STOCKHOLM SCHOOL OF ECONOMICS
Bachelor's Thesis in Finance

The Impact of Demographic and Socioeconomic Factors on Municipal Bond Coupon Rates

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Abstract

This thesis aims to understand and explain if and how demographic and socioeconomic factors affect the cost of debt for local governments, namely U.S. counties when issuing municipal bonds. By first discussing potential factors that may prove significant to financial performance, correlation analysis and model testing are made. Inspired by previous research, this thesis employs a fixed effects OLS model. The results provide significance and high explanatory value that investors actually do evaluate these factors when assessing the risk premia of municipal bonds. The final model indicates that unemployment rate, share of youth, property tax, retirement benefits, level of public spending and public affiliation have significant impact on the coupon rates of municipal bonds. As only one of these factors is demographic in nature, the thesis concludes that investors pay greater attention to socioeconomic factors, beside financial factors already explained by previous research.

Keywords
Municipal bonds, demographic factors, socioeconomic factors, cost of debt, U.S. counties, public finance

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1. Introduction

In the modern world, financing has become an integral part of the global economy. Whether it be corporations, states, local governments or individuals, external financing is often needed for long term investments. Considering state and local governments, external financing is used for large projects such as infrastructure that are likely to yield private and social returns in the long run.

Over the years, considerable attention has been paid to financial factors affecting cost of debt in public finance, such as debt burden and liquidity of local governments. However, does the demographic and socioeconomic profile of these entities play a role? One could imagine that the inhabitant characteristics can play a significant role in the need and ability to pay off debt. Does a large elderly population increase the healthcare costs to such an extent that it increases the risk premium the local government faces in debt markets? Do investors consider factors such as crime rate and unemployment when making investment decisions regarding municipal bonds? A fundamental principle within finance is that investors want to be compensated for the risk taken. The cost of debt of municipal bonds should therefore reflect the underlying riskiness of the municipality. Historical evidence suggests that cost of debt can vary significantly in a given time period depending on macro- and socioeconomic factors (Ludvigson & Serena, 2005).

This thesis aims to investigate this relationship between municipal bond coupon rates and underlying demographic and socioeconomic factors in U.S. counties. As the U.S. municipal bond market was valued at $3.7 trillion in 2015 (Federal Reserve, 2015), it is of interest for investors and local governments to understand some of the underlying factors affecting income and expenditures – and in extension debt financing. One could argue that a county with a low income base and high expenditures would be relatively cash strapped and represent an increased default risk. The question is whether these conditions are accounted for by investors and if the investors thus require an increased return to account for the risk they assume. Correlation factors were calculated using OLS estimation for each of the variables, that were in turn selected based on relevancy and previous research, to produce a model with strong explanatory power, similar to the methodology of previous research in public finance (Merrifield, 1991).

1.1. Thesis overview

Section 2 describes the general theory of bond pricing and risk and definition of municipal bonds. Following that, the U.S. local government structure is outlined together with income sources and expense centers, providing a logical bridge to the selected demographic factors that this thesis uses as independent variables. Section 3 outlines the hypotheses regarding the outcome and effect of the selected variables. Section 4 presents the demographic, socioeconomic and financial data used to test the hypotheses. Section 5 contains the methods used to process and analyze the data sets. Section 6 presents the results which are later discussed in Section 7. Finally, suggestions for future research are presented in Section 8.

1.2. Delimitations

The focus of this thesis is on the explanatory value of demographic characteristics on the coupon rates of municipal bonds and the results presented herein do not attempt to account for the explanatory value of financial factors. Credit risk, liquidity premium and the tax-free returns of a municipal bond all play a large role in explaining the municipal bond spread (Ang, Bhansali and Xing, 2014).

2. Theory

2.1. Municipal bonds

In the U.S., municipal bonds are bonds that are issued by local governments at or below state level, including counties, municipalities, school districts and public utility districts. These bonds are issued to cover financing for schools, roads and infrastructure projects, waste treatment and utilities. The main differentiating factor of the municipal bond is the tax-exempt status from many state, federal and local taxes (subject to each individual state and local government legislature). As such, many municipal bonds offer lower returns compared to corporate bonds and sovereign debt, which makes it an attractive source of financing for many local governments. Bonds with a maturity shorter than one year are called notes. There are several types of municipal bonds – general obligation bonds, revenue bonds, drainage bonds, school district bonds, port authority bonds and housing authority bonds. General obligation bonds are supported by the full taxation capabilities of the issuer, while revenue bonds are repaid using only a specific revenue stream, e.g. a toll road.

General obligation bonds are more secure of the two, as the entire revenue stream can be used to meet coupon payments. The credit risk of municipal bonds lies within the local government's ability to make the payments in full and on time (O'Hara, 2012). Defaults can occur if unforeseen expenses occur or the tax revenue drops, through e.g. devaluation of properties.

Historically, the default rates of municipal bonds have been lower than that of the corporate bonds in the U.S., but default rates have converged with U.S. corporate bonds with same ratings since 2010. In 2014, 93% of municipal bonds were rated "A" or higher by Moody's, compared to 21% of global corporate bonds. This signifies the overall low risk profile of municipal bonds. However, defaults have occurred due to liquidity shortfalls (Jefferson County, AL in 2011), fiscal mismanagement (City of Harrisburg, PA in 2009) and decrease in revenue following property devaluation after the financial crisis (City of Stockton, CA in 2012), to name a few (Moody's, 2015).

While much more stable than the profits of a corporation, the ability of a local government to meet its payments is dependent on the profit & loss statement it produces. These factors are outlined below and are dictated by the demographic and socioeconomic characteristics of a local government, affecting the taxes it collects and expenses it faces serving the citizens.

2.2. U.S. local governments

The U.S. local governments act under state law, rather than federal, as stated by the Tenth Amendment of the U.S. Constitution. The two types of local governments are counties and municipalities, with the former being the biggest. There are 3,144 counties (U.S. Census Bureau, 2014) including county equivalents, such as boroughs and parishes in Alaska and Louisiana, respectively. Local governments are mainly responsible for services such as transportation, protection services such as police and fire departments, public work (waste management, snow removal, street maintenance etc.) and recreational areas. Where relevant, local governments are also responsible for sea- and airports (White House, 2015). The local governments preside under the state and federal governments, and have therefore a large dependence on them, not least when it comes to revenue.

2.2.1. Local government revenue streams

Previous research points to a multitude of institutional, demographic and political factors affecting tax revenue in American states (Merrifield, 1991). It shows to that the amount of tax revenue collected depends on the business attractiveness of a particular state. The statistically significant factors were mostly institutional or political – such as ruling political party, turnout rate and the governor's ability to veto line items. In addition, there were several demographic factors explaining tax revenues in the 49 states such as poverty, per capita income and share of senior citizens. Other factors were examined such as crime rate, unemployment rate and share of minor population (18 years of age and below), but they showed to be insignificant in explaining the tax revenue. This thesis aims to examine these and other factors on a county level, based on revenue streams of local governments. The aim is to select variables that will explain the stability and size of the revenue streams, and thus the local government's ability to meet debt payments.

Table 1 – 2012 Income streams of local governments, in USDb

Taxes	608	*36%*
Intergovernmental revenue	540	*32%*
Charges and miscellaneous general revenue	339	*20%*
Utility revenue	144	*8%*
Miscellaneous general revenue	78	*5%*
	1,710	***100%***

Source: U.S. Census Bureau

In 2012, local governments collected revenue totaling $1.7 trillion (U.S. Census Bureau, 2013), with taxes being the biggest contributor. As the income and corporate taxes are on state- and federal level, the biggest directly controllable revenue stream of a local government is the property tax (Tax Policy Center, 2014), which contributed to 72% of total tax revenue. The second-biggest revenue stream were the inter-governmental transfers from state- and federal levels. These transfers do not vary significantly from year to year (Wildasin, 2009) and are mainly contributed to by state authorities; federal transfers are modest, representing only 13% of total transfers. Charges and miscellaneous receipts amount to 20% of total revenue, paid by institutions such as universities and colleges. Together, the top three revenue streams total at almost 90% of local governments' income.

2.2.2. Local government expenses

Borcherding (1985) has estimated that 40% of the government expenditure growth can be explained by changes in income and demand for public goods such as education, welfare and protection. The remaining share can be explained by institutional factors such as increased bureaucracy and political redistributions. Furthermore, democratic states tend to have larger expenditures (Merrifield, 2000), necessitating the need to investigate if this effect is present on a county level and if it affects coupon rates. Using previous research and recent local government expenditure as guidance; demographic, socioeconomic and political factors will be identified.

As seen below in Table 2, the top five expense posts account for 84% of expenses. Education is the biggest expense category, with over 90% related to pre- through secondary education. Other spending includes waste management and other utility services. Police protection and prisons compromise 70% of Protection expenses. Health Care and Transportation (road maintenance as

well as air- and seaport operations) conclude the top 5 list. The nature of these costs is care for the immediate population and infrastructure in the local government, with little to no expenses related to the surrounding world. Interesting to note is that the expenses are very close to the revenue collected, suggesting that local governments are efficient with their money and quick to react to macroeconomic events, or that public funds are spent to minimize risk of a reduced budget in the following period.

Table 2 – Local government spending in 2012, in USDb

Education	609	*37%*
Other Spending	341	*21%*
Protection	158	*10%*
Health Care	139	*8%*
Transportation	134	*8%*
Welfare	89	*5%*
General Government	73	*4%*
Interest	62	*4%*
Pensions	43	*3%*
Total Spending	**1,647**	***100%***

Source: U.S. Census Bureau

2.3. Selected demographic factors

As described above, the diverse revenue streams and expenditures can be narrowed down to several posts that the local government can control and that will account for large parts of its operations. They will later be combined into a hypothesis in Section 3, predicting that a local government with low expenditures and high and stable revenues will be able to secure a lower cost of debt on their municipal obligations. The demographic and socioeconomic variables are lagging, as the data is gathered in the year preceding the publishing date (see Section 4).

2.3.1. Crime rate

Crime is problematic for a community in multiple ways, not least economically. High crime rates create direct costs of public protection, where communities with higher crime rates also have bigger police forces (Nagin, 1998), penitentiary facilities and legal expenses. Indirect costs are no small matter either: rehabilitation programs, costs of private protection and a lower median income in that area (Anderson, 1999) all increase the local governments' expenses and decrease the tax base. In this thesis, crime rate is measured as number of violent crimes committed as a % of total population, to provide a unified measure across counties of various sizes. Violent crimes include felonies such as aggravated assault, rape, homicide and armed robbery – all deemed severe both in terms of public safety and economic impact.

2.3.2. Poverty rate

Similar to unemployment, poverty affects the local government on several fronts. First, lower income through various taxes, and indirectly also inter-governmental transfers, as the state also receives less payroll tax. Second, people in poverty require large amounts of assistance and are eligible for a multitude of welfare programs (Brookings Institute, 2015). While most programs are funded by state and federal governments, local governments spend 12% of their revenue on

poverty-related expenses (Summers and Gyourko, 1997). The definition of people living in poverty is taken directly from the U.S. Census Bureau, where there are 48 different income thresholds for poverty, dependent on size of family and age of its members. Poverty rate is defined as people living in poverty as a % of total population.

2.3.3. Unemployment rate

There are two reasons why unemployment rate may affect the profit & loss statement of a local government and as a consequence, have major effects on the cost of financing. First, unemployed citizens earn less and spend less, decreasing revenue from VAT and other taxes. Second, the welfare expenses increase in form of unemployment benefits (which however, are mostly paid by state governments) and related aid. Finally, unemployment may lead to an increased crime rate (Lin, 2008). Unemployment is based not on total population, but on the available work force within the measureable group, in this case counties. Unemployment rate is therefore measured as people unemployed as a % of total available work force.

2.3.4. Education

Higher education in the U.S. increases earnings, where the median holder of a Bachelor's degree out-earn high-school graduates during all stages of their careers, independent of major (Hershbein & Kearney, 2014). This boosts the spending ability of graduates and also allows them to acquire homes with a larger value, increasing the property tax revenue for a local government. Furthermore, college presence enhances a city's economic stability and reduces the cost of borrowing (Hastie, 1972). The education rate is defined as number of citizens with a Bachelor's degree or higher as a % of total population.

2.3.5. Share of senior citizens

The healthcare costs associated with senior citizens have been widely discussed, and so have the future demographic trends of an ageing population. In Europe, citizens aged 65 and above are increasing their per capita health expenditures compared to other age groups in recent years (Bech, Chirstiansen, Khoman, Lauridsen and Weale, 2015). The disproportionate spending of senior citizens on healthcare has long been the case in the U.S. as well. In 1987, citizens aged 65 and above represented 36% of total personal healthcare costs, while only representing 12% of the total population. As such, senior citizens are likely to increase the healthcare costs borne by local governments – one of the biggest expenses. Share of senior citizens is measured as a % of total population aged 65 and above (Waldo, Sonnefeld, McKusick & Arnet, 1989).

2.3.6. Share of youth

The share of young people in a community has proven to increase equity premiums as the generational shift is expected to increase productivity and future earnings, even if it is rationally anticipated (Ang & Maddaloni, 2005). As future earnings are the foundation of the tax base, the share of citizens aged 18 and below is expected to have an impact on the financial performance of a county, much like the share of senior citizens. Share of youth is defined as a % of total population aged 18 and below.

2.3.7. Property tax

In 2012, local governments received $442 billion in property taxes, corresponding to 26% of total revenue. It is the largest revenue stream that a local government can control, as inter-governmental transfers are decided at state and federal levels. As there are multiple tax brackets

based on property value and classification (Brookings Institute, 2013), median property tax as percentage of property value is of interest. It makes the local governments more comparable and can suggest the local demographic characteristics – for example, if properties are taxed at a high rate, it may suggest frivolous spending and poor population, undermining the financial position of the local government (Inman, 2003). The factor measured in this thesis, uses the definition tax paid as a % of property value and will take both relative tax levels and property values into account, regardless of the size of the county.

2.3.8. Household income

A local government whose citizens have a higher income can expect to bolster its revenues in several ways. For one, higher income allows households to spend more on a daily basis, contributing to the local government via VAT. It also enables them to purchase more expensive properties, bolstering the biggest revenue source a local government can control. Finally, a higher household income implies by definition that state and federal governments receive more payroll and corporate taxes (assuming that the individual increases a company's productivity), which are then returned to the local government as inter-governmental transfers. As household income increases the tax base, it is therefore significant when considering debt market implications (Palumbo, Shick and Zaporowski, 2006). Median household income is preferred over mean household income because of the likely presence of outliers. The median therefore provides a more justified and transparent view of households' income levels within a given county.

2.3.9. Retirement benefits

Pension liabilities to public sector employees are funded by all levels of the U.S. government – federal, state and local. Unfunded liabilities have increased in recent years, which can be explained by municipalities offering generous pension plans as employment benefits in a competitive job market. As the public is not aware of the full employment cost of municipal employees, little pushback occurs and municipal labor forces can become inefficiently large (Epple & Schipper, 1981). The increased spending and future debt burden should have a strong impact on both current and future county financial performance and thus its coupon rates.

The retirement benefits per capita factor used in this thesis includes both state and local benefits, as funded through programs such as Medicare and Medicaid along with private pension benefits. Unemployment insurance benefits and income maintenance benefits are not included. This measurement does not uniquely identify public retirement contributions, but it is still deemed a suitable proxy for analyzing the level of spending on citizens that have ceased to generate county revenue through income taxes.

2.3.10. Total population

As local governments primarily levy property taxes, payroll taxes do not matter to a larger extent. However, the number of properties in an area depend on the population at hand and their income directly and indirectly affects the revenue base of the local government (Palumbo, Shick and Zaporowski, 2006). Furthermore, a smaller local authority lacks the administrative power to reach the same financial management capabilities of the large local governments and populations with less than 10,000 inhabitants pay higher interest rates (Simonsen, 2001). While the data sample used does not include such small counties, it is probable that total population will have an effect on cost of debt.

2.3.11. Public spending

Government activities, as measured by share of public spending of state GDP, has proven to be inefficient. Other than education services, government spending on a state level has negative impact on state productivity (Evans & Karras, 1994). As productivity decreases, and this affects financial performance, public spending should have an impact on municipal bond coupon rates.

The obtained factor used measures state and local GDP as a % of total GDP per state. County-level statistics were unavailable because measurements occur on a metropolitan level, which can include as much as ten counties, limiting the ability to uniquely identify GDP levels for each county. State GDP was therefore considered to be the most suitable factor. The measurement includes state and local activities as well as government enterprises.

2.3.12. Political affiliation

The Republican and Democratic parties in the U.S. have widely differing views on multiple issues – taxation, welfare, defense and education to name a few. These differences in opinion do not only affect fiscal policies, but also the values that define a community. The values themselves can affect the type of people that reside in the area – as residential selection is influenced by politics (Gimpel & Hui, 2015). Thus, politics must be included in the list of selected variables, as it directly affects the demographic composition and fiscal policy of a local government. While these differing views provide tangible variation in budgets on state and federal levels, this does not occur on the city level (Ferreira & Gyourko, 2007). One explanation to this is homogeneity of the local household that provides incentives for local representatives to avoid political brinkmanship. Nonetheless, this factor can have an impact on the county level, as Democrats favor higher public spending and taxes than the Republicans, as well as having larger administrations on the state level (Reed, 2006) (Merrifield, 2000).

The variable used retrieves ADA scores from a survey conducted by Americans for Democratic Action. Further definition is given in Section 4. The survey serves as a standard measure of political liberalism, indicating on a scale 0-100 if the state tends to vote in liberal favor. The measure uses data on a state-level but voting similarities between counties within a given state are expected to exist.

ADA scores were chosen instead of the political affiliation of the congressmen as they provide a clearer picture of political affiliation and agenda with more detail than the party affiliation itself. Furthermore, congressmen receive calls from their constituents regarding individual house votes. These calls can affect the decisions made by the congressmen and reflect the true political stance of a specific cohort to a better degree than the nominal party affiliation.

3. Hypotheses

In this section, the theories of municipal bonds, U.S. local governments and demographic and socioeconomic characteristics are combined to formulate the hypotheses.

3.1. Hypothesis 0

The null hypothesis states that there is no relationship between the demographic and socioeconomic characteristics of a county and its cost of debt, and that investors disregard these factors in favor of balance sheet ratios and other financial metrics. All selected demographic factors will have no explanatory power over the municipal bond coupon rates.

Hypothesis 0: *There is no impact on the coupon rates by selected demographic factors.*

3.2. Hypothesis 1a

In hypothesis 1a, crime rate is expected to have a strong overall negative impact on a local government's finances – first, due to increased spending for protection, penitentiary facilities and legal expenses. Second, it will reduce income, as property values and household income are lower in areas with high crime rates.

Hypothesis 1a: *Crime rate will have a positive impact on the coupon rates.*

3.3. Hypothesis 1b

Government finances are expected to be in worse condition when the poverty rate is high. Spending will increase on all government levels in the form of welfare benefits and the revenues will fall in parallel, as payroll, corporate and property taxes will decrease.

Hypothesis 1b: *Poverty rate will have a positive impact on the coupon rates.*

3.4. Hypothesis 1c

Unemployment, much like crime rate, will affect both sides of the profit & loss statement and negatively impact the available financing terms. Unemployment reduces the taxes a local government collects and increases its spending on benefits programs, even if the majority of said programs are paid by state and federal governments.

Hypothesis 1c: *Unemployment will have a positive impact on the coupon rates.*

3.5. Hypothesis 1d

Education attainment is expected to improve individual earning capabilities and allow citizens to spend more and acquire more expensive properties, increasing the tax base of a county. Thus, the proportion of the population with a Bachelor's degree is expected to positively impact the financing terms of a county.

Hypothesis 1d: *Education will have a negative impact on the coupon rates.*

3.6. Hypothesis 1e

The share of senior citizens, as outlined above, are accountable for a disproportionate amount of healthcare costs and will thus increase the expense burden of a local government. This will increase the expenses a local government faces and negatively affect its financial performance.

Hypothesis 1e: *Senior citizens as % of population will have a positive impact on the coupon rates.*

3.7. Hypothesis 1f

A larger share of youth preparing to enter the labor force is anticipated to have a negative effect on coupon rates, as future earnings and tax revenue will reduce the credit risk.

Hypothesis 1f: *Share of youth will impact the coupon rates negatively.*

3.8. Hypothesis 1g

A higher property tax paid as percentage of property value is expected to signal adverse financial conditions. Arguably, this is explained by lower income and lower property values, which forces the local government to increase the tax levy to collect the needed revenue for continued operations. Alternatively, high tax rates can point to poor fiscal discipline and inefficiency. In either case, this will negatively affect the profit & loss statement.

Hypothesis 1g: *Property tax as % of property value will have a positive impact on the coupon rates.*

3.9. Hypothesis 1h

Median household income is anticipated to increase the citizens' purchase power and allow them to buy more valuable properties, increasing the tax revenue a local government receives. It will adequately explain the revenue streams of a local government.

Hypothesis 1h: *Median household income will have a negative impact on the coupon rates.*

3.10. Hypothesis 1i

A larger pension obligation owed to the public employees, presented as retirement income (e.g. welfare benefits) is expected to affect the coupon rates positively. This is due to an increased debt burden and future spending, as well as increased current spending, since municipal labor forces tend to be bigger than necessary.

Hypothesis 1i: *Retirement benefits per capita is expected to have a positive impact on coupon rates.*

3.11. Hypothesis 1j

Total population is anticipated to have a negative impact on the coupon rates. The hypothesis is based on that a larger county with a bigger population will have a larger tax base, as it means more spending, payrolls and number of properties in absolute terms. In addition, larger local governments will have better administrative and managerial capabilities.

Hypothesis 1j: *Total population will have a negative impact on the coupon rates.*

3.12. Hypothesis 1k

Public spending as percentage of state GDP is expected to increase the coupon, as productivity is decreasing with the share of public spending. Since reduced productivity decreases the tax base, the financial performance of counties is expected to suffer and thus increase the rates required by investors.

Hypothesis 1k: *Public spending is expected hove a positive impact on the coupon rates.*

3.13. Hypothesis 1l

Political affiliation is expected to have an effect on the coupon rates with counties in Democratic states having higher coupon rates and counties in Republican states having lower coupon rates. This is based on the general trend that Democrats favor higher public spending with higher taxes and have larger state administrations than Republican states. As states are fairly homogenous in voting records, this is expected to translate to the county level as well.

Hypothesis 1l: *Affiliation with the Democrats is expected to impact the coupon rates positively.*

All of the Hypotheses 1a-1l, summarized in Table 3, are expected to be statistically significant and adequately explain the effect of various demographic and socioeconomic factors on the profit & loss statement of a local government. As such, this will affect the risk perception of investors and translate into changes in cost of debt on municipal obligations of a county.

Table 3 – Expected effects on coupon rates

Hypothesis	Effect on coupon rates
Null	–
1a: Crime rate	Positive
1b: Poverty rate	Positive
1c: Unemployment rate	Positive
1d: Education	Negative
1e: Share of senior citizens	Positive
1f: Share of youth	Negative
1g: Property tax	Positive
1h: Median household income	Negative
1i: Retirement benefits	Positive
1j: Total population	Negative
1k: Public spending as % of GDP	Positive
1l: Political affiliation with Democrats	Positive

3.14. Control variables

To further increase explanatory value and validity of the model and hypotheses tested, three financial control variables will be incorporated to take market rates, liquidity and duration into account. Coupon rates are anticipated to correlate with market rates, i.e. Fed rates, while larger maturity sizes require lower coupon rates because of the liquidity aspect. Duration, like other market rates is expected to increase coupon rates, or an inverted yield curve would be present.

4. Data

The following section aims to describe the data used for testing the hypotheses. Through quantitative analysis, the aim is to understand if demographic factors provide explanatory value regarding the pricing of municipal bonds. Data was collected through a bottom-up approach, initially conducting a thorough data gathering process before sequentially adjusting and removing data deemed unfit for the analysis process. Demographic, socioeconomic and financial data were merged into one combined dataset. This resulted in 491,775 observations at the most from 1,433 counties over a period of 12 years, containing both demographic and financial data (see Table 10 in appendix). After adjustments were made to remove any missing values, 312,107 observations from 583 counties over the same time period of 12 years remained (see Table 4). This results in a dataset where each county has, on average, issued 535 bonds over 12 years, equaling 45 bonds issued per county per year. This per-county-per-year sample is deemed large enough to proceed with the analysis, however, the data is predicted to suffer from selection bias caused by larger counties issuing a disproportionately larger amount of bonds compared to smaller counties. Bond data is obtained from primary offerings, meaning every municipal bond equals one observation in the data. This is due to liquidity aspects on the secondary market and that the bond's coupon rates to maturity may vary to a larger degree than its initial offering coupon rate. In order to uniquely and numerically identify counties and states, both demographic and financial data were matched with a State FIPS[1] (*S_FIPS*) and County FIPS (*C_FIPS*) number along with a combined State-County FIPS (*SC_FIPS*).

4.1. Demographic and socioeconomic data

The main source for demographic and socioeconomic data was the American Community Survey (ACS) conducted by the U.S. Census Bureau, compromising the majority of the data for the years 2000-2012. This program sends out the long questionnaire form, more commonly found in the Decennial censuses, to communities in the U.S on a continual basis. The first surveys were conducted in 2001, and the program was fully implemented in 2005. The program was initiated as a response to declining response rates in the Decennial census and provides 1, 3 and 5-year estimates, based on the size of the community surveyed.

The American Community Survey results are lagging in nature, where the figures presented in the 1-, 3- and 5-year estimates were collected over the same number of years preceding the release. This means that the the estimates presented in the 2006 ACS 1-year estimate used in this thesis, were collected during 2005. The one-year estimate is available for all areas with a population above 65,000, which limits the sample to 828 counties, or about 26% of all counties in the United States**.** As such, this set the biggest restriction on sample size, as annual and accurate data was of essence, while the aim remained to reach the most local geographical level possible (U.S. Census Bureau, 2015).

The ACS was used for total population, share of senior citizens in the total population, share of youth in the total population, unemployment rate, education attainment as percentage of population with a Bachelor's degree, poverty rate as percentage of population, median household income and property tax rate variables between the years 2005-2012. To bridge the data with the 2000 Decennial Census, a variation of the Das Gupta method was used. It is a method adopted

[1] FIPS – Federal Information Processing Standards. Publicly announced standards developed by the United States Federal Government for use in computer systems.

by the U.S. Census Bureau, based on geometric average growth rates and comparing the intercensal values with actual ones in the next Decennial Survey (U.S. Census Bureau, 2012). This allowed the interpolation of the years 2001-2004 and was strengthened by the close accuracy when compared to later years were actual data was available. Unemployment figures were gathered from U.S. Bureau of Labor Statistics for the years where the U.S. Census Bureau lacked them. Data from the Bureau of Economic Analysis was used for retirement benefits per capita and share of public GDP. Crime rate data statistics were retrieved from the Federal Bureau of Investigation's (FBI) Uniform Crime Reporting Program. This data would also set the restriction on sample size because crime rate data was not available for the same number of counties as the other variables while crime rate statistics only contained data for the years 2000-2012. All variables except for median household income (*logmedhinc*) and total population (*logtotpop*) are in percentages. Logarithms of *logmedhinc* and *logtotpop* are used in order to better fit within the OLS model used.

4.2. Political affiliation data

The voting records of the members of House of Representatives between 2000-2012 was collected from Americans for Democratic Action, or ADA, which is a political organization advocating liberal and progressive policies. The organization ranks legislators based on their annual voting record and how well it fits with ADA policies. Each year, twenty House votes are selected, based on their impact on social and economic issues (both foreign and domestic). If a representative voted in accordance with ADA's position, the representative is awarded 5 points and if he voted against ADA's position or was absent, 0 points are awarded. At the end of the year, representatives achieve a score ranging between 0-100, with 0 indicating very conservative votes and 100 very liberal ones (ADA, 2014). These scores were converted into percentage points to simplify data processing. The ADA scores were grouped and an average was taken for each state and applied to individual counties for several reasons. First, gerrymandering posed a potential pitfall, where individual counties can be reset into different electoral districts and thus change its political affiliation with no set schedule. Second, while the number of representatives has been set at 435, vacant seats due to resignations, deaths and sick-leave occur each year. To avoid these irregularities, the average ADA score for each state and year was used, as the representatives for each state voted fairly homogeneously on an annual basis.

4.3. Financial data

Financial data was obtained from two sources: Bloomberg and The Federal Reserve Bank of St. Louis' Economic Research division. Bloomberg was the sole source of data regarding municipal bond issues between 2000 and 2012. All rates including both coupon rates as well as the fed rates are presented in percentage format. The dates given from Bloomberg are in the month/day/year-format whereas the fed-rates are in year/month while the demographic data is only on a yearly basis. The *fed* variable is calculated by matching the specific bond's duration with the closest possible Fed rate given the data. Data was gathered for general obligations from primary offerings, meaning that every municipal bond is only observed once in the data. Fed rates are constant maturity rates of different durations derived from zero-coupon bonds. Hence, a discrepancy exists between the general obligation municipal bonds studied since these offer periodic coupons compared to the zero-coupon federal bonds. It is still deemed that these rates serve as the best measurement of the risk-free rate and are considered important for further analysis and later use in the models tested. Besides coupon rate data, fed rates, bond maturity size and duration are all used as control variables in the model later presented.

4.4. Descriptive statistics

The variables used are presented in their coded names along with descriptive statistics and variable labels. An interesting fact regarding the data is that in 14 out of 25 cases, the median is lower than the mean, indicating the presence of outliers in the higher percentiles. During the observed time period, no county issued municipal bonds above $1 billion or with a duration above 23 years. Instead, the median amount of funds raised through a bond issuance was $140 million and the median time to maturity was 5 years.

All percentage demographic variables exhibit large ranges except for *crimerate* and *medproptax*. This may indicate that those variables will not have a large impact on bond coupon rates simply because the variance is too small. Some counties exhibit poverty rates as high as 43.80% of total population while other counties consist of 43.16% senior citizens. Variance within counties is therefore expected to be large, with expectations of both low and high outliers. By comparing the median coupon rate of 3.75% to the median 5-year Fed rate of 3.29%, the difference becomes 46 basis points, indicating an overall higher riskiness of municipal bonds compared to treasury bonds, as expected. Another observation regarding the coupon rate is that the maximum value is very high compared to the maximum value of any observed Fed rate, where the maximum coupon rate is 12.0% compared to the maximum 20-year Fed rate of 6.86%.

One thing worth mentioning is how the coupon rates have developed over time, declining from 5.50% to almost 3% between the years 2000-2004, with the Fed rates moving in a similar pattern. The economic downturn during the dotcom-bubble, scandals such as Enron and WorldCom, geopolitical uncertainty such as 9/11 and Iraq all contributed to a pessimistic economic market. A comparison between municipal coupon rates and the fed rates worth noting is that municipal bonds during the observed time period never experienced an inverted yield curve while the Fed rates did so on two occasions, during the dotcom-bubble of 2000 and the housing market collapse 2007. What can be seen in the municipal bond coupon rates however is a reduced gap between short term bonds and long term bonds between 2004 to 2007, indicating that the yield curve was flattening.

When the housing crisis began in late 2007, both Fed and municipal bond rates decreased sharply as a result of the financial meltdown and the start of programs such as TARP and quantitative easing. The underlying cause of which was the devaluation of properties and increased insolvency of households, affecting the tax base of local governments. After the crisis and initiation of large capital injections by the Federal Reserve, the spread assumed a higher range compared to before the crisis, indicating that while Fed rates were close to zero, municipal bonds were given higher risk premia. This was most probably caused by slower economic recovery rates among counties and property values. As can be seen, average municipal bond coupon rates have ranged from 2.50-5.50% over the time period compared to the average fed rates ranging from 0.80-6.50%. Regarding the yield curve, it can be seen that the short-term bond rate was close to the mean, and long term coupon rates during 2000 and 2006-2009. During the periods 2001-2005 and 2009-2012, the yield curve was upward sloping for both municipal bond coupon rates and fed rates. In the low-rate environment in recent years, fed rates have on average been below 2% while municipal bonds have had a spread of approximately 1%, indicating a higher risk premium for municipal bonds. The opposite was true during 2006-2008 when the spread was negative.

Figure 1 – Monthly municipal bond coupon rates

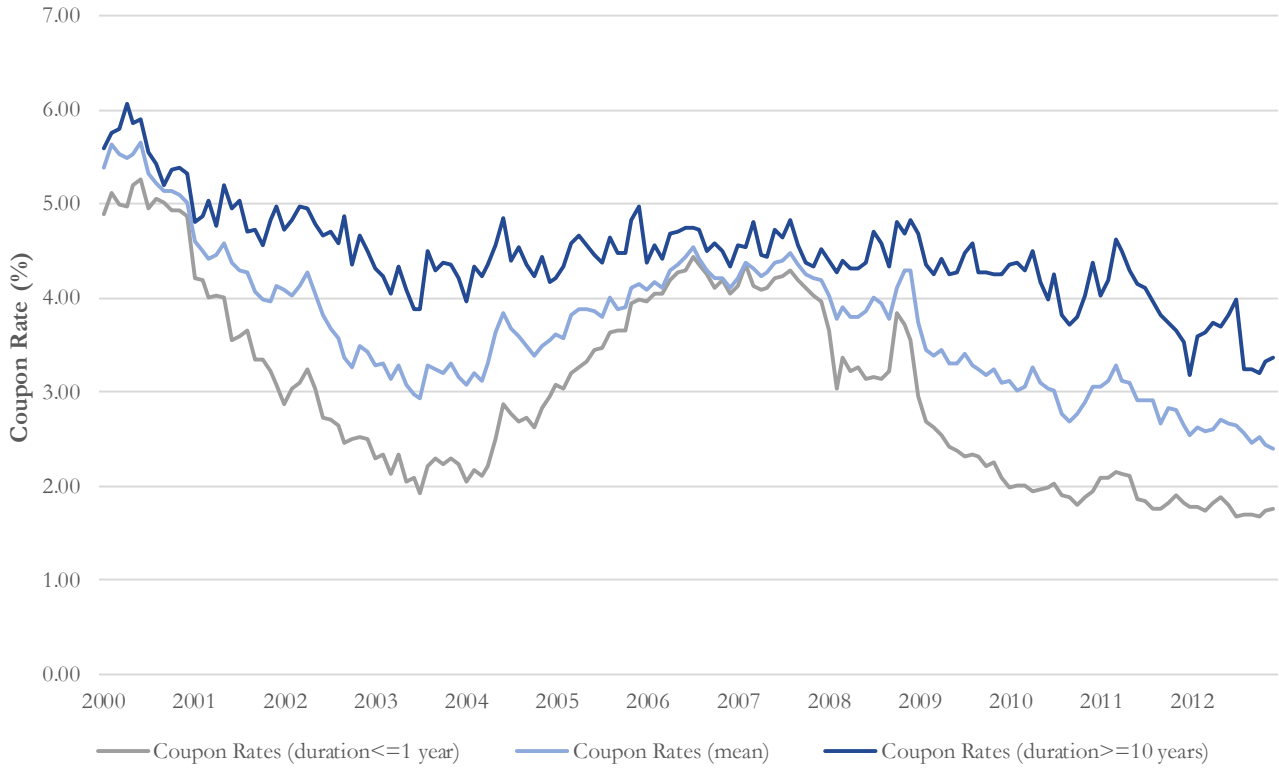

Figure 2 – Monthly federal reserve interest rates

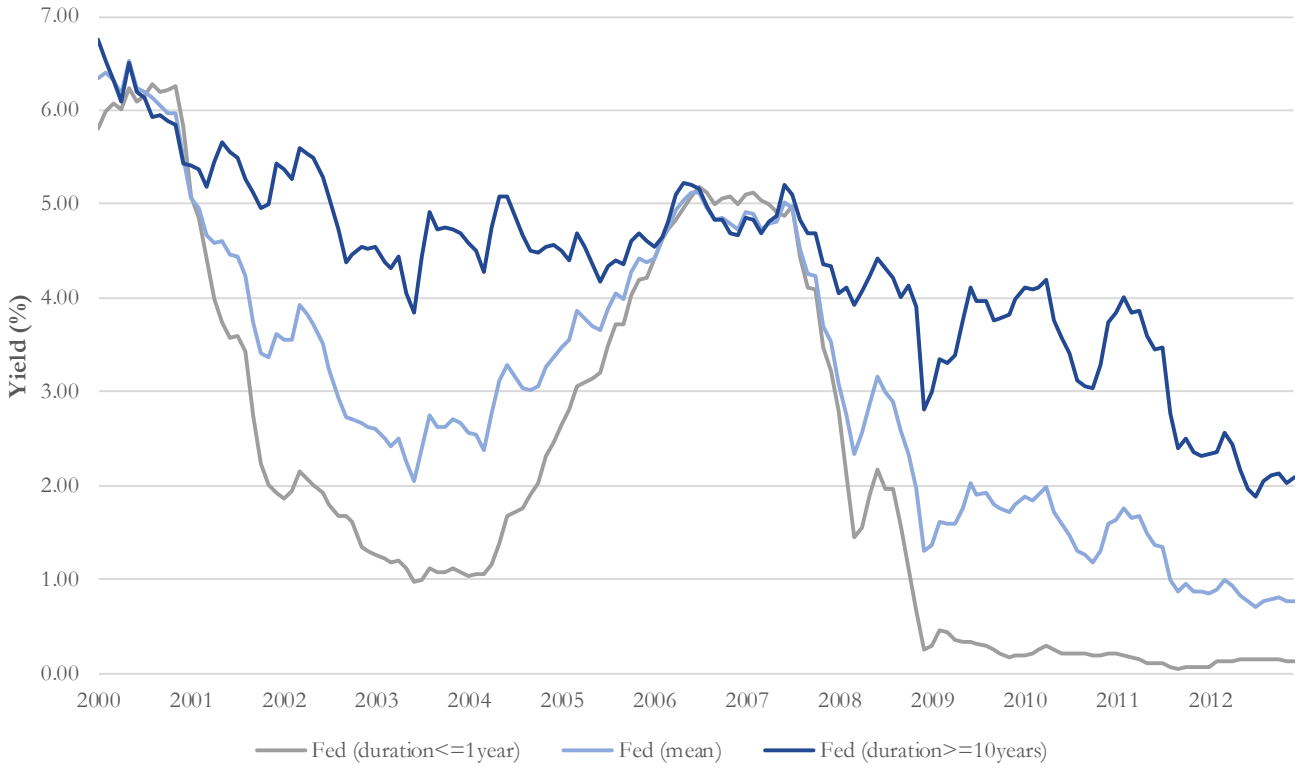

Table 4 - Descriptive data statistics, 2-decimal formatting, except for SC_FIPS

Variable	Obs	Unique	Mean	Median	Min	Max	Sd	Label
SC_FIPS	312,107	583	32.74	36.05	1.00	56.02	14.83	Unique State and County FIPS Code
S_FIPS	312,107	47	32.65	36.00	1.00	56.00	14.81	State FIPS Code
C_FIPS	312,107	127	93.05	71.00	1.00	491.00	88.48	County FIPS Code
duration	312,107	255	4.93	4.75	0.00	22.42	2.95	Bond's duration in years
matsize	312,107	8,467	4.89	5.25	1.00	6.91	1.50	Size of bond issuance MUSD, in logarithm
coupon	312,107	1,473	3.64	3.75	0.05	12.00	1.21	Fixed rate of coupon %
crimerate	312,107	5,383	0.07	0.03	0.00	1.58	0.10	Violent crimes committed as % of total population
poverty	312,107	5,959	11.48	11.22	1.82	43.80	5.05	People living in poverty as % of total population
unemployment	312,107	189	6.44	6.10	0.30	21.20	2.80	People unemployed as % of total population
education	312,107	2,078	18.59	18.22	4.00	38.50	5.40	People with BSc or higher as % of total population
age65	312,107	5,954	11.77	11.75	4.05	43.16	2.83	People aged 65 and above (senior citizen) as % of total population
age18	312,107	5,959	25.22	25.00	9.10	38.42	2.70	People aged 18 and below (youth) as % of total population
medproptax	312,107	5,959	0.43	0.42	0.07	1.38	0.19	Median property tax as % of household value
logmedhinc	312,107	5,711	10.87	10.84	10.04	11.69	0.24	Median household income USD, in logarithm
logretpercap	312,107	3,686	8.38	8.39	6.97	9.50	0.32	Retirement and similar benefits per capita USD, in logarithm
logtotpop	312,107	5,935	12.96	12.94	10.87	16.11	1.17	Total population, in logarithm
publicprivategdp	312,107	586	9.29	9.39	6.94	13.65	1.04	% ratio of state and local industry compared to total state GDP
political	312,107	372	51.16	50.00	0.00	100.00	19.31	% of votes cast in liberal favor by members of congress
fed	312,107	546	3.01	3.18	0.01	6.81	1.70	Fed treasury constant maturity rate %, with matched duration
fed3m	312,107	109	2.06	1.65	0.01	6.36	1.93	Fed 3-month treasury constant maturity rate %
fed6m	312,107	120	2.18	1.64	0.04	6.39	1.95	Fed 6-month treasury constant maturity rate %
fed1y	312,107	122	2.28	2.02	0.10	6.33	1.88	Fed 1-year treasury constant maturity rate %
fed2y	312,107	130	2.56	2.45	0.21	6.81	1.78	Fed 2-year treasury constant maturity rate %
fed3y	312,107	131	2.81	2.70	0.33	6.77	1.67	Fed 3-year treasury constant maturity rate %
fed5y	312,107	138	3.29	3.35	0.62	6.69	1.46	Fed 5-year treasury constant maturity rate %
fed7y	312,107	129	3.66	3.75	0.98	6.72	1.30	Fed 7-year treasury constant maturity rate %
fed10y	312,107	123	3.99	4.14	1.53	6.66	1.10	Fed 10-year treasury constant maturity rate %
fed20y	312,107	128	4.63	4.78	2.22	6.86	0.97	Fed 20-year treasury constant maturity rate %

Sources: US Census Bureau, US Bureau of Labor Statistics, Federal Bureau of Investigation, Bureau of Economic Analysis, Bloomberg, Federal Reserve Bank of St. Louis

5. Methodology

The methodology is divided into three parts – correlation analysis, model testing and comparison to previous research. Correlation and covariance analysis is made in order to better understand the data and how the different variables change in relation to each other, which may indicate that some have stronger explanatory value to the model than others. The analysis is also made to ensure that no issues such as multicollinearity exists between the variables. Besides analyzing for correlation and covariance, the variables will also be specifically tested for multicollinearity. When testing the model, several adjustments to the model will be tested in order to account for various effects such as the behavior of the standard errors, county-fixed effects, and time-invariant effects. Model testing is conducted stepwise to analyze individual behavior of each variable. Comparison to previous research is made to validate the empirical approach used in this thesis.

5.1. Analysis of correlation, covariance and multicollinearity

All variables tested in the model are analyzed for pairwise correlation coefficients, shown in Results and Appendix. The resulting correlation and covariance between variables will be taken into consideration when performing the model testing in order to better understand why some variables may be dropped due to insignificance. In this analysis, only the *coupon*-variable along with the demographic and socioeconomic variables will be used since they are later to be incorporated into the model. Besides simply analyzing the correlation and covariance between variables, specific tests for multicollinearity will be undertaken. If any variable possesses a variance inflation factor above 5.00, it will merit further investigation. Below the threshold of 10.00, variables are deemed acceptable with regards to multicollinearity (Kennedy, 1992).

5.2. Model testing

As has been found, OLS estimation is a common method of analysis within this field (Palumbo, Shick and Zaporowski, 2006) (Merrifield, 1991) (Wescott, 1984). This study will adopt the same approach and model as Palumbo, Shick and Zaporowski (2006) among other studies by using an OLS estimation with fixed effects. Merrifield's (1991) OLS model also shows that the analysis has strong explanatory power when it comes to multiple demographic and socioeconomic variables when studying public finance. Similar to Kidwell, Koch and Stock's (1987) study when using OLS estimation, this study will also employ financial control variables to better analyze the independent demographic and socioeconomic variables. Other approaches and models such as OLG, path analysis and regressions with instrumental variables have been considered, but the OLS model was preferred in several relevant studies within public finance. The main contribution by this thesis will be to focus on coupon rates instead of ratings, while combining demographic and socioeconomic factors, unlike previous research that has mainly focused on one of the two. Furthermore, this study employs a larger scope, and number, of demographic and socioeconomic factors where previous research has used a narrower range of factors. The ambition of a broader scope while focusing on the coupon rate is to provide a greater explanatory value of non-financial metrics by using a fixed-effects OLS model.

The model will incorporate a total of twelve independent variables and three controlling variables to regress against the dependent variable – the coupon of the municipal bond. The control variable *fed* is calculated by matching the municipal bond's duration with the closest possible fed rate, such as matching a 4-year municipal bond with the 5-year fed rate. All durations between 10 and 20 years are matched with the 10-year fed rate. In order to test the hypotheses and

corresponding model, several adjustments will be made in order to better understand the underlying behavior of the data gathered. Stepwise regressions are conducted to observe the behavior of each independent variable, by itself, when adding additional variables. This to analyze whether the coefficient and/or significance of a variable varies when others are added to the model. The final model containing all variables will be tested and analyzed to conclude which hypotheses are to be, or not to be, rejected. Adjustments will concern the treatment of standard errors and the impact of fixed effects regarding grouping and time-invariance. Treating standard errors as heteroskedastic is not initially assumed to be sufficient, as standard errors are likely to exhibit grouping behavior within counties due to the bonds' underlying similarities. Clustering of standard errors is therefore used in the model and is seen as the first pass of the regression.

Fixed effects are also likely to play a large role in the model analysis because of similarities within counties as well as the likely coherent behavior of bonds during a given year. Assumptions are that large parts of the variance are not random but correlated within groups and time. Fixed effects are therefore used to take variance within counties and time into account, and used as the second pass of the regression. F-test analysis and t-test statistics of each individual variable coefficient are used to analyze the significance of the results. The White-test for heteroskedasticity will be incorporated to verify the statistical rigidness of the models. Finally, the fixed effects model will be tested against a random effects model, using Hausman's (1978) specification test to see if the fixed effects model is statistically valid.

5.3. Methodology compared to previous research

Previous research has focused on financial factors (Kidwell, Koch and Stock, 1987) (Palumbo, Shick and Zaporowski, 2006) and the role of rating agencies in the municipal bond markets (Ang, Bhansali and Xing, 2014). Some studies have incorporated demographic and socioeconomic factors but have not analyzed the impact on the direct coupon rate, yield or spread, but on the rating given by agencies such as Moody's, S&P and Fitch (Wescott, 1984) (Stover, 1991). These studies often adopt path analysis, two-step regressions with instrumental variables (Liu & Thakor, 1984) or OLG estimations (Ang & Maddaloni, 2005) while also limiting the sample to fewer amounts of bonds from fewer counties, during shorter time periods. Because of the larger dataset and number of variables used, this thesis will employ a fixed effects OLS model with controlling variables to gain a better understanding on the direct relationship between municipal bond coupon rates and variables used, thereby not focusing on the impact of rating agencies. While Palumbo, Shick & Zaporowski (2006) focused on financial factors, their OLS model together with Merrifield's (1991), Kidwell, Koch and Stock's (1987) research will act as theoretical inspiration for this study's methodology and empirical analysis. Similar to the articles above, variables were selected through inspiration from previous research and personal judgment.

Table 5 – Model description with variable names, treatment of standard errors and fixed effects

DEPENDENT VARIABLE
coupon
INDEPENDENT VARIABLES
$\alpha + \beta_1 * crimerate + \beta_2 * poverty + \beta_3 * unemployment + \beta_4 * education + \beta_5 * age65 + \beta_6 * age18 + \beta_7 * medproptax + \beta_8 * logmedhinc + \beta_9 * logretpercap + \beta_{10} * logtotpop + \beta_{11} * publicprivategdp + \beta_{12} * political$
CONTROLLING VARIABLES
$\beta_{13} * fed + \beta_{14} * matsize + \beta_{15} * duration + \varepsilon_i$
STANDARD ERRORS
Clustered, by county
FIXED EFFECTS
Grouping and time-invariance, by county and year

6. Results

6.1. Analysis of correlation, covariance and multicollinearity

When looking at the correlation of the variables in Table 6, there are eight cases where correlation is above 0.5 and risks of multicollinearity may exist. The *poverty* correlates with *education* and *medproptax*, while *logretpercap* correlates with *age65* and *age18*. *age18* correlates with *age65, medproptax* with *education* and *fed* with coupon.

There are several occasions where covariance is above 1.0 but no concrete relationship is seen between high levels of covariance and high levels of correlation, indicating that the product of two variables' standard deviations is relatively low for most cases where correlation is above 0.5 (see Table 6). These aspects will be taken into account when testing for multicollinearity and later in the model testing. After testing for multicollinearity, all variables are below 5.00, except for *poverty*, *logmedhinc*, and *logretpercap*. All variables are still below the threshold of 10.00. This indicates that while *medproptax*, *logmedhinc* and *logretpercap* may exhibit high correlation with other variables, both pass the test for multicollinearity and are therefore kept in the model (see Table 7).

Table 6 - Pairwise correlation coefficients at 0.05 significance level. Corr>|0.5| is bolded

	coupon	crimerate	poverty	mployment	education	age65	age18	edproptax	gmedhinc	gretpercap	logtotpop	cprivategdp	political	fed	matsize	duration
coupon	1.0000															
crimerate	0.0761*	1.0000														
poverty	-0.0298*	0.1730*	1.0000													
unemployment	-0.2827*	0.0774*	0.4440*	1.0000												
education	-0.0367*	-0.1291*	-0.4034*	-0.1982*	1.0000											
age65	-0.1598*	-0.0156*	-0.0333*	0.1358*	-0.3572*	1.0000										
age18	0.1621*	0.0560*	0.1165*	-0.0400*	-0.0682*	**-0.6254***	1.0000									
medproptax	0.0419*	0.0107*	0.3633*	0.0208*	**-0.5925***	0.0862*	0.1771*	1.0000								
logmedhinc	-0.0931*	-0.1106*	**-0.7112***	-0.1517*	**0.6737***	-0.1464*	-0.0285*	**-0.6749***	1.0000							
logretpercap	-0.3342*	0.0433*	0.2158*	0.4407*	-0.2806*	**0.7352***	**-0.5330***	-0.0452*	-0.0157*	1.0000						
logtotpop	0.0870*	0.0386*	0.1183*	0.0827*	0.3180*	-0.2507*	0.2284*	-0.4671*	0.2382*	-0.0680*	1.0000					
publicprivategdp	-0.1164*	0.0357*	0.0634*	0.0939*	-0.1388*	0.2126*	-0.2163*	0.0666*	-0.1400*	0.2631*	-0.2507*	1.0000				
political	0.0677*	-0.0137*	-0.2401*	-0.0601*	-0.0264*	0.3327*	-0.3037*	-0.2950*	0.2298*	0.2583*	0.0520*	-0.0132*	1.0000			
fed	**0.6682***	0.0088*	-0.1474*	-0.4296*	-0.0994*	-0.1239*	0.1663*	0.1097*	-0.1704*	-0.4677*	-0.0163*	-0.1366*	0.0586*	1.0000		
matsize	-0.0978*	-0.0692*	-0.0203*	0.0182*	-0.0525*	0.0583*	-0.0013	0.0332*	-0.0080*	0.0286*	-0.0608*	-0.0151*	0.0318*	0.0102*	1.0000	
duration	0.3430*	0.0192*	0.0222*	-0.0067*	0.0061*	-0.0448*	0.0397*	-0.0153*	-0.0218*	-0.0605*	0.0375*	-0.0320*	0.0151*	0.3533*	0.1008*	1.0000

Sources: US Census Bureau, US Bureau of Labor Statistics, Federal Bureau of Investigation, Bureau of Economic Analysis, Bloomberg, Federal Reserve Bank of St. Louis

Table 7 - Test for multicollinearity

Variable	VIF	SQRT VIF	Tolerance	R-Squared
coupon	1.99	1.41	0.5026	0.4974
crimerate	1.06	1.03	0.9396	0.0604
poverty	5.43	2.33	0.1842	0.8158
unemployment	1.71	1.31	0.5851	0.4149
education	3.47	1.86	0.2882	0.7118
age65	4.53	2.13	0.2207	0.7793
age18	2.65	1.63	0.3771	0.6229
medproptax	2.87	1.69	0.3484	0.6516
logmedhinc	8.11	2.85	0.1232	0.8768
logretpercap	6.33	2.52	0.1579	0.8421
logtotpop	1.85	1.36	0.5407	0.4593
publicprivategdp	1.21	1.1	0.8289	0.1711
political	1.44	1.2	0.6964	0.3036
fed	2.84	1.69	0.3518	0.6482
matsize	1.05	1.03	0.9512	0.0488
duration	1.27	1.13	0.7865	0.2135

Mean VIF = 2.99

6.2. Model testing

Regardless of whether one independent variable or all independent variables are incorporated, the explanatory value increases only slightly – from 0.560 to 0.561 – most likely due to the model, together with the controlling variables reaching its maximum explanatory value. All models pass the F-test, indicating that the variables as a whole provide explanatory value. The performed White test rejects each model's assumption of residual homoscedasticity, indicating the importance of assuming that the residual variance is heteroskedastic. The Hausman specification test validates the fixed effects model, indicating that non-systematic differences in variance exist between the fixed effects-model and the random effects-model (see Table 24 in Appendix).

Looking at the stepwise regressions in Table 8, changes in both coefficients and significance can be observed. *Crimerate, poverty, education* and *age65* all remain insignificant through the entire model testing. *Unemployment, age18, medproptax, logretpercap, publicprivategdp, political* and all controlling variables remain significant through the entire model testing. An interesting observation is that the coefficients of these variables all decrease in absolute value when stepwise adding variables. Coefficients of the control variables remain virtually the same.

Ranked by absolute value, *logretpercap* followed by *medproptax* exhibit the largest coefficients, both close to 0.5. Variables *logmedhinc* and *logtotpop* experience the largest changes when performing stepwise regressions, where *logmedhinc* becomes significant first in model 8 and *logtotpop* is significant up to model 3 and then in the final model. In the final model, six of the independent variables provide significant explanatory value along with all control variables.

Because of clustering and fixed effects, some variables lacking significance such as *crimerate*, *poverty* and *education* may experience lack of data due to there being potential information bias towards larger counties, where smaller counties lack data. This may explain the insignificance of some of the variables simply because there were too few observations per county and year when applying clustered standard errors, county- and year- fixed effects. The control variables all exhibit expected coefficients, where an increase in the federal rate corresponds to increased municipal bond coupon rates, while increased duration equals higher coupon rates and larger bond issues require lower coupon rates.

Table 8 - Regression results, summary of all stepwise key variables (tables 12-23)

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
crimerate	-0.107	-0.108	-0.101	-0.101	-0.102	-0.108	-0.112	-0.101	-0.12	-0.117	-0.125	-0.136
	-0.194	-0.195	-0.191	-0.191	-0.191	-0.191	-0.195	-0.194	-0.192	-0.193	-0.189	-0.189
poverty	0.00268	0.00271	-0.00531	-0.00538	-0.00542	-0.00422	-0.00638	-0.00154	-0.000774	-0.000766	-0.00029	-0.00038
	-0.00481	-0.00482	-0.00434	-0.00432	-0.00436	-0.00435	-0.00441	-0.00485	-0.00478	-0.00478	-0.00484	-0.00482
unemployment	0.0266***	0.0266***	0.0282***	0.0282***	0.0282***	0.0253***	0.0222***	0.0237***	0.0227***	0.0228***	0.0215***	0.0208***
	-0.00787	-0.00785	-0.00778	-0.00777	-0.00776	-0.0073	-0.00763	-0.00758	-0.00761	-0.00764	-0.00758	-0.00741
education	-0.00128	-0.00135	-0.000998	-0.00103	-0.000975	-0.00143	-0.00107	-0.00215	-0.00348	-0.00343	-0.0059	-0.007
	-0.00663	-0.00663	-0.00661	-0.00642	-0.00639	-0.00631	-0.0064	-0.00644	-0.00619	-0.00616	-0.00609	-0.00615
age65	0.000706	0.000848	0.000541	0.00282	0.00274	-0.00107	-0.0107	-0.00717	0.0212	0.0214	0.0175	0.0151
	-0.0167	-0.0167	-0.0167	-0.0156	-0.0156	-0.0154	-0.0152	-0.0153	-0.0157	-0.0158	-0.0156	-0.0152
age18	-0.0394***	-0.0394***	-0.0396***	-0.0315***	-0.0316***	-0.0316***	-0.0292***	-0.0292***	-0.0264**	-0.0269**	-0.0264**	-0.0243**
	-0.012	-0.012	-0.0122	-0.0108	-0.0108	-0.0109	-0.0111	-0.0111	-0.0109	-0.011	-0.0114	-0.0118
medproptax	0.627***	0.628***	0.638***	0.494***	0.493***	0.515***	0.476***	0.527***	0.544***	0.548***	0.506***	0.476***
	-0.146	-0.146	-0.151	-0.159	-0.16	-0.158	-0.159	-0.166	-0.164	-0.166	-0.164	-0.162
logmedhinc	-0.0754	-0.0792	-0.0439	0.167	0.172	0.187	0.198	0.322	0.288	0.284	0.394**	0.337*
	-0.167	-0.167	-0.185	-0.183	-0.185	-0.189	-0.189	-0.197	-0.196	-0.194	-0.19	-0.191
logretpercap	-0.532**	-0.533**	-0.545**	-0.494**	-0.498**	-0.702***	-0.659***	-0.683***	-0.669***	-0.680***	-0.599***	-0.529**
	-0.237	-0.237	-0.238	-0.226	-0.226	-0.242	-0.236	-0.239	-0.239	-0.243	-0.23	-0.224
logtotpop	-0.392***	-0.406***	-0.403***	-0.283*	-0.285*	-0.286*	-0.178	-0.116	-0.139	0.023	0.156	0.25
	-0.149	-0.152	-0.153	-0.15	-0.149	-0.149	-0.148	-0.154	-0.151	-0.143	-0.146	-0.154
publicprivategdp	0.108***	0.109***	0.109***	0.0948***	0.0959***	0.0959***	0.0899***	0.0836***	0.0909***	0.0800***	0.0854***	0.0690***
	-0.0245	-0.0248	-0.0246	-0.0236	-0.0234	-0.0234	-0.0232	-0.0237	-0.0233	-0.0231	-0.0241	-0.0235
political	0.00465***	0.00468***	0.00468***	0.00433***	0.00436***	0.00436***	0.00414***	0.00400***	0.00397***	0.00365***	0.00380***	0.00340***
	-0.000991	-0.00101	-0.00101	-0.000973	-0.00096	-0.00096	-0.000939	-0.000965	-0.000962	-0.000977	-0.00102	-0.00101
CONTROL VARIABLES												
fed	0.369***	0.369***	0.369***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***
	-0.00919	-0.00918	-0.00913	-0.009	-0.00901	-0.00901	-0.00899	-0.00896	-0.00896	-0.00898	-0.00899	-0.00894
matsize	-0.0782***	-0.0782***	-0.0782***	-0.0783***	-0.0783***	-0.0783***	-0.0783***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00769	-0.00769	-0.00769	-0.00767	-0.00767	-0.00767	-0.00767	-0.00768	-0.00768	-0.00768	-0.00768	-0.00769
duration	0.0590***	0.0590***	0.0590***	0.0591***	0.0591***	0.0591***	0.0592***	0.0591***	0.0592***	0.0592***	0.0592***	0.0592***
	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	2.956***	2.965***	2.940***	2.936***	3.005***	2.967***	3.665***	3.535***	0.269	4.39	3.257	0.0881
	-0.103	-0.0989	-0.123	-0.127	-0.179	-0.236	-0.331	-0.343	-2.209	-2.911	-3.238	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561	0.561	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

6.3. Hypotheses verdicts

Hypotheses 1a, 1b, 1d, 1e, 1h and 1j are all rejected because of the insignificance of the variables. The underlying variables *crimerate, poverty, education, age65*, *logmedhinc* and *logtotpop* can therefore, in this study, be deemed to not provide informational value to investors when analyzing municipal bonds.

Failure to reject hypotheses 1c, 1f, 1g, 1k and 1l are all coherent with initial hypotheses since all variables exhibit significant coefficients and have an impact on the coupon rate as earlier predicted. As such, it is deemed that *unemployment, age18, medproptax, publicprivategdp* and *political* are all important factors for investors and affect the pricing of municipal bonds, implying a causal relationship between these factors and a local government's expense and revenue streams.

Hypothesis 1i is rejected, despite the fact that the underlying variables significant, as it exhibits an opposite impact on the coupon rate, compared to what was initially predicted in the hypothesis. The opposite sign of of retirement benefits coefficient becomes a further point of discussion, due to the significant explanatory value but deviation from previously stated hypothesis.

Table 9 – Hypotheses verdicts

Hypothesis	Verdict	Comments
Null	Rejected	The model variables as a whole explain the coupon rates
1a: Crime rate	Rejected	Crime rate fails to explain the coupon rates at a significant level
1b: Poverty rate	Rejected	Poverty fails to explain the coupon rates at a significant level
1c: Unemployment rate	**Fail to reject**	Unemployment explains and affects the coupon rates positively
1d: Education	Rejected	Education fails to explain the coupon rates
1e: Share of senior citizens	Rejected	Share of senior citizens fails to explain the coupon rates
1f: Share of youth	**Fail to reject**	Share of young citizens affect the coupon rates negatively
1g: Property tax	**Fail to reject**	Property tax explains and affects the coupon rates positively
1h: Median household income	Rejected	Median household income fails to explain the coupon rates
1i: Retirement benefits	Rejected*	Retirement benefits explain and affect the coupon rates negatively
1j: Total population	Rejected	Total population explains and affects the coupon rates positively
1k: Public spending as % of GDP	**Fail to reject**	Share of public spending explains and affects the coupon rates positively
1l: Political affiliation	**Fail to reject**	Political affiliation explains and affects the coupon rates positively

7. Discussion

The final model proves to have significant explanatory value. An R-squared value of 0.561 is deemed high since previous research focusing on financial factors such as outstanding debt, liquidity premia and general taxation of municipal bonds also impact the coupon rates to a large extent (Ang, Bhansali and Xing, 2014).

The discussion is divided into rejected hypotheses and those that could not be rejected, where each hypothesis is stated and further discussion provided on the results of the empirical study, bridging the results with previous research used to base the initial hypotheses.

7.1. Rejected hypotheses

7.1.1. Crime rate

Crime rate was expected to have a strong positive impact on the municipal bond coupon rates, but results did not even show statistical significance at the 10%-level or less. There is however a possible explanation to the insignificance of this demographic factor. For one, most counties are not systematically affected by crime, where law abiding citizens and business owners live in terror. And in those areas where that is the case, in e.g. Detroit and Chicago, high crime rates are prevalent in concentrated cohorts. Generally, the number of violent crimes are low compared to the total population of a given county. While an increase of several assaults or murders per year in a county might result in a large percentage change, the change is small in absolute numbers and most likely not enough to adversely affect the safety perception of the general population. Thus, it will probably not affect investor confidence, who are more removed from isolated crimes than inhabitants of said county.

Furthermore, the indirect costs of non-violent crimes, which are not reported by the FBI, may be much greater than direct costs of violent crimes. For example, a county with high rates of drug abuse (a crime in itself), will most likely experience lower levels of productivity. Drug abuse also leads to indirect costs of rehabilitation and lower paying jobs (if a drug abuser has served time in a correctional facility or has been fired from their previous job as a result of poor performance). In addition to increased rehabilitation expenses (Anderson, 1999) and police efforts, revenue streams are reduced and property valuation drops when so called 'crack houses' emerge. However, these effects are hard to measure and are most likely not fully captured in the number of violent crimes, that may also have a differing impact on the government's protection expenses, which were one of the expense determinants (Borcherding, 1985).

7.1.2. Poverty

Poverty was also anticipated to have a large effect on coupon rates, but proved to be statistically insignificant. A suggested explanation is the distribution of the cost burden among the different levels of the U.S. government, where the majority of programs are funded by state and federal governments. The results suggest that while local governments also contribute to welfare programs, the scale of the cost burden is not significant enough to affect the investment attractiveness of a county's municipal bonds. Following the previous proposition, investors may not give poverty rates much attention, but focus on other closely related factors such as unemployment to gauge a county's ability to collect revenues and meet coupon payments.

7.1.3. Education

The level of college graduates was expected to affect the coupon rates negatively, but was statistically insignificant. While the increased earnings potential of college graduates has been proven multiple times (Hershbein & Kearney, 2014), it might not outweigh the costs of education borne by local governments, seen in Table 2, where almost 40% of total local government spending was on education – with the vast majority of that money going towards pre- through secondary education. Assuming net migration for all counties combined is insignificant, where college graduates remain in their native counties or are replaced by other graduates, counties spend large amounts of taxpayer money on schools every year. A college graduate is therefore accountable for a minimum 12 years of spending by the local government. As the variable is statistically insignificant, it appears that the two effects offset each other.

7.1.4. Share of senior citizens

The share of senior citizens did not provide significant explanatory value on its effect on coupon rates, going against Hypothesis 1e. While unexpected, further consideration can provide an explanation. Senior citizens have had a longer time to accumulate wealth than the younger population. This most likely translates into ownership of more valuable property, counteracting the increased burden of government healthcare expenditure. Thus, an increased share of senior citizens will increase the tax revenue of the local government. It is possible that the economic effects of this demographic group offset each other.

7.1.5. Household income

Household income did not have significant explanatory value on its effect on coupon rates. The most likely explanation is the limited role household income plays on the local government's tax revenue, as most of it is derived from property taxes. While household income should theoretically improve the purchasing power and thus the VAT and property taxes (as higher income will translate to higher property values), the effect appears to be negligible.

7.1.6. Retirement benefits

Retirement benefits had a high explanatory value, but returned an unexpected sign and in fact reduces the coupon rates, where a 1 percentage point increase in retirement benefits guaranteed by the state and local governments results in a 0.529% decrease of the coupon rate. The initial hypothesis of increasing debt burden and future expenses affecting the required coupon rate is thus dismissed. A possible explanation can be found in the financial endurance of larger counties. Outliers such as Detroit aside, counties that have larger retirement benefits on their balance sheet may be more likely to meet those obligations, increasing the probability of meeting other obligations as well.

7.1.7. Total population

The initial hypothesis proved to be incorrect, as total population didn't have a significant explanatory power on the coupon rates. The initial theory (Simonsen, 2001) that the hypothesis was based on, where states with a larger population had better administrative capabilities and could manage their finances better, does not seem to translate on the county level. Arguably, counties, no matter the size cannot achieve the required critical mass of effective government finance management portrayed in the article.

7.2. Accepted hypotheses

7.2.1. Unemployment

As expected, unemployment proved to be significant in explaining the coupon rates. The coefficient however, was low where a 1 percentage increase in *unemployment* resulted in a 0.0208% increase in the coupon rates. While the variable affects the coupon rates as anticipated, the low coefficient indicates that it is not a primary concern for municipal bond investors, most likely due to state and federal governments financing the majority of unemployment benefits. While one of the foundations of this hypothesis was based on increased crime rate as a result of unemployment (Lin, 2008), this effect seems negligible as crime itself was a statistically insignificant variable. However, the decrease in productivity and increase in government spending is the most likely factor behind the significance of the unemployment rate.

7.2.2. Share of youth

In accordance with the initial hypothesis, share of youth in a county provided a coefficient reducing the coupon rates. An increase in the share of citizens aged 18 and below by 1 percentage point would decrease the coupon rate by 0.0243%. This implies that the future earnings potential (Ang & Maddaloni, 2005) of this demographic group and the tax revenue that will follow outweighs the current education costs that the county has to bear through secondary school.

7.2.3. Property tax

Property tax proved to be the factor with the largest significant coefficient affecting the coupon rates, where a 1 percentage increase in *medproptax* results in a 0.476% increase in the coupon rate. As anticipated by the hypothesis and supported by previous research, a larger tax rate increased the coupon rate, suggesting that property tax rates reflect county prosperity (as *logmedhinc* was negatively correlated with *medproptax*) and fiscal responsibility (Inman, 2003). As such, investors take the local county's tax policy into account when assessing investment risk. In addition, highly valued properties do not need to be taxed at the same level for the government to receive the same tax revenue. Low property values can also indicate poor financial quality of the county.

7.2.4. Public spending

As predicted, public spending as a % of GDP increased the coupon rate, where a 1 percentage point increase in public spending resulted in a 0.0690% increase in the coupon rate. Supporting the initial theory of public spending being less productive (Evans & Karras, 1994), the reduced earnings potential and increased expenses seem to affect the financial performance to such an extent, that it translates into financing terms.

7.2.5. Political affiliation

As previous research suggested (Reed, 2006) (Merrifield, 2000) increased taxation and administration is typical Democratic governance on state level; coupon rates reflect these previous findings on county level as well. A 1 percentage point increase in ADA score, measuring favoritism of liberal policies, resulted in a 0.00340% increase in coupon rates (or 0.017% for 5 percentage points that correspond to one full vote cast in favor of liberal policies). Following the initial hypothesis, political affiliation with the Democrats increases the expenses born by the government in the form of increased welfare costs and increased administration costs, proven by the research mentioned above.

8. Further research

This thesis has provided some explanation on demographic and socioeconomic factors affecting municipal bond coupon rates. However, this study could be expanded further by adding more demographic and socioeconomic characteristics and, more importantly, attempt to find leading indicators. If successful, it opens a multitude of topics in the field of fixed income trading strategies and risk management. The concept can also be tested on other municipal bond markets around the world, with adequately large trading volume to generate a significant correlation.

Finally, the conundrum of *logretpercap* being significant but with an unexpected coefficient sign needs to be researched further. While the initial hypotheses had been based on previous research and the discussion has tried to provide a reasonable explanation to the unexpected result, detailed quantitative research has to be conducted to arrive at a definitive answer.

9. Concluding remarks

This thesis has examined the effects of demographic and socioeconomic factors on the coupon rates of municipal bonds in the U.S. The results showed that share of youth was the only demographic factor whose effect was statistically significant on the coupon rates. The socioeconomic and political factors that proved to be significant were unemployment, retirement benefits, property tax, public spending and political affiliation.

The final model accounted for 56.1% of the variation, with the remaining variation most likely explained by tax-free returns and liquidity premium among other factors. However, as only one demographic factor proved to be significant, with the remaining variables being of socioeconomic and political nature, it seems that demographic factors do not play a significant role in the risk assessment done by municipal bond investors. A possible explanation to this is that the socioeconomic, political and other factors are easier to measure and have a more direct effect on the local government's finances.

As a final remark, this study shows that the demographic factors have little effect on coupon rates and, rather than spending energy on a county's demographic profile, local governments should focus on efficient political and fiscal operations. While no study can be seen as a handbook for government operations; the theoretical backbone provided by this thesis can be used as guidance when evaluating what factors, besides purely financial, are considered by investors when pricing municipal bonds.

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11. Appendix

Table 10 - Descriptive data statistics, 2-decimal formatting, except for SC_FIPS. Includes missing values

Variable	Obs	Unique	Mean	Median	Min	Max	Sd	Label
SC_FIPS	491,775	1,433	31.92	34.04	1.00	56.05	14.61	Unique State and County FIPS Code
S_FIPS	491,775	50	31.83	34.00	1.00	56.00	14.58	State FIPS Code
C_FIPS	491,775	185	90.76	65.00	1.00	810.00	95.51	County FIPS Code
duration	491,772	258	4.99	4.83	0.00	22.42	2.97	Bond's duration in years
matsize	418,090	10,298	4.88	5.25	1.00	6.91	1.51	Size of bond issuance MUSD, in logarithm
coupon	491,569	2,087	3.64	3.75	0.05	14.00	1.19	Fixed rate of coupon %
crimerate	369,093	5,542	0.07	0.04	0.00	1.58	0.10	Violent crimes committed as % of total population
poverty	462,847	7,778	11.67	11.31	1.23	43.80	5.09	People living in poverty as % of total population
unemployment	464,736	194	6.44	6.10	0.30	21.60	2.86	People unemployed as % of total population
education	462,847	2,591	18.98	18.40	4.00	38.50	5.49	People with BSc or higher as % of total population
age65	462,847	7,772	11.82	11.79	4.05	43.16	2.74	People aged 65 and above (senior citizen) as % of total population
age18	462,748	7,778	25.03	24.91	9.10	38.42	2.79	People aged 18 and below (youth) as % of total population
medproptax	462,295	7,765	0.41	0.39	0.00	1.38	0.19	Median property tax as % of household value
logmedhinc	462,847	7,375	10.86	10.84	10.04	11.69	0.24	Median household income USD, in logarithm
logretpercap	491,651	4,927	8.40	8.41	6.82	9.50	0.32	Retirement and similar benefits per capita USD, in logarithm
logtotpop	463,278	7,749	12.99	13.00	10.62	16.11	1.15	Total population, in logarithm
publicprivategdp	491,775	649	9.28	9.35	6.94	13.65	1.09	% ratio of state and local industry compared to total state GDP
political	491,775	378	51.50	50.00	0.00	100.00	21.18	% of votes cast in liberal favor by members of congress
fed	491,775	549	2.99	3.14	0.01	6.81	1.69	Fed treasury constant maturity rate %, with matched duration
fed3m	491,775	109	2.02	1.61	0.01	6.36	1.91	Fed 3-month treasury constant maturity rate %
fed6m	491,775	120	2.14	1.64	0.04	6.39	1.94	Fed 6-month treasury constant maturity rate %
fed1y	491,775	122	2.25	1.96	0.10	6.33	1.86	Fed 1-year treasury constant maturity rate %
fed2y	491,775	130	2.53	2.42	0.21	6.81	1.77	Fed 2-year treasury constant maturity rate %
fed3y	491,775	131	2.78	2.57	0.33	6.77	1.66	Fed 3-year treasury constant maturity rate %
fed5y	491,775	138	3.26	3.30	0.62	6.69	1.45	Fed 5-year treasury constant maturity rate %
fed7y	491,775	129	3.64	3.75	0.98	6.72	1.29	Fed 7-year treasury constant maturity rate %
fed10y	491,775	123	3.98	4.13	1.53	6.66	1.09	Fed 10-year treasury constant maturity rate %
fed20y	491,775	128	4.62	4.78	2.22	6.86	0.96	Fed 20-year treasury constant maturity rate %

Sources: US Census Bureau, US Bureau of Labor Statistics, Federal Bureau of Investigation, Bureau of Economic Analysis, Bloomberg, Federal Reserve Bank of St. Louis

Table 11 - Covariance coefficients

	coupon	crimerate	poverty	unemployment	education	age65	age18	medproptax	logmedhinc	logretpercap	logtotpop	ublicprivategdp	political	fed	matsize	duration
coupon	1.4572															
crimerate	0.0090	0.0101														
poverty	-0.1815	0.0877	25.4624													
unemployment	-0.9567	0.0218	6.2818	7.8600												
education	-0.2390	-0.0700	-10.9844	-2.9986	29.1187											
age65	-0.5462	-0.0044	-0.4758	1.0780	-5.4583	8.0185										
age18	0.5284	0.0152	1.5869	-0.3028	-0.9933	-4.7819	7.2912									
medproptax	0.0095	0.0002	0.3457	0.0110	-0.6030	0.0460	0.0902	0.0356								
logmedhinc	-0.0267	-0.0026	-0.8519	-0.1010	0.8630	-0.0984	-0.0183	-0.0302	0.0564							
logretpercap	-0.1302	0.0014	0.3515	0.3988	-0.4887	0.6720	-0.4645	-0.0028	-0.0012	0.1042						
logtotpop	0.1227	0.0045	0.6972	0.2709	2.0041	-0.8292	0.7203	-0.1029	0.0660	-0.0256	1.3642					
publicprivategdp	-0.1455	0.0037	0.3313	0.2726	-0.7761	0.6235	-0.6051	0.0130	-0.0344	0.0880	-0.3034	1.0730				
political	1.5789	-0.0265	-23.3957	-3.2526	-2.7542	18.1914	-15.8325	-1.0741	1.0532	1.6101	1.1719	-0.2632	372.8290			
fed	1.3748	0.0015	-1.2678	-2.0527	-0.9147	-0.5979	0.7656	0.0353	-0.0689	-0.2573	-0.0325	-0.2411	1.9291	2.9053		
matsize	-0.1770	-0.0104	-0.1536	0.0765	-0.4248	0.2475	-0.0051	0.0094	-0.0028	0.0139	-0.1065	-0.0234	0.9194	0.0260	2.2485	
duration	1.2215	0.0057	0.3302	-0.0550	0.0964	-0.3746	0.3163	-0.0085	-0.0153	-0.0576	0.1291	-0.0979	0.8607	1.7768	0.4459	8.7040

Sources: US Census Bureau, US Bureau of Labor Statistics, Federal Bureau of Investigation, Bureau of Economic Analysis, Bloomberg, Federal Reserve Bank of St. Louis

Table 12 - Regression results, crimerate as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
crimerate	-0.107	-0.108	-0.101	-0.101	-0.102	-0.108	-0.112	-0.101	-0.12	-0.117	-0.125	-0.136
	-0.194	-0.195	-0.191	-0.191	-0.191	-0.191	-0.195	-0.194	-0.192	-0.193	-0.189	-0.189
poverty		0.00271	-0.00531	-0.00538	-0.00542	-0.00422	-0.00638	-0.00154	-0.000774	-0.000766	-0.00029	-0.00038
		-0.00482	-0.00434	-0.00432	-0.00436	-0.00435	-0.00441	-0.00485	-0.00478	-0.00478	-0.00484	-0.00482
unemployment			0.0282***	0.0282***	0.0282***	0.0253***	0.0222***	0.0237***	0.0227***	0.0228***	0.0215***	0.0208***
			-0.00778	-0.00777	-0.00776	-0.0073	-0.00763	-0.00758	-0.00761	-0.00764	-0.00758	-0.00741
education				-0.00103	-0.000975	-0.00143	-0.00107	-0.00215	-0.00348	-0.00343	-0.0059	-0.007
				-0.00642	-0.00639	-0.00631	-0.0064	-0.00644	-0.00619	-0.00616	-0.00609	-0.00615
age65					0.00274	-0.00107	-0.0107	-0.00717	0.0212	0.0214	0.0175	0.0151
					-0.0156	-0.0154	-0.0152	-0.0153	-0.0157	-0.0158	-0.0156	-0.0152
age18						-0.0316***	-0.0292***	-0.0292***	-0.0264**	-0.0269**	-0.0264**	-0.0243**
						-0.0109	-0.0111	-0.0111	-0.0109	-0.011	-0.0114	-0.0118
medproptax							0.476***	0.527***	0.544***	0.548***	0.506***	0.476***
							-0.159	-0.166	-0.164	-0.166	-0.164	-0.162
logmedhinc								0.322	0.288	0.284	0.394**	0.337*
								-0.197	-0.196	-0.194	-0.19	-0.191
logretpercap									-0.669***	-0.680***	-0.599***	-0.529**
									-0.239	-0.243	-0.23	-0.224
logtotpop										0.023	0.156	0.25
										-0.143	-0.146	-0.154
publicprivategdp											0.0854***	0.0690***
											-0.0241	-0.0235
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.368***	0.368***	0.368***	0.367***	0.367***	0.367***	0.368***	0.367***	0.368***	0.368***	0.367***	0.368***
	-0.00916	-0.00912	-0.00899	-0.00899	-0.00899	-0.00897	-0.00893	-0.00892	-0.00894	-0.00894	-0.00889	-0.00894
matsize	-0.0783***	-0.0783***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00767	-0.00767	-0.00765	-0.00765	-0.00765	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00768	-0.00769
duration	0.0591***	0.0591***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0594***	0.0592***
	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	3.188***	3.162***	3.139***	3.157***	3.125***	4.006***	3.843***	0.28	5.627*	5.468*	1.255	0.0881
	-0.074	-0.0961	-0.101	-0.152	-0.217	-0.337	-0.354	-2.222	-2.996	-3.309	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.559	0.559	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 13 - Regression results, poverty as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
poverty	0.00268	0.00271	-0.00531	-0.00538	-0.00542	-0.00422	-0.00638	-0.00154	-0.000774	-0.000766	-0.00029	-0.00038
	-0.00481	-0.00482	-0.00434	-0.00432	-0.00436	-0.00435	-0.00441	-0.00485	-0.00478	-0.00478	-0.00484	-0.00482
crimerate		-0.108	-0.101	-0.101	-0.102	-0.108	-0.112	-0.101	-0.12	-0.117	-0.125	-0.136
		-0.195	-0.191	-0.191	-0.191	-0.191	-0.195	-0.194	-0.192	-0.193	-0.189	-0.189
unemployment			0.0282***	0.0282***	0.0282***	0.0253***	0.0222***	0.0237***	0.0227***	0.0228***	0.0215***	0.0208***
			-0.00778	-0.00777	-0.00776	-0.0073	-0.00763	-0.00758	-0.00761	-0.00764	-0.00758	-0.00741
education				-0.00103	-0.000975	-0.00143	-0.00107	-0.00215	-0.00348	-0.00343	-0.0059	-0.007
				-0.00642	-0.00639	-0.00631	-0.0064	-0.00644	-0.00619	-0.00616	-0.00609	-0.00615
age65					0.00274	-0.00107	-0.0107	-0.00717	0.0212	0.0214	0.0175	0.0151
					-0.0156	-0.0154	-0.0152	-0.0153	-0.0157	-0.0158	-0.0156	-0.0152
age18						-0.0316***	-0.0292***	-0.0292***	-0.0264**	-0.0269**	-0.0264**	-0.0243**
						-0.0109	-0.0111	-0.0111	-0.0109	-0.011	-0.0114	-0.0118
medproptax							0.476***	0.527***	0.544***	0.548***	0.506***	0.476***
							-0.159	-0.166	-0.164	-0.166	-0.164	-0.162
logmedhinc								0.322	0.288	0.284	0.394**	0.337*
								-0.197	-0.196	-0.194	-0.19	-0.191
logretpercap									-0.669***	-0.680***	-0.599***	-0.529**
									-0.239	-0.243	-0.23	-0.224
logtotpop										0.023	0.156	0.25
										-0.143	-0.146	-0.154
publicprivategdp											0.0854***	0.0690***
											-0.0241	-0.0235
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.368***	0.368***	0.368***	0.367***	0.367***	0.367***	0.368***	0.367***	0.368***	0.368***	0.367***	0.368***
	-0.00912	-0.00912	-0.00899	-0.00899	-0.00899	-0.00897	-0.00893	-0.00892	-0.00894	-0.00894	-0.00889	-0.00894
matsize	-0.0784***	-0.0783***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00767	-0.00767	-0.00765	-0.00765	-0.00765	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00768	-0.00769
duration	0.0592***	0.0591***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0594***	0.0592***
	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	3.155***	3.162***	3.139***	3.157***	3.125***	4.006***	3.843***	0.28	5.627*	5.468*	1.255	0.0881
	-0.099	-0.0961	-0.101	-0.152	-0.217	-0.337	-0.354	-2.222	-2.996	-3.309	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.559	0.559	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 14 - Regression results, unemployment as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
unemployment	0.0266***	0.0266***	0.0282***	0.0282***	0.0282***	0.0253***	0.0222***	0.0237***	0.0227***	0.0228***	0.0215***	0.0208***
	-0.00787	-0.00785	-0.00778	-0.00777	-0.00776	-0.0073	-0.00763	-0.00758	-0.00761	-0.00764	-0.00758	-0.00741
crimerate		-0.103	-0.101	-0.101	-0.102	-0.108	-0.112	-0.101	-0.12	-0.117	-0.125	-0.136
		-0.193	-0.191	-0.191	-0.191	-0.191	-0.195	-0.194	-0.192	-0.193	-0.189	-0.189
poverty			-0.00531	-0.00538	-0.00542	-0.00422	-0.00638	-0.00154	-0.000774	-0.000766	-0.00029	-0.00038
			-0.00434	-0.00432	-0.00436	-0.00435	-0.00441	-0.00485	-0.00478	-0.00478	-0.00484	-0.00482
education				-0.00103	-0.000975	-0.00143	-0.00107	-0.00215	-0.00348	-0.00343	-0.0059	-0.007
				-0.00642	-0.00639	-0.00631	-0.0064	-0.00644	-0.00619	-0.00616	-0.00609	-0.00615
age65					0.00274	-0.00107	-0.0107	-0.00717	0.0212	0.0214	0.0175	0.0151
					-0.0156	-0.0154	-0.0152	-0.0153	-0.0157	-0.0158	-0.0156	-0.0152
age18						-0.0316***	-0.0292***	-0.0292***	-0.0264**	-0.0269**	-0.0264**	-0.0243**
						-0.0109	-0.0111	-0.0111	-0.0109	-0.011	-0.0114	-0.0118
medproptax							0.476***	0.527***	0.544***	0.548***	0.506***	0.476***
							-0.159	-0.166	-0.164	-0.166	-0.164	-0.162
logmedhinc								0.322	0.288	0.284	0.394**	0.337*
								-0.197	-0.196	-0.194	-0.19	-0.191
logretpercap									-0.669***	-0.680***	-0.599***	-0.529**
									-0.239	-0.243	-0.23	-0.224
logtotpop										0.023	0.156	0.25
										-0.143	-0.146	-0.154
publicprivategdp											0.0854***	0.0690***
											-0.0241	-0.0235
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.367***	0.367***	0.368***	0.367***	0.367***	0.367***	0.368***	0.367***	0.368***	0.368***	0.367***	0.368***
	-0.009	-0.009	-0.00899	-0.00899	-0.00899	-0.00897	-0.00893	-0.00892	-0.00894	-0.00894	-0.00889	-0.00894
matsize	-0.0785***	-0.0785***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00765	-0.00765	-0.00765	-0.00765	-0.00765	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00768	-0.00769
duration	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0594***	0.0592***
	-0.00232	-0.00232	-0.00233	-0.00233	-0.00233	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	3.087***	3.094***	3.139***	3.157***	3.125***	4.006***	3.843***	0.28	5.627*	5.468*	1.255	0.0881
	-0.0947	-0.0918	-0.101	-0.152	-0.217	-0.337	-0.354	-2.222	-2.996	-3.309	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 15 - Regression results, education as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
education	-0.00128	-0.00135	-0.000998	-0.00103	-0.000975	-0.00143	-0.00107	-0.00215	-0.00348	-0.00343	-0.0059	-0.007
	-0.00663	-0.00663	-0.00661	-0.00642	-0.00639	-0.00631	-0.0064	-0.00644	-0.00619	-0.00616	-0.00609	-0.00615
crimerate		-0.108	-0.108	-0.101	-0.102	-0.108	-0.112	-0.101	-0.12	-0.117	-0.125	-0.136
		-0.194	-0.195	-0.191	-0.191	-0.191	-0.195	-0.194	-0.192	-0.193	-0.189	-0.189
poverty			0.00264	-0.00538	-0.00542	-0.00422	-0.00638	-0.00154	-0.000774	-0.000766	-0.00029	-0.00038
			-0.00481	-0.00432	-0.00436	-0.00435	-0.00441	-0.00485	-0.00478	-0.00478	-0.00484	-0.00482
unemployment				0.0282***	0.0282***	0.0253***	0.0222***	0.0237***	0.0227***	0.0228***	0.0215***	0.0208***
				-0.00777	-0.00776	-0.0073	-0.00763	-0.00758	-0.00761	-0.00764	-0.00758	-0.00741
age65					0.00274	-0.00107	-0.0107	-0.00717	0.0212	0.0214	0.0175	0.0151
					-0.0156	-0.0154	-0.0152	-0.0153	-0.0157	-0.0158	-0.0156	-0.0152
age18						-0.0316***	-0.0292***	-0.0292***	-0.0264**	-0.0269**	-0.0264**	-0.0243**
						-0.0109	-0.0111	-0.0111	-0.0109	-0.011	-0.0114	-0.0118
medproptax							0.476***	0.527***	0.544***	0.548***	0.506***	0.476***
							-0.159	-0.166	-0.164	-0.166	-0.164	-0.162
logmedhinc								0.322	0.288	0.284	0.394**	0.337*
								-0.197	-0.196	-0.194	-0.19	-0.191
logretpercap									-0.669***	-0.680***	-0.599***	-0.529**
									-0.239	-0.243	-0.23	-0.224
logtotpop										0.023	0.156	0.25
										-0.143	-0.146	-0.154
publicprivategdp											0.0854***	0.0690***
											-0.0241	-0.0235
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.368***	0.368***	0.368***	0.367***	0.367***	0.367***	0.368***	0.367***	0.368***	0.368***	0.367***	0.368***
	-0.00917	-0.00916	-0.00912	-0.00899	-0.00899	-0.00897	-0.00893	-0.00892	-0.00894	-0.00894	-0.00889	-0.00894
matsize	-0.0784***	-0.0783***	-0.0783***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00767	-0.00767	-0.00767	-0.00765	-0.00765	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00768	-0.00769
duration	0.0591***	0.0591***	0.0591***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0594***	0.0592***
	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	3.203***	3.211***	3.180***	3.157***	3.125***	4.006***	3.843***	0.28	5.627*	5.468*	1.255	0.0881
	-0.133	-0.132	-0.147	-0.152	-0.217	-0.337	-0.354	-2.222	-2.996	-3.309	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.559	0.559	0.559	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 15 - Regression results, education as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
education	-0.00128	-0.00135	-0.000998	-0.00103	-0.000975	-0.00143	-0.00107	-0.00215	-0.00348	-0.00343	-0.0059	-0.007
	-0.00663	-0.00663	-0.00661	-0.00642	-0.00639	-0.00631	-0.0064	-0.00644	-0.00619	-0.00616	-0.00609	-0.00615
crimerate		-0.108	-0.108	-0.101	-0.102	-0.108	-0.112	-0.101	-0.12	-0.117	-0.125	-0.136
		-0.194	-0.195	-0.191	-0.191	-0.191	-0.195	-0.194	-0.192	-0.193	-0.189	-0.189
poverty			0.00264	-0.00538	-0.00542	-0.00422	-0.00638	-0.00154	-0.000774	-0.000766	-0.00029	-0.00038
			-0.00481	-0.00432	-0.00436	-0.00435	-0.00441	-0.00485	-0.00478	-0.00478	-0.00484	-0.00482
unemployment				0.0282***	0.0282***	0.0253***	0.0222***	0.0237***	0.0227***	0.0228***	0.0215***	0.0208***
				-0.00777	-0.00776	-0.0073	-0.00763	-0.00758	-0.00761	-0.00764	-0.00758	-0.00741
age65					0.00274	-0.00107	-0.0107	-0.00717	0.0212	0.0214	0.0175	0.0151
					-0.0156	-0.0154	-0.0152	-0.0153	-0.0157	-0.0158	-0.0156	-0.0152
age18						-0.0316***	-0.0292***	-0.0292***	-0.0264**	-0.0269**	-0.0264**	-0.0243**
						-0.0109	-0.0111	-0.0111	-0.0109	-0.011	-0.0114	-0.0118
medproptax							0.476***	0.527***	0.544***	0.548***	0.506***	0.476***
							-0.159	-0.166	-0.164	-0.166	-0.164	-0.162
logmedhinc								0.322	0.288	0.284	0.394**	0.337*
								-0.197	-0.196	-0.194	-0.19	-0.191
logretpercap									-0.669***	-0.680***	-0.599***	-0.529**
									-0.239	-0.243	-0.23	-0.224
logtotpop										0.023	0.156	0.25
										-0.143	-0.146	-0.154
publicprivategdp											0.0854***	0.0690***
											-0.0241	-0.0235
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.368***	0.368***	0.368***	0.367***	0.367***	0.367***	0.368***	0.367***	0.368***	0.368***	0.367***	0.368***
	-0.00917	-0.00916	-0.00912	-0.00899	-0.00899	-0.00897	-0.00893	-0.00892	-0.00894	-0.00894	-0.00889	-0.00894
matsize	-0.0784***	-0.0783***	-0.0783***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00767	-0.00767	-0.00767	-0.00765	-0.00765	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00768	-0.00769
duration	0.0591***	0.0591***	0.0591***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0594***	0.0592***
	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	3.203***	3.211***	3.180***	3.157***	3.125***	4.006***	3.843***	0.28	5.627*	5.468*	1.255	0.0881
	-0.133	-0.132	-0.147	-0.152	-0.217	-0.337	-0.354	-2.222	-2.996	-3.309	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.559	0.559	0.559	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 16 - Regression results, age65 as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
age65	0.000706	0.000848	0.000541	0.00282	0.00274	-0.00107	-0.0107	-0.00717	0.0212	0.0214	0.0175	0.0151
	-0.0167	-0.0167	-0.0167	-0.0156	-0.0156	-0.0154	-0.0152	-0.0153	-0.0157	-0.0158	-0.0156	-0.0152
crimerate		-0.107	-0.108	-0.102	-0.102	-0.108	-0.112	-0.101	-0.12	-0.117	-0.125	-0.136
		-0.194	-0.195	-0.191	-0.191	-0.191	-0.195	-0.194	-0.192	-0.193	-0.189	-0.189
poverty			0.0027	-0.00536	-0.00542	-0.00422	-0.00638	-0.00154	-0.000774	-0.000766	-0.00029	-0.00038
			-0.00487	-0.00438	-0.00436	-0.00435	-0.00441	-0.00485	-0.00478	-0.00478	-0.00484	-0.00482
unemployment				0.0282***	0.0282***	0.0253***	0.0222***	0.0237***	0.0227***	0.0228***	0.0215***	0.0208***
				-0.00777	-0.00776	-0.0073	-0.00763	-0.00758	-0.00761	-0.00764	-0.00758	-0.00741
education					-0.000975	-0.00143	-0.00107	-0.00215	-0.00348	-0.00343	-0.0059	-0.007
					-0.00639	-0.00631	-0.0064	-0.00644	-0.00619	-0.00616	-0.00609	-0.00615
age18						-0.0316***	-0.0292***	-0.0292***	-0.0264**	-0.0269**	-0.0264**	-0.0243**
						-0.0109	-0.0111	-0.0111	-0.0109	-0.011	-0.0114	-0.0118
medproptax							0.476***	0.527***	0.544***	0.548***	0.506***	0.476***
							-0.159	-0.166	-0.164	-0.166	-0.164	-0.162
logmedhinc								0.322	0.288	0.284	0.394**	0.337*
								-0.197	-0.196	-0.194	-0.19	-0.191
logretpercap									-0.669***	-0.680***	-0.599***	-0.529**
									-0.239	-0.243	-0.23	-0.224
logtotpop										0.023	0.156	0.25
										-0.143	-0.146	-0.154
publicprivategdp											0.0854***	0.0690***
											-0.0241	-0.0235
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.368***	0.368***	0.368***	0.367***	0.367***	0.367***	0.368***	0.367***	0.368***	0.368***	0.367***	0.368***
	-0.00917	-0.00916	-0.00912	-0.00899	-0.00899	-0.00897	-0.00893	-0.00892	-0.00894	-0.00894	-0.00889	-0.00894
matsize	-0.0784***	-0.0783***	-0.0783***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00767	-0.00767	-0.00767	-0.00765	-0.00765	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00768	-0.00769
duration	0.0591***	0.0591***	0.0591***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0594***	0.0592***
	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	3.173***	3.178***	3.156***	3.107***	3.125***	4.006***	3.843***	0.28	5.627*	5.468*	1.255	0.0881
	-0.198	-0.197	-0.198	-0.191	-0.217	-0.337	-0.354	-2.222	-2.996	-3.309	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.559	0.559	0.559	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 17 - Regression results, age18 as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
age18	-0.0394***	-0.0394***	-0.0396***	-0.0315***	-0.0316***	-0.0316***	-0.0292***	-0.0292***	-0.0264**	-0.0269**	-0.0264**	-0.0243**
	-0.012	-0.012	-0.0122	-0.0108	-0.0108	-0.0109	-0.0111	-0.0111	-0.0109	-0.011	-0.0114	-0.0118
crimerate		-0.114	-0.115	-0.107	-0.108	-0.108	-0.112	-0.101	-0.12	-0.117	-0.125	-0.136
		-0.192	-0.193	-0.191	-0.191	-0.191	-0.195	-0.194	-0.192	-0.193	-0.189	-0.189
poverty			0.00316	-0.00415	-0.00424	-0.00422	-0.00638	-0.00154	-0.000774	-0.000766	-0.00029	-0.00038
			-0.00489	-0.00431	-0.00431	-0.00435	-0.00441	-0.00485	-0.00478	-0.00478	-0.00484	-0.00482
unemployment				0.0254***	0.0254***	0.0253***	0.0222***	0.0237***	0.0227***	0.0228***	0.0215***	0.0208***
				-0.00734	-0.00734	-0.0073	-0.00763	-0.00758	-0.00761	-0.00764	-0.00758	-0.00741
education					-0.00141	-0.00143	-0.00107	-0.00215	-0.00348	-0.00343	-0.0059	-0.007
					-0.00633	-0.00631	-0.0064	-0.00644	-0.00619	-0.00616	-0.00609	-0.00615
age65						-0.00107	-0.0107	-0.00717	0.0212	0.0214	0.0175	0.0151
						-0.0154	-0.0152	-0.0153	-0.0157	-0.0158	-0.0156	-0.0152
medproptax							0.476***	0.527***	0.544***	0.548***	0.506***	0.476***
							-0.159	-0.166	-0.164	-0.166	-0.164	-0.162
logmedhinc								0.322	0.288	0.284	0.394**	0.337*
								-0.197	-0.196	-0.194	-0.19	-0.191
logretpercap									-0.669***	-0.680***	-0.599***	-0.529**
									-0.239	-0.243	-0.23	-0.224
logtotpop										0.023	0.156	0.25
										-0.143	-0.146	-0.154
publicprivategdp											0.0854***	0.0690***
											-0.0241	-0.0235
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.368***	0.368***	0.368***	0.367***	0.367***	0.367***	0.368***	0.367***	0.368***	0.368***	0.367***	0.368***
	-0.00913	-0.00912	-0.00907	-0.00896	-0.00896	-0.00897	-0.00893	-0.00892	-0.00894	-0.00894	-0.00889	-0.00894
matsize	-0.0783***	-0.0783***	-0.0783***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00768	-0.00768	-0.00767	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00768	-0.00769
duration	0.0592***	0.0592***	0.0592***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0594***	0.0592***
	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	4.213***	4.222***	4.196***	3.966***	3.992***	4.006***	3.843***	0.28	5.627*	5.468*	1.255	0.0881
	-0.298	-0.303	-0.298	-0.269	-0.28	-0.337	-0.354	-2.222	-2.996	-3.309	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.559	0.559	0.559	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 18 - Regression results, medproptax as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
medproptax	0.627***	0.628***	0.638***	0.494***	0.493***	0.515***	0.476***	0.527***	0.544***	0.548***	0.506***	0.476***
	-0.146	-0.146	-0.151	-0.159	-0.16	-0.158	-0.159	-0.166	-0.164	-0.166	-0.164	-0.162
crimerate		-0.117	-0.116	-0.108	-0.109	-0.107	-0.112	-0.101	-0.12	-0.117	-0.125	-0.136
		-0.199	-0.199	-0.195	-0.195	-0.196	-0.195	-0.194	-0.192	-0.193	-0.189	-0.189
poverty			-0.00156	-0.00765*	-0.00768*	-0.00765*	-0.00638	-0.00154	-0.000774	-0.000766	-0.00029	-0.00038
			-0.00492	-0.00441	-0.00439	-0.00439	-0.00441	-0.00485	-0.00478	-0.00478	-0.00484	-0.00482
unemployment				0.0248***	0.0248***	0.0246***	0.0222***	0.0237***	0.0227***	0.0228***	0.0215***	0.0208***
				-0.00816	-0.00815	-0.00811	-0.00763	-0.00758	-0.00761	-0.00764	-0.00758	-0.00741
education					-0.000482	-0.000626	-0.00107	-0.00215	-0.00348	-0.00343	-0.0059	-0.007
					-0.00649	-0.00646	-0.0064	-0.00644	-0.00619	-0.00616	-0.00609	-0.00615
age65						-0.00798	-0.0107	-0.00717	0.0212	0.0214	0.0175	0.0151
						-0.0152	-0.0152	-0.0153	-0.0157	-0.0158	-0.0156	-0.0152
age18							-0.0292***	-0.0292***	-0.0264**	-0.0269**	-0.0264**	-0.0243**
							-0.0111	-0.0111	-0.0109	-0.011	-0.0114	-0.0118
logmedhinc								0.322	0.288	0.284	0.394**	0.337*
								-0.197	-0.196	-0.194	-0.19	-0.191
logretpercap									-0.669***	-0.680***	-0.599***	-0.529**
									-0.239	-0.243	-0.23	-0.224
logtotpop										0.023	0.156	0.25
										-0.143	-0.146	-0.154
publicprivategdp											0.0854***	0.0690***
											-0.0241	-0.0235
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.367***	0.368***	0.368***	0.367***	0.368***
	-0.00914	-0.00913	-0.00908	-0.00896	-0.00896	-0.00895	-0.00893	-0.00892	-0.00894	-0.00894	-0.00889	-0.00894
matsize	-0.0784***	-0.0784***	-0.0784***	-0.0785***	-0.0785***	-0.0785***	-0.0784***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00768	-0.00767	-0.00767	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00766	-0.00768	-0.00769
duration	0.0591***	0.0591***	0.0591***	0.0592***	0.0592***	0.0592***	0.0593***	0.0593***	0.0593***	0.0593***	0.0594***	0.0592***
	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	2.873***	2.880***	2.890***	2.931***	2.940***	3.023***	3.843***	0.28	5.627*	5.468*	1.255	0.0881
	-0.0997	-0.0981	-0.107	-0.103	-0.161	-0.218	-0.354	-2.222	-2.996	-3.309	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.559	0.559	0.559	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 19 - Regression results, logmedhinc as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
logmedhinc	-0.0754	-0.0792	-0.0439	0.167	0.172	0.187	0.198	0.322	0.288	0.284	0.394**	0.337*
	-0.167	-0.167	-0.185	-0.183	-0.185	-0.189	-0.189	-0.197	-0.196	-0.194	-0.19	-0.191
crimerate		-0.11	-0.109	-0.0944	-0.0949	-0.0954	-0.101	-0.101	-0.12	-0.117	-0.125	-0.136
		-0.195	-0.195	-0.19	-0.19	-0.19	-0.189	-0.194	-0.192	-0.193	-0.189	-0.189
poverty			0.00193	-0.00261	-0.00264	-0.00249	-0.00111	-0.00154	-0.000774	-0.000766	-0.00029	-0.00038
			-0.00524	-0.00493	-0.00492	-0.00487	-0.0049	-0.00485	-0.00478	-0.00478	-0.00484	-0.00482
unemployment				0.0291***	0.0292***	0.0293***	0.0265***	0.0237***	0.0227***	0.0228***	0.0215***	0.0208***
				-0.00786	-0.00784	-0.00783	-0.00737	-0.00758	-0.00761	-0.00764	-0.00758	-0.00741
education					-0.00168	-0.00162	-0.00212	-0.00215	-0.00348	-0.00343	-0.0059	-0.007
					-0.00648	-0.00646	-0.00637	-0.00644	-0.00619	-0.00616	-0.00609	-0.00615
age65						0.0054	0.00172	-0.00717	0.0212	0.0214	0.0175	0.0151
						-0.0159	-0.0158	-0.0153	-0.0157	-0.0158	-0.0156	-0.0152
age18							-0.0318***	-0.0292***	-0.0264**	-0.0269**	-0.0264**	-0.0243**
							-0.0109	-0.0111	-0.0109	-0.011	-0.0114	-0.0118
medproptax								0.527***	0.544***	0.548***	0.506***	0.476***
								-0.166	-0.164	-0.166	-0.164	-0.162
logretpercap									-0.669***	-0.680***	-0.599***	-0.529**
									-0.239	-0.243	-0.23	-0.224
logtotpop										0.023	0.156	0.25
										-0.143	-0.146	-0.154
publicprivategdp											0.0854***	0.0690***
											-0.0241	-0.0235
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.368***	0.368***	0.368***	0.367***	0.367***	0.367***	0.367***	0.367***	0.368***	0.368***	0.367***	0.368***
	-0.00916	-0.00915	-0.00912	-0.00898	-0.00899	-0.00899	-0.00896	-0.00892	-0.00894	-0.00894	-0.00889	-0.00894
matsize	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0784***	-0.0783***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00767	-0.00767	-0.00767	-0.00765	-0.00765	-0.00765	-0.00766	-0.00766	-0.00766	-0.00766	-0.00768	-0.00769
duration	0.0591***	0.0591***	0.0591***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0594***	0.0592***
	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	3.993**	4.041**	3.642*	1.314	1.292	1.065	1.828	0.28	5.627*	5.468*	1.255	0.0881
	-1.784	-1.789	-2.013	-2.007	-2.012	-2.101	-2.098	-2.222	-2.996	-3.309	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.559	0.559	0.559	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 20 - Regression results, logretpercap as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	œupon	œupon	œupon	œupon	œupon	œupon	œupon	œupon	œupon	œupon	œupon	œupon
logretpercap	-0.532**	-0.533**	-0.545**	-0.494**	-0.498**	-0.702***	-0.659***	-0.683***	-0.669***	-0.680***	-0.599***	-0.529**
	-0.237	-0.237	-0.238	-0.226	-0.226	-0.242	-0.236	-0.239	-0.239	-0.243	-0.23	-0.224
crimerate		-0.115	-0.117	-0.109	-0.11	-0.12	-0.125	-0.13	-0.12	-0.117	-0.125	-0.136
		-0.191	-0.193	-0.19	-0.19	-0.189	-0.188	-0.193	-0.192	-0.193	-0.189	-0.189
poverty			0.00409	-0.00378	-0.00394	-0.00387	-0.00286	-0.00508	-0.000774	-0.000766	-0.00029	-0.00038
			-0.00492	-0.00441	-0.00442	-0.0044	-0.00437	-0.00442	-0.00478	-0.00478	-0.00484	-0.00482
unemployment				0.0272***	0.0272***	0.0272***	0.0247***	0.0213***	0.0227***	0.0228***	0.0215***	0.0208***
				-0.00779	-0.00777	-0.00781	-0.00736	-0.00766	-0.00761	-0.00764	-0.00758	-0.00741
education					-0.0026	-0.00255	-0.00287	-0.00255	-0.00348	-0.00343	-0.0059	-0.007
					-0.00617	-0.00608	-0.00606	-0.00613	-0.00619	-0.00616	-0.00609	-0.00615
age65						0.0330**	0.0277*	0.0186	0.0212	0.0214	0.0175	0.0151
						-0.0158	-0.0159	-0.0157	-0.0157	-0.0158	-0.0156	-0.0152
age18							-0.0290***	-0.0263**	-0.0264**	-0.0269**	-0.0264**	-0.0243**
							-0.0107	-0.0108	-0.0109	-0.011	-0.0114	-0.0118
medproptax								0.499***	0.544***	0.548***	0.506***	0.476***
								-0.158	-0.164	-0.166	-0.164	-0.162
logmedhinc									0.288	0.284	0.394**	0.337*
									-0.196	-0.194	-0.19	-0.191
logtotpop										0.023	0.156	0.25
										-0.143	-0.146	-0.154
publicprivategdp											0.0854***	0.0690***
											-0.0241	-0.0235
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.367***	0.368***
	-0.00919	-0.00918	-0.00913	-0.009	-0.009	-0.00901	-0.00898	-0.00895	-0.00894	-0.00894	-0.00889	-0.00894
matsize	-0.0782***	-0.0782***	-0.0782***	-0.0783***	-0.0783***	-0.0783***	-0.0783***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00768	-0.00768	-0.00767	-0.00766	-0.00765	-0.00766	-0.00766	-0.00767	-0.00766	-0.00766	-0.00768	-0.00769
duration	0.0592***	0.0591***	0.0592***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0594***	0.0592***
	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	7.443***	7.463***	7.521***	7.086***	7.169***	8.427***	8.909***	8.916***	5.627*	5.468*	1.255	0.0881
	-1.907	-1.909	-1.911	-1.813	-1.811	-1.883	-1.849	-1.875	-2.996	-3.309	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.559	0.559	0.559	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 21 - Regression results, logtotpop as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
logtotpop	-0.392***	-0.406***	-0.403***	-0.283*	-0.285*	-0.286*	-0.178	-0.116	-0.139	0.023	0.156	0.25
	-0.149	-0.152	-0.153	-0.15	-0.149	-0.149	-0.148	-0.154	-0.151	-0.143	-0.146	-0.154
crimerate		-0.173	-0.173	-0.147	-0.148	-0.149	-0.136	-0.131	-0.123	-0.117	-0.125	-0.136
		-0.199	-0.199	-0.195	-0.195	-0.195	-0.192	-0.197	-0.195	-0.193	-0.189	-0.189
poverty			0.00107	-0.0058	-0.00592	-0.00598	-0.00473	-0.00661	-0.00151	-0.000766	-0.00029	-0.00038
			-0.00488	-0.00436	-0.00435	-0.00439	-0.00442	-0.00444	-0.00485	-0.00478	-0.00484	-0.00482
unemployment				0.0259***	0.0259***	0.0259***	0.0243***	0.0217***	0.0231***	0.0228***	0.0215***	0.0208***
				-0.00782	-0.00781	-0.00781	-0.00748	-0.00768	-0.00764	-0.00764	-0.00758	-0.00741
education					-0.00189	-0.00182	-0.0019	-0.00139	-0.0026	-0.00343	-0.0059	-0.007
					-0.00618	-0.00616	-0.00619	-0.0063	-0.00632	-0.00616	-0.00609	-0.00615
age65						0.00353	-5.55E-05	-0.00957	-0.0056	0.0214	0.0175	0.0151
						-0.0153	-0.0152	-0.0149	-0.0151	-0.0158	-0.0156	-0.0152
age18							-0.0273**	-0.0265**	-0.0259**	-0.0269**	-0.0264**	-0.0243**
							-0.011	-0.011	-0.0111	-0.011	-0.0114	-0.0118
medproptax								0.453***	0.502***	0.548***	0.506***	0.476***
								-0.161	-0.168	-0.166	-0.164	-0.162
logmedhinc									0.342*	0.284	0.394**	0.337*
									-0.195	-0.194	-0.19	-0.191
logretpercap										-0.680***	-0.599***	-0.529**
										-0.243	-0.23	-0.224
publicprivategdp											0.0854***	0.0690***
											-0.0241	-0.0235
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.367***	0.368***
	-0.00916	-0.00914	-0.00909	-0.00896	-0.00897	-0.00897	-0.00894	-0.00892	-0.00891	-0.00894	-0.00889	-0.00894
matsize	-0.0784***	-0.0784***	-0.0784***	-0.0785***	-0.0785***	-0.0785***	-0.0784***	-0.0784***	-0.0783***	-0.0782***	-0.0781***	-0.0781***
	-0.00768	-0.00768	-0.00768	-0.00766	-0.00766	-0.00766	-0.00767	-0.00767	-0.00767	-0.00766	-0.00768	-0.00769
duration	0.0592***	0.0592***	0.0592***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0593***	0.0594***	0.0592***
	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	8.238***	8.431***	8.384***	6.807***	6.865***	6.835***	6.194***	5.274***	1.77	5.468*	1.255	0.0881
	-1.915	-1.965	-1.984	-1.958	-1.929	-1.95	-1.9	-2	-2.975	-3.309	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.559	0.559	0.559	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 22 - Regression results, publicprivategdp as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
publicprivategdp	0.108***	0.109***	0.109***	0.0948***	0.0959***	0.0959***	0.0899***	0.0836***	0.0909***	0.0800***	0.0854***	0.0690***
	-0.0245	-0.0248	-0.0246	-0.0236	-0.0234	-0.0234	-0.0232	-0.0237	-0.0233	-0.0231	-0.0241	-0.0235
crimerate		-0.153	-0.153	-0.141	-0.143	-0.143	-0.146	-0.147	-0.134	-0.145	-0.125	-0.136
		-0.191	-0.191	-0.188	-0.188	-0.188	-0.188	-0.192	-0.19	-0.189	-0.189	-0.189
poverty			-0.000278	-0.00683	-0.0071	-0.00709	-0.00597	-0.00763*	-0.000906	-0.000371	-0.00029	-0.00038
			-0.00485	-0.00435	-0.00435	-0.00438	-0.0044	-0.00445	-0.0049	-0.00483	-0.00484	-0.00482
unemployment				0.0244***	0.0244***	0.0244***	0.0222***	0.0198***	0.0217***	0.0211***	0.0215***	0.0208***
				-0.00784	-0.00784	-0.00782	-0.00735	-0.00761	-0.00756	-0.00756	-0.00758	-0.00741
education					-0.00394	-0.00394	-0.00415	-0.00366	-0.00541	-0.00608	-0.0059	-0.007
					-0.00614	-0.00612	-0.00612	-0.00622	-0.00623	-0.00608	-0.00609	-0.00615
age65						-0.000129	-0.0032	-0.011	-0.00609	0.0164	0.0175	0.0151
						-0.015	-0.0149	-0.0148	-0.0149	-0.0156	-0.0156	-0.0152
age18							-0.0270**	-0.0253**	-0.0250**	-0.0232**	-0.0264**	-0.0243**
							-0.011	-0.0111	-0.0112	-0.011	-0.0114	-0.0118
medproptax								0.395**	0.460***	0.481***	0.506***	0.476***
								-0.159	-0.164	-0.164	-0.164	-0.162
logmedhinc									0.455**	0.412**	0.394**	0.337*
									-0.192	-0.192	-0.19	-0.191
logretpercap										-0.534**	-0.599***	-0.529**
										-0.228	-0.23	-0.224
logtotpop											0.156	0.25
											-0.146	-0.154
political												0.00340***
												-0.00101
CONTROL VARIABLES												
fed	0.368***	0.368***	0.368***	0.367***	0.367***	0.367***	0.367***	0.367***	0.367***	0.367***	0.367***	0.368***
	-0.0091	-0.00908	-0.00904	-0.00893	-0.00894	-0.00894	-0.00891	-0.00888	-0.00887	-0.00889	-0.00889	-0.00894
matsize	-0.0783***	-0.0783***	-0.0783***	-0.0784***	-0.0784***	-0.0784***	-0.0783***	-0.0783***	-0.0783***	-0.0782***	-0.0781***	-0.0781***
	-0.0077	-0.00769	-0.00769	-0.00767	-0.00767	-0.00767	-0.00768	-0.00768	-0.00768	-0.00768	-0.00768	-0.00769
duration	0.0592***	0.0592***	0.0592***	0.0593***	0.0593***	0.0593***	0.0594***	0.0593***	0.0594***	0.0594***	0.0594***	0.0592***
	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00231	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	2.219***	2.221***	2.223***	2.328***	2.389***	2.391***	3.187***	3.109***	-1.992	2.542	1.255	0.0881
	-0.244	-0.243	-0.248	-0.236	-0.262	-0.301	-0.385	-0.389	-2.172	-2.93	-3.333	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
7	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 23 - Regression results, political as key variable

Number of Independent Variables	1	2	3	4	5	6	7	8	9	10	11	12
INDEPENDENT VARIABLES	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon	coupon
political	0.00465***	0.00468***	0.00468***	0.00433***	0.00436***	0.00436***	0.00414***	0.00400***	0.00397***	0.00365***	0.00380***	0.00340***
	-0.000991	-0.00101	-0.00101	-0.000973	-0.00096	-0.00096	-0.000939	-0.000965	-0.000962	-0.000977	-0.00102	-0.00101
crimerate		-0.152	-0.152	-0.143	-0.145	-0.146	-0.148	-0.15	-0.14	-0.151	-0.131	-0.136
		-0.193	-0.194	-0.191	-0.19	-0.19	-0.191	-0.195	-0.194	-0.192	-0.192	-0.189
poverty			0.00259	-0.00456	-0.00481	-0.00486	-0.00395	-0.00583	-0.0014	-0.000817	-0.000765	-0.00038
			-0.00481	-0.00429	-0.0043	-0.00435	-0.00434	-0.00441	-0.00481	-0.00477	-0.00477	-0.00482
unemployment				0.0252***	0.0252***	0.0252***	0.0231***	0.0204***	0.0218***	0.0212***	0.0216***	0.0208***
				-0.00774	-0.00773	-0.00773	-0.00723	-0.0075	-0.00742	-0.00745	-0.00748	-0.00741
education					-0.00394	-0.00387	-0.00408	-0.00368	-0.00465	-0.00547	-0.0052	-0.007
					-0.00623	-0.0062	-0.0062	-0.00629	-0.00635	-0.00618	-0.00618	-0.00615
age65						0.00325	0.000231	-0.00815	-0.00493	0.0167	0.018	0.0151
						-0.0151	-0.015	-0.0149	-0.0151	-0.0155	-0.0153	-0.0152
age18							-0.0248**	-0.0229**	-0.0230**	-0.0213*	-0.0245**	-0.0243**
							-0.011	-0.0111	-0.0111	-0.011	-0.0115	-0.0118
medproptax								0.412***	0.459***	0.478***	0.504***	0.476***
								-0.156	-0.163	-0.164	-0.163	-0.162
logmedhinc									0.295	0.271	0.244	0.337*
									-0.196	-0.196	-0.195	-0.191
logretpercap										-0.516**	-0.584**	-0.529**
										-0.231	-0.234	-0.224
logtotpop											0.156	0.25
											-0.148	-0.154
publicprivategdp												0.0690***
												-0.0235
CONTROL VARIABLES												
fed	0.369***	0.369***	0.369***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***	0.368***
	-0.00919	-0.00918	-0.00913	-0.009	-0.00901	-0.00901	-0.00899	-0.00896	-0.00896	-0.00898	-0.00899	-0.00894
matsize	-0.0782***	-0.0782***	-0.0782***	-0.0783***	-0.0783***	-0.0783***	-0.0783***	-0.0783***	-0.0782***	-0.0782***	-0.0781***	-0.0781***
	-0.00769	-0.00769	-0.00769	-0.00767	-0.00767	-0.00767	-0.00767	-0.00768	-0.00768	-0.00768	-0.00768	-0.00769
duration	0.0590***	0.0590***	0.0590***	0.0591***	0.0591***	0.0591***	0.0592***	0.0591***	0.0592***	0.0592***	0.0592***	0.0592***
	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00233	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232	-0.00232
Constant	2.956***	2.965***	2.940***	2.936***	3.005***	2.967***	3.665***	3.535***	0.269	4.39	3.257	0.0881
	-0.103	-0.0989	-0.123	-0.127	-0.179	-0.236	-0.331	-0.343	-2.209	-2.911	-3.238	-3.306
Observations	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107	312.107
R-squared	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.561	0.561	0.561	0.561	0.561
Prob > F	0	0	0	0	0	0	0	0	0	0	0	0
White test (p > chi2)	0	0	0	0	0	0	0	0	0	0	0	0
Clustered Standard Errors	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS	SC_FIPS
Fixed Effects	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year	SC_FIPS, year

*Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

Table 24 - Hausman test to determine validity of fixed effects in model

	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
Variable	Fixed Effects	Random Effects	Difference	S.E.
crimerate	-0.135821	0.5861859	-0.7220069	0.0425537
poverty	-0.0003803	0.043892	-0.0442723	0.0013679
unemployment	0.0207623	-0.02249	0.0432523	0.0012465
education	-0.0070036	-0.0095488	0.0025452	0.0017468
age65	0.0151416	-0.0091155	0.0242571	0.004153
age18	-0.0242962	-0.0103902	-0.0139059	0.0025759
medproptax	0.475605	0.3559623	0.1196427	0.0408986
logmedhinc	0.3370987	0.8875442	-0.5504456	0.0496566
logretpercap	-0.5288911	-0.282757	-0.246134	0.0523326
logtotpop	0.2495326	0.0604065	0.1891261	0.0388967
publicprivategdp	0.0689877	0.0127291	0.0562585	0.0055838
political	0.0033973	0.0041752	-0.0007779	0.0001785
fed	0.3676744	0.432959	-0.0652847	0.0022162
matsize	-0.0780634	-0.0859316	0.0078682	.
duration	0.0592224	0.0531311	0.0060913	0.0003505

b = consistent under Ho and Ha; obtained from Fixed Effects

B = inconsistent under Ha, efficient under Ho; obtained from Random Effects

Test: Ho: Difference in coefficients not systematic

chi2(15) = (b-B) ' [(V_b-V_B) ^ (-1)] (b-B)

= 1949.87

Prob>chi2 = 0.0000