

Online Appendices for Kenyon et al. (2020)

Note: This document includes two online appendices to accompany the following article: Kenyon, Daphne, Robert Wassmer, Adam Langley, and Bethany Paquin. 2020. “The Effects of Property Tax Abatements on School District Property Tax Bases and Rates.” *Economic Development Quarterly*. Forthcoming.

Appendix A: Data Sources

Data from Franklin County Auditor’s Office (FRANKLIN_CO).

Most of the data analyzed in this article come from data sets provided to the authors by the Franklin County Auditor’s office in Columbus, Ohio. For the analyses, we first combined seven separate data sets to create a parcel-level annual data set for 1998 to 2015, and then summed the parcel-level data to the level of school districts, municipalities, and census tracts.

The Franklin County Auditor’s office provided six parcel-level data sets used for the analysis and a seventh data set for taxing districts, which we merged together based on the parcel ID for each parcel:

1) *Historical Value Control Tables from Tax System*: These annual data sets include information on market values for each parcel separated into three components: Market Value = Base Value + TIF Value + Exempt Value. These data sets also include land use codes for each parcel, which we used to separate properties into six categories—industrial (land use codes 300 to 399), office space (447 to 450 and 470), apartments (401 to 403), other commercial (400, 404 to 446, 451 to 469, 471 to 499), residential (500 to 599), and other (100 to 299, 600 to 999).

2) *CRA, EZ, and EPA Spreadsheets*: These annual spreadsheets include information for each parcel that has received an abatement, including the type of abatement (CRA, EZ, or EPA), the name of the CRA zone, market value abated, and net tax savings.

3) *Historical Parcel Tables from Tax System*: These tables include a school district code and municipality name, which we used to aggregate the parcel-level data to the level of school districts and municipalities.

4) *Historical GIS Extract*: This geodatabase includes geographic information for each parcel, which allows the data to be mapped in ArcGIS and to be analyzed spatially. We used the geocoded database to identify the census tract for each parcel and then to aggregate parcel-level data to the level of census tracts. The historical GIS extract also includes annual data on the tax charge for each parcel, apart from condominiums, which are mapped differently than other parcels.

5) *Parcel Data sets from Auditor’s Website*: These data sets were used to fill in tax charges for condominiums missing data in the historical GIS extract. Data from the October spreadsheets were used for each year. As of August 29, 2019, these data sets are available on the auditor’s website at ftp://apps.franklincountyauditor.com/Parcel_CSV/.

6) *Tax Rate Sheets for Taxing Districts*: These data sets provide data on effective tax rates for each taxing district. The tax rate data were merged with the parcel-level data set using each parcel's tax district code included in the Historical Parcel Tables from Tax System.

Census data (CENSUS).

For school districts, our regression analysis includes several socioeconomic variables from the 2000 decennial census and the 2006 to 2010 and 2011 to 2015 American Community Surveys. We used linear interpolation to approximate annual values based on the three data points available for each school district. Values from the decennial census were used for 1998 to 1999; the 2006 to 2010 ACS was used for 2008 and the 2011 to 2015 ACS was used for 2013-2015; and then linear interpolations were used to approximate values for 2000 to 2007 and 2009 to 2012.

In addition, we use annual data on school district revenues from the individual unit of government files from the Census of Government Finances and the Annual Surveys of State and Local Government Finances. These data are only available up to 2014.

State data sources (STATE).

1) For school districts, our regression analysis uses some of the data available in annual SD1 spreadsheets from the Ohio Department of Taxation, including data on school mill rates, enrollment, and total real property values. Total property values reported for each school district in the SD1 spreadsheets are like the sum of market values for all parcels in each school district that are reported in the data sets from the Franklin County Auditor's office, but not identical. To test our findings, we tried two similar regressions for school district property values: one where the dependent variable is total property value from the SD1 spreadsheets (schl_value_total) and a second where the dependent variable is the sum of market values for all parcels in each school district (market_value). As of August 29, 2019, the SD1 spreadsheets are available at http://www.tax.ohio.gov/tax_analysis/tax_data_series/school_district_data/publications_tds_school.aspx.

2) An e-mail request to the Ohio Development Services Agency (ODSA) produced data on job creation tax credits (JCTC). Specifically, the ODSA had on file all JCTC agreements since the program's inception in 1993. Included in those agreements is the number of retained or new jobs promised and the number of years for which the JCTC was awarded. We aggregated this job information for all firms whose address falls in each Franklin County school district or census tract, for the years that the JCTC was granted and for the years under consideration in our analysis. We normalized this variable across zip codes and census tracts of widely varying sizes and economic activity by dividing by the market value of taxable property in the geographic entity measured in \$100 million.

Appendix B: Municipal Income Tax Analysis

Since municipal governments in Franklin County rely most heavily on local income tax revenue, we explored the relationship between abatement intensity and municipal income tax revenue. In interviews, policy makers often argued that even if local governments raised less in property taxes due to abatements, this revenue drop would be more than offset by higher local income tax revenues. Thus, the impact of abatements on income taxes is an important consideration, especially for municipal governments in Franklin County.

We used regression analysis to examine this relationship but are concerned that abatement intensity and income tax revenue are endogenously determined, as the governing body with discretion over property tax abatements is the same government receiving income tax revenues. To diminish concerns about endogeneity, we lagged all variables measuring abatement intensity by 1 year.

Table 6 shows the results of this regression for 17 municipal governments in Franklin County. The specification is nearly identical to the previous regressions with property tax rates and property values as the dependent variables. The analysis shows that a one percentage point increase in CRA abatement intensity in the prior year is correlated with a statistically significant 1.24% increase in municipal income tax revenues in the current year. None of the other measures of abatement intensity have a statistically significant relationship with income tax revenues, but they all have the expected positive sign, except for the EPA intensity variable.

While we cannot determine that greater use of CRA abatements *causes* growth in municipal income tax revenues, there is a clear positive relationship between these two variables. This result suggests that using CRA abatements may have at least two positive fiscal effects: increases in municipalities' income tax revenues and decreases in school districts' property tax rates.

Table 6: Regression Results Using Franklin County Municipal Data

Dependent variable	(1) Ln_Income_Tax
CRA_Abate_Percent (t-1)	1.238* (0.077)
EZ_Abate_Percent (t-1)	14.05 (0.142)
EPA_Abate_Percent (t-1)	-18.62 (0.194)
TIF_Abate_Percent (t-1)	0.677 (0.452)
CRA_Pre94_Percent (t-1)	0.0491 (0.254)
Tax_Exempt_Property_Percent	2.312*** 0.000
Ln_Parcels_Number	1.043*** 0.000
Parcels_NonResidential_Percent	5.833*** 0.000
Age19_Less_Percent	-2.497** (0.034)
Bachelor_Plus_Percent	2.858*** (0.001)
Constant	4.778** (0.017)
City fixed effects	Yes
Year fixed effects	Yes
Within <i>R</i> -Squared	0.753
Observations	289

Notes: Data on 17 Franklin County municipalities drawn from 17 years between 1999 and 2015. The analysis excludes three municipalities that had zero income tax revenue or were missing income tax data, and four municipalities that did not use any abatements for the entire 1999 to 2015 period. These were the seven smallest municipalities in the county, with an average of just 292 parcels in 2015. Heteroscedastic and autocorrelated robust standard errors through clustering on municipalities. Statistical significance measured in two-tailed test: *** > 99%, **95 to 99%, and *90 to 95%. Within *R*-Squared measures the variance within the panel units (municipalities) accounted for by the regression model.