

**APPENDIX D:
Moody's Sales Tax Forecast**

NORTH CAROLINA

Revenue Outlook: Durham and Orange County Article 43 Tax Collections

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Revenue Outlook: Durham and Orange County Article 43 Tax Collections

BY DAN WHITE, EFUA AMOONUA AFFUL AND EMILY MANDEL

The following revenue outlook links Durham and Orange County Article 43 sales tax collections to measures of underlying economic growth in an effort to better understand and anticipate future funding levels. A healthy labor market and strong income growth will fuel robust tax collections throughout the forecast. Collections will grow more strongly in Durham County because of stronger private-sector job and population gains. Orange County's large government presence will drive slower job creation and consequent collections.

Regional economic outlook

North Carolina's economic growth has cooled considerably after a strong start to the year, though job gains still best the U.S. average and track those of the South. Service-providing payrolls are expanding at a healthy pace, although performance across industries is uneven. Professional/business services and trade/transportation/utilities are increasing at an above-average rate, leisure/hospitality payrolls are contracting, and financial service payrolls have leveled off (see Charts 1 and 2). Less than half of industries are contributing to job growth, but a tighter job market is still leading to wage gains (see Chart 3).

Longer term, a generally good investment climate and faster than average popu-

lation growth will spur above-average gains in higher-paying employment. Though much of this will continue to come in professional services and—despite recent struggles—finance, an increasing share will come from tech.

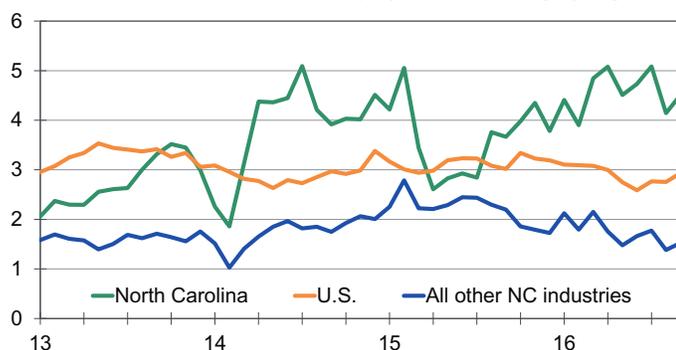
The Research Triangle Park will remain the backbone of North Carolina's high-tech industry, an important growth engine throughout the forecast. In 2015 the state ranked in the top 10 for growth in high tech, churning out net new jobs faster than Massachusetts and Colorado and only slightly more slowly than California. The Durham and Raleigh metro areas, which together house the RTP, accounted for nearly half of the state's tech job gains last year. A large pool of talent and lower costs than in the

Bay Area and Northeast draw firms to the RTP (see Chart 4). For example, Cohera Medical is moving its headquarters to Raleigh from Pittsburgh and Arbiom is setting up a new research and development center in Durham.

Thanks to still-low interest rates and healthy risk appetite, venture capital is being put to work in North Carolina and helping firms such as Bivarus and Windsor Circle expand. North Carolina firms received more than \$700 million in venture capital over the last four quarters, up 40% from the prior four-quarter period and 10th highest in the nation. Startup incubators and accelerators such as the Hamner Institutes for Health Sciences and the Triangle Startup Factory bode well for growth.

Chart 1: Professional/Business Services Lead

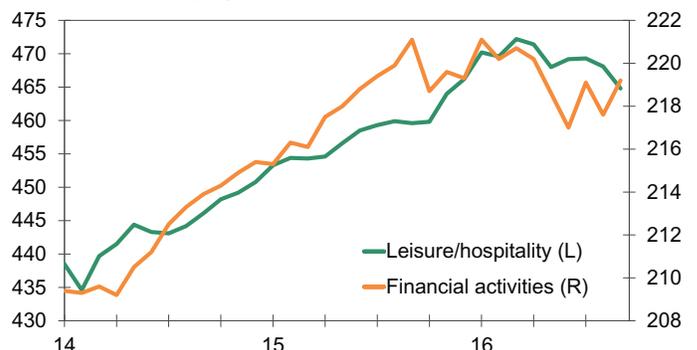
Professional/business services employment, % change yr ago



Sources: BLS, Moody's Analytics

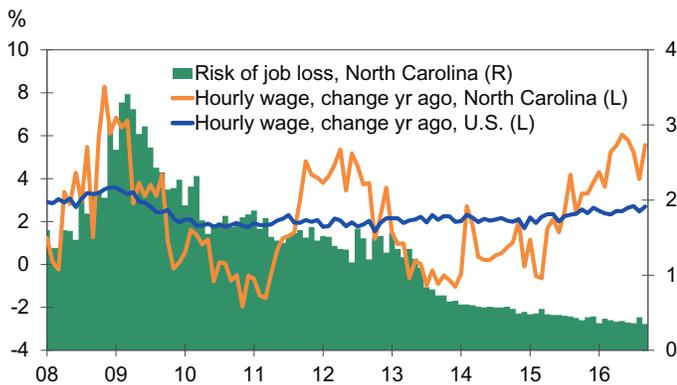
Chart 2: Banking and Tourism Hit the Brakes

North Carolina employment, ths



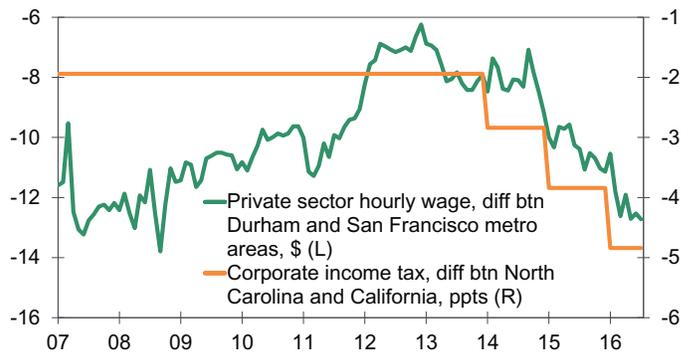
Sources: BLS, Moody's Analytics

Chart 3: Tightening Labor Market Boosts Wages



Sources: BLS, ETA, Moody's Analytics

Chart 4: Durham Positioned for Tech Growth



Sources: BLS, Tax Foundation, Moody's Analytics

North Carolina's banks, on the other hand, will expand at a measured pace as improving household balance sheets and accelerating wage growth drive stronger demand for consumer credit. Wells Fargo and Bank of America, which together account for one-quarter of the state's finance and insurance jobs, will benefit from stronger demand for home loans in the coming years despite rising interest rates.

This increased demand for housing thanks to strong demographics and even stronger income gains ahead will also manifest itself in faster homebuilding. Construction is poised to take off and take the baton from manufacturing as the engine of growth in goods-producing industries. Supply and demand fundamentals are much improved compared with this time last year, suggesting a bigger boost from housing in the quarters ahead. Population growth is steadily ahead of the national average, and

more households are forming now that the tightening job market is generating faster income growth. More people will be willing and able to buy homes, and with supplies tight and prices rising, builders will turn more aggressive and the recent lull in construction employment will prove short-lived (see Chart 5).

In total, North Carolina economic growth will accelerate in the near term thanks to more spending by consumers and businesses, which will benefit from bigger wage gains and declining costs, respectively. Longer term, a diverse industrial structure, low costs, and educated workforce will attract a wide range of capital and help the state to outperform the national average and its neighbors.

Sales tax forecast

Methodology. With only three full years of data, Article 43 collections were impossible to forecast directly, and the more established Article 39 collections history was used as a proxy. Separate regressions were performed for each county utilizing county-level personal disposable income and metro area housing completions

as explanatory variables. Because of the delay between initial sales and distributable proceeds, both independent variables were found to have the strongest explanatory power when lagged by one quarter.

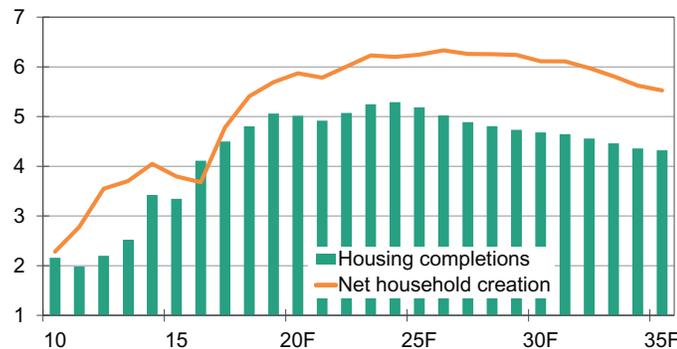
Orange County collections display an erratic seasonal pattern, with a tremendous amount of volatility that is not always correlated with underlying measures of economic growth. This is likely due to the large tax-exempt presence in the county, which can create distortions between what is occurring in the economy and what ultimately comes in the door in the form of revenues. Durham County collections, by contrast, were found to have a much more stable and consistent seasonal pattern.

Historical collections growth rates for Article 39 and Article 43 collections were compared for both counties, and found to be extremely similar despite the inclusion of food and medical purchases in one series and not the other. After the determination of an appropriate forecast for Article 39 collections, the results were then fitted to historical Article 43 values to provide the county-level forecasts. A Monte Carlo simulation was then used to create optimistic and pessimistic scenarios based on probabilities encompassing 85% of potential outcomes (see Charts 6 and 7).

Forecast. Sales tax collections will grow at a healthy pace in both Durham and Orange counties. Although the short history available for Article 43 collections demonstrates considerable volatility, strong underlying economic drivers will yield a consistent

Chart 5: Housing Market Has Room to Grow

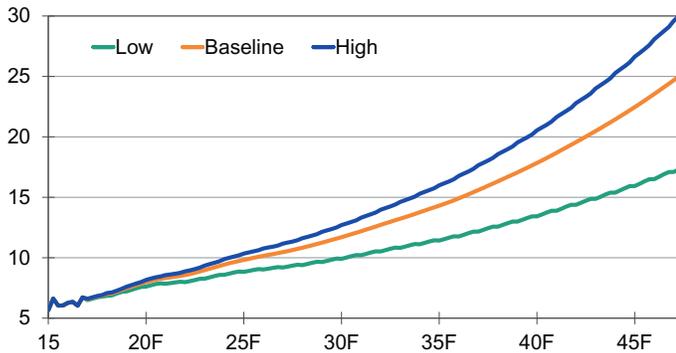
Durham County, ths



Sources: Census Bureau, Moody's Analytics

Chart 6: Durham County Scenarios

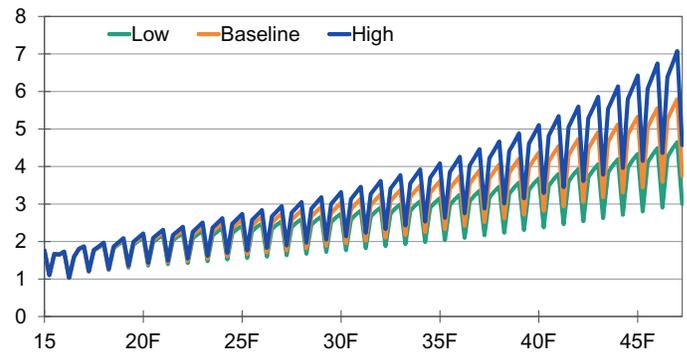
Article 43 collections, fiscal yr, mil



Sources: GoTriangle, Moody's Analytics

Chart 7: Orange County Scenarios

Article 43 collections, fiscal yr, mil



Sources: GoTriangle, Moody's Analytics

upward trend. Orange County Article 43 collections underperformed through much of fiscal 2016, but the economy's underlying strength and tight labor market ensure that

collections will turn around this year. The past year's weak comparative base will drive especially strong gains for Orange County in the coming year. Near-term collections will

also improve in Durham County, but a relatively strong performance in fiscal 2016 will deliver slower, steadier gains in fiscal 2017.

Longer term, however, Durham will be the stronger of the two. Over the coming decade Durham County tax collections will settle into an average of 4.1% year-to-year growth, while Orange County will lag slightly at around 3.5% (see Tables 1 and 2).

Drivers. Sales tax collections will be supported by a number of factors, with growth underpinned by a strong labor market. Disposable personal income has consistently proved to be a reliable driver of consumer spending. Prospects are quite bright in both counties, with disposable personal income expected to rise at well above the national pace (see Chart 8). Durham benefits from a number of dynamic industries, and the Research Triangle Park will propel high-wage job growth. Wages will also pick up across industries, as the county's tightening labor market leads businesses to compete for workers. As consumers see their take-home pay rise, they will increase spending on retail, recreation and housing.

Income gains will be slightly slower in Orange County. The county will also benefit from falling unemployment and rising wages, but the county's large public sector, anchored by the University of North Carolina at Chapel Hill, will weigh on top-line job growth (see Chart 9). The public sector tends to expand more slowly in good times, but also will experience smaller declines during economic downturns. However, the tax exempt status of the university and accompanying medical

Table 1: Durham County Growth Forecast

Article 43 distributable proceeds, % change yr ago

	Low	Baseline	High
FY2017	5.0	6.2	6.8
FY2018	5.0	6.2	6.8
FY2019	6.1	7.3	7.9
FY2020-FY2029	2.8	4.1	4.7
FY2030-FY2039	3.1	4.3	4.9
FY2040-FY2046	3.5	4.7	5.4

Sources: GoTriangle, Moody's Analytics

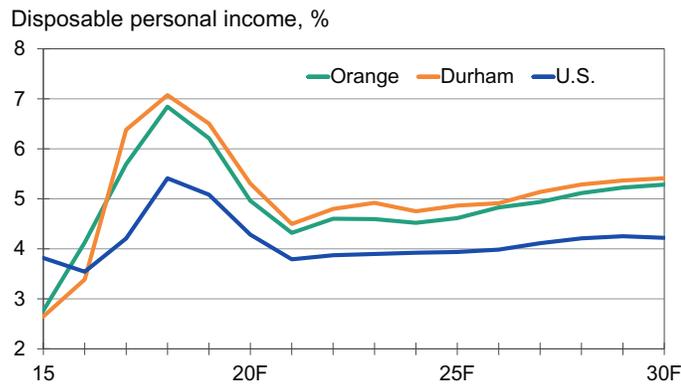
Table 2: Orange County Growth Forecast

Article 43 distributable proceeds, % change yr ago

	Low	Baseline	High
FY2017	8.7	9.4	10.1
FY2018	3.9	4.6	5.3
FY2019	5.0	5.7	6.4
FY2020-FY2029	2.8	3.5	4.2
FY2030-FY2039	3.0	3.7	4.4
FY2040-FY2046	3.4	4.1	4.8

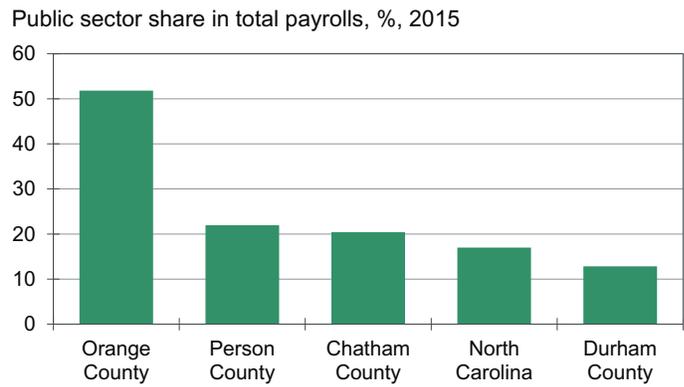
Sources: GoTriangle, Moody's Analytics

Chart 8: Rising Incomes Will Fuel Spending



Sources: BEA, Moody's Analytics

Chart 9: Low Industrial Diversity Risk to Growth



Sources: BLS, Moody's Analytics

center lessens the overall pool for collections, increasing seasonal variations, and creating a more volatile revenue series.

In addition to consumer activity, construction plays an outside role in determining sales tax collections. The model utilizes housing completions to account for the positive economic

impact of building. New housing construction requires significant expenditures on durable goods. This includes building materials and the significant spending that goes into furnishing a newly built house. Homebuilding has picked up significantly over the past year, but there is further room for growth.

Strong population gains, particularly in Durham County, are fueling robust demand. The improving labor market will also boost household formation in the near term, further supporting home sales. Its more dynamic demographic profile will also help Durham County outperform throughout the forecast.

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