026	\$144,471,813	\$69,436,025
2031	\$79,452,051	\$121,995,802	\$30,978,960	\$152,974,762	\$73,522,711
TOTAL	\$851,295,452	\$1,307,133,924	\$331,926,586	\$1,639,060,510	\$787,765,058

Net Effect

Additional revenue exceeds the additional expenditures. Column 6 of Table 1 shows the net revenue generated each year. Total net revenue over the 25 years is \$787.8 billion.

Using Net Revenue

To use the approximately \$787.8 billion potential net revenue we would suggest Certificates of Participation (COPs) as the debt instrument. We do not believe that bond financing is an appropriate way of capitalizing the potential net revenue.

Certificates of Participation (COPs) are a form of debt that is analogous to a lease-rental obligation, customarily used to finance the acquisition of buildings or equipment for a governmental entity. COP popularity is due to the fact that it does not require voter approval and that it is “off-balance sheet” debt, which is not subject to statutory debt limitations.

How COPs Work. A governmental entity enters into a lease-purchase agreement with a *lessor* for a proposed facility, such as a building. The government transfers its interest in the property to the lessor (e.g. a building authority or non-profit organization) and leases it back through annual "lease" payments. The government, therefore, becomes the *lessee*. If the government owns the land beneath the leased facility, it also enters into a long-term ground lease.

After a negotiated or competitive bidding process, handled by a *financial advisor*, the government receives the money to construct the capital facility from an *underwriter*. The underwriter sells the certificates to investors. In the meantime, to secure the interests of the investors, the lessor assigns its interests to a *trustee*. The trustee is usually a commercial bank that holds title to the property, collects the lease payments from the government, and makes payments to investors.

The lessor structures the lease within the parameters set by law. The government makes annual authorized lease payments that include both principal and interest. The interest rate paid by the government is fixed and depends on market conditions on the pricing date. The government renews the lease each year through appropriation. When the lease ends, the government owns the facility at no or minimal additional cost. The government may also purchase the leased property and terminate the lease early if funding is available.

Investors. COPs are marketed to investors by the underwriter in the form of securities. Investors normally purchase the certificates in \$5,000 denominations. Although the government makes annual payments, investors generally receive interest payments every six months and principal payments annually. In addition to market conditions on the pricing date, the interest rate earned by investors depends on the maturity date of the securities purchased. Investors who invest for the term of the COP receive a higher interest rate than those who purchase certificates with an earlier maturity date. In addition, the interest income earned by investors is exempt from federal and state taxation.

Comparison to Other Bonds. COPs are necessarily similar to other bond obligations in all material respects. COPs and other bond obligations are instruments by which governments access capital markets to secure resources to address capital needs. Good faith pledged by the borrowing entity to appropriate resources required to make agreed upon principal and interest payments occurs in either type of these financing transactions. The amount of interest cost is determined in general by how investors perceive the issuer's ability to repay the outstanding obligations. Importantly, either of the financing options requires current resources and thus competes with other operating needs for limited resources available in budgets. Thus, the conclusion drawn is that COPs and other capital financing instruments are only minimally distinct.

The technical differences between COPs and other capital financing instruments may be perceived as minor, but there are two critical differences. The first is derived from the repayment of the obligation. In typical general obligation financing, the issuer agrees to repay the principal and interest in whole or in part from ad valorem property taxes that will be added to the current mill levy. In that sense, bonds collateralized either entirely or in part by the government's taxing authority represent a legally enforceable debt obligation. In contrast, a lease finance instrument, such as COPs, is based upon the government's agreement to make periodic lease payments to the lessor. Generally the lease payment is not treated as a binding debt obligation, and as such, does not count against the debt limits that constrain many governments. Secondly, since the lease payment is not construed as debt, the COPs typically do not require voter approval in a bond referendum.

Risks to Consider. If the government fails to make the annual lease payment, the lease terminates and the trustee may sell, re-let, or otherwise dispose of the property, using the proceeds to pay the investors.

If the lease agreement is specific, the trustee or lessor may not be able to re-let the facility. This specification of the facility or equipment purchased through the COP instrument may increase the costs of the lease when compared to general obligation debt.

Comment. The major disadvantages of COPs or other financing obligations are financing costs and fixed long-term annual appropriations. Financing costs, primarily interest payments but also transaction costs can make projects more costly than if they are funded with current dollars. This is particularly the case if the government chooses to begin lease payments at a later date and enters into a lease with a lengthy term. Substantial annual appropriations for COPs can also make it more difficult to fund other projects or programs. That said, the use of COPs provides an opportunity to fund an asset over its useful life and provides a fair intergenerational distribution of the costs of capital.

Traditionally, the concern with revenue-backed debt instruments, such as COPs, is their true interest costs. To provide an example, the estimated difference in repayment costs between a general obligation bond and an insured COP is summarized below. A comparison of the use of both forms of financing of a \$100 million project that would be repaid over 20 years produces the following estimated costs, assuming market rate.

Financing Tool	True Interest Cost	Estimated Total Payments
General Obligation	4.28%	\$151.44 million
Insured COP	4.31%	\$151.78 million

The present value of the difference in the total repayment amounts is about \$2,105. Thus, on a 20-year insured COP we find little difference in total costs when compared to a GO bond.