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**Davis v. Department of Revenue of Kentucky:  
A Preliminary Impact Assessment**

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# Davis v. Department of Revenue of Kentucky: A Preliminary Impact Assessment

## Abstract

States with income taxes frequently exempt municipal bond interest from state taxation. Such exemptions, referred to as double exempts, are tax expenditures that reduce state revenues, but are viewed as a subsidy to the cost of capital for the state and its localities. All but a few states provide the income tax exemption for state based issues while taxing interest from municipal bonds issued by muni issuers in other states. A recent court case, Davis vs. Department of Revenue of Kentucky, declared state statutes limiting the state income tax exemptions to "in-state" issues unconstitutional. This paper provides some legal background and context for the current case and addresses two key fiscal implications of this case. First, the paper presents a basic model that suggests that bonds issued by states with higher marginal tax rates would see the yields increase on their obligations while states with lower than average marginal tax rates would see their yields decline. The yields would converge at new market equilibrium due to the elimination of tax preferences across the states. Second, the preliminary estimates suggest a good deal of variance in how much tax revenue each state will lose if the case is upheld by the Supreme Court.

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# 1 Introduction

In recent decades, state and local governments have increasingly turned to bonds or debt financing to finance their capital budgets. As a result, the issuance of tax-exempt municipal bonds has grown to meet state and local government capital investment needs. The growth of the tax exempt market has resulted in federal tax expenditures of approximately \$32 billion dollars. Outstanding municipal issues are estimated to be approximately \$2.3 trillion.<sup>1</sup> States with income taxes also frequently exempt municipal bond interest from state taxation. Such exemptions, referred to as double exempts, are tax expenditures that reduce state revenues, but are viewed as a subsidy to the cost of capital for the state and its localities. The potential state revenue loss resulting from the state income tax exemption has been partially mitigated by prevailing state policies that grant the state income exemption only for those issues emanating from issuing entities within their state. In other words, states have provided the income tax exemption for state based issues while taxing interest from municipal bonds issued by muni issuers in other states. A recent court case, *Davis vs. Department of Revenue of Kentucky*, declared state statutes limiting the state income tax exemptions to “in-state” issues unconstitutional. Based on the “dormant” commerce clause of the U.S. Constitution, the Kentucky Court of Appeals found that treating non-state issues differently from state based issues was an infringement on interstate commerce which is prohibited by the Commerce clause. This paper considers the impact of this ruling on state revenues and the municipal bond markets.

## 1.1 Background

Bond financing of state and local government capital budgets has become the “industry standard” in recent decades. The use of bond sale proceeds to fund capital budgets has emerged for several reasons including its use as means of managing the “lumpiness” of major capital projects and responding to the pressure of maintaining infrastructure investments during periods of limited resources, among others. The use of debt financing has also been justified on the “benefits received principle,” which suggests that the cost of state and local capital and infrastructure investments should be borne by the citizens that benefit from such investments in public capital. As most

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<sup>1</sup>Bond Market Association as reported in *The Wall Street Journal*. Herman, Tom, 2006, “Kentucky Muni-Bond Case May Have Broad Reach” *The Wall Street Journal*, D2, Wednesday, September 6, 2006.

capital investments provide benefits over several years, it is argued that bond financing provides an opportunity to match capital costs to capital project benefits.

While the increased reliance on bond financing has been justified in a number of ways, the attractiveness of this capital financing alternative has been enhanced by the long-standing capital subsidy emanating from the tax-exempt status of municipal bonds. The capital cost reductions that result from the exemption of municipal bond interest from federal and state income taxes provides an additional reason for greater state and local government use of this capital budget funding source. The growth of municipal bond issuance and bond market is evidenced by the number of investors in muni bonds (estimated to be approximately 4.4 million federal taxpayers in 2004) as well as the interest income earned from muni bonds, which the Internal Revenue Service estimates to be in the \$50 billion dollar range in the same year<sup>2</sup> The exemption of the municipal bond interest from the federal income which has existed since the passage of the 16th amendment and the enactment of the current federal income tax is not without its critics. At various times during the previous century, the exemption of municipal bond interest has come under attack by various federal officials. They have expressed concern about the tax expenditure impact and/or federal tax revenue loss which has resulted from the exemption. Meanwhile, states with personal income taxes have also exempted interest income on muni bonds issued by the state and its political subdivisions (including localities) within their state while taxing interest income flowing from municipal bonds issued by muni issuing entities of other states. The double exemption (from both federal and state income taxes) has enhanced the marketability of muni issues and has acted as a capital subsidy for state and local government entities. In some cities, such as New York, municipal bond holders benefit from a triple exemption if both a state and the cities within the state have enacted personal income taxes.

## 1.2 The Davis v. Department of Revenue Case

A recent case in Kentucky, *Davis v. Department of Revenue*<sup>3</sup>, has challenged the ability of Kentucky to exempt in-state municipal bond interest while taxing interest received by state residents that hold munis issued by entities of other states. In the case, the Kentucky Appeals Court ruled that

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<sup>2</sup>Herman, Tom, 2006, "Tax Report: Kentucky Muni-Bond Case May Have Broad Reach" The Wall Street Journal, D2, Wednesday, September 6, 2006.

<sup>3</sup>*Davis v. Department of Revenue*, 2004-CA-001940-MR

it is unconstitutional for Kentucky to tax interest earned on out-of-state issues while exempting interest earned on in-state muni bonds. The ruling was based on the Commerce Clause of the U.S. Constitution which gives the federal government authority to regulate commerce between and among states and foreign countries. The Kentucky Supreme Court let the ruling stand by choosing not to review the case.

The Kentucky Department of Revenue has applied for a writ of certiorari from the U.S. Supreme Court.<sup>4</sup> At this time, it is not clear whether the Supreme Court will approve the request as a limited number of petitions for cert. are honored by the court each year (approximately 80 out of 7,500 petitions). Among the factors normally considered by the Court in granting such requests are whether the case 1) involves a question of law rather than law and fact, 2) there is a conflict among lower courts regarding the meaning of the law and 3) a lower court produced a faulty conclusion. The outcome of this case is presently unclear. However, if the Supreme Court hears and sustains the Kentucky Court of Appeals opinion, the position in the opinion will become the law of the land, binding on all federal and state courts. This in turn will probably lead to standardization of state laws regarding the preferential tax treatment of municipal bond interest. This paper reviews the history of the federal and state exemptions and considers the potential impact of such an outcome on the muni bond market. Then we examine the potential implications of the case on the cost of capital for state and local governments.

## **2 Court Cases Involving Tax Exemption of Municipal Bonds**

The most recent court case heard by the Kentucky Court of Appeals involving the state exemption of municipal bonds follows a number of other important court cases concerning the exemption of interest from municipal bonds at both the state and federal level.

### **2.1 Federal exemption for state and local bond interest**

Interest earned from bonds issued by states and localities has been exempt from federal taxation from the inception of the current federal income tax in 1913 (Sixteenth Amendment). However, prior to the sixteenth amendment, there were periods where taxes were levied on income as well as personal

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<sup>4</sup>U.S. S. Ct., Dkt. No. 06-666, 11/29/2006

property. The legal question of whether bonds issued by states and localities could be taxed by the federal government precedes the enactment of the sixteenth amendment.

The traditional thought, and earliest precedent, with regard to the tax exemption of municipal bonds at the federal level goes back to *McCulloch v. Maryland*.<sup>5</sup> According to Tucker<sup>6</sup> this case, which was decided in 1819, established the “doctrine of intergovernmental tax immunity.” The issue at hand was whether or not Maryland could tax a bank chartered by the United States.<sup>7</sup> The U.S. Supreme court ruled that the Maryland did not have power to tax the notes issued by the bank in question. Tucker notes, “In the succeeding years the principle of federal immunity was enlarged and expanded, but it was not until 1870 that the converse situation arose and a federal tax was questioned because it applied to an instrumentality of the state.”<sup>8</sup> Through this “doctrine” it became established that one level of government could not impose a direct tax on another level of government. This idea was first applied to salary earned by an employee of the state (*Collector v. Day*)<sup>9</sup> and later was applied to municipal securities. The prevailing logic was that municipal securities are issued by the state and therefore a tax on the security was a tax on the state. *McCulloch* is widely seen as the precedent for the Federal exemption of municipal bonds from taxation.<sup>10</sup>

This line of reasoning was strengthened in a case brought before the United States Supreme court in 1895. The case, *Pollock v. Farmers’ Loan & Trust Co.*,<sup>11</sup> disputed a recently passed federal income tax and was centrally focused on whether the burden of this tax was directly apportioned among the states. Another issue, according to Zimmerman (1991), was that “this tax also provided an exclusion for interest on U.S government obligations and not those of state or local governments.”<sup>12</sup> The US Supreme Court found that the income tax violated the rule of direct apportionment and

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<sup>5</sup> *McCulloch v. Maryland*, 17 U.S. 316 (1819)

<sup>6</sup> Tucker, Robert H, 1940, “Some Aspects of Intergovernmental Tax Exemption,” *Southern Economic Journal*, 6(3): 273-290

<sup>7</sup> Wallace, M.G., 1919, “Taxation by the States of United States Bonds Held by Corporations,” *Virginia Law Review*, 6(1):20-27.

<sup>8</sup> Tucker 283-284

<sup>9</sup> *The Collector v. Day*, 78 U.S. 113 (1870)

<sup>10</sup> For example, Fisher, Ronald C., 2007, *State & Local Public Finance*, Third Edition, Thomson South-Western: US, pgs 240-1; Zimmerman, Dennis, 1991, *The private use of tax-exempt bonds*, The Urban Institute Press: Washington D.C., pgs 41-2.

<sup>11</sup> *Pollock v. Farmers’ Loan & Trust Co.*, 157 U.S. 429 (1895)

<sup>12</sup> Zimmerman 42

also that the tax on state and local bond interest was “repugnant to the constitution.” This case touched on the taxation of municipal bonds in affirming that a tax levied on municipal bonds was unconstitutional.

From the passage of the Sixteenth Amendment to the present, there has been continual debate regarding the exemption of municipal bonds from federal taxation.<sup>13</sup> When congress passed the Tax Equity and Fiscal Responsibility Act (TEFRA) in 1982 the tax treatment of municipal bonds was a central issue. Congress desired to increase their ability to track who was holding municipal bonds and crack down on any fraud. TEFRA removed the tax exemption for municipal bonds unless they were issued in registered form. In *South Carolina V. Baker*,<sup>14</sup> the state of South Carolina challenged the notion that the Federal government could tax their municipal bonds at all. They specifically thought that TEFRA violated the 10th amendment and intergovernmental tax immunity established in *Pollock* almost 100 years earlier. The US Supreme Court noted in their decision that *Pollock* had been overturned piece by piece over the previous century and that state bond interest is not immune from nondiscriminatory federal taxation. This verified the right of the Federal government to tax interest earned from bonds regardless of issuer.

Since *South Carolina v. Baker*, municipal bonds have been issued in registered form in order to obtain the exemption from federal taxation. The amount of revenue that the federal government will forgo this year due to this tax preference is estimated, by the Office of Management and the Budget,<sup>15</sup> to be \$28 billion (includes exemptions for individuals and corporations holding tax-exempt bonds). It is clear that if the federal government chose to start taxing municipal bonds, there would be a substantial amount of revenue collected.<sup>16</sup>

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<sup>13</sup>For a more complete discussion see Pryde, Joan, 1993, “The ongoing battle: Almost 70 years of assaults on Tax-exempt municipals,” In *The Handbook of municipal bonds and public finance* eds. R. Lamb, J. Leigland, and S. Rappaport, New York Institute of Finance: New York.

<sup>14</sup>*South Carolina v. Baker*, 485 U.S. 505 (1988)

<sup>15</sup>Office of Management and the Budget, 2006, *Analytical Perspective, Budget of the United States Government, Fiscal Year 2007*, US Government Printing Office: Washington, pg. 289.

<sup>16</sup>These estimates do not account for any change in behavior that would occur if these municipal bonds lost their tax exemption. As demonstrated later in the paper, the incentives that individuals have to hold these bonds could be reduced if *Davis v. Dept of Revenue* is not overturned and states respond by taxing all muni bonds.

## 2.2 State exemption of its own bond interest

The taxation of other state's bonds while exempting one's own bonds is a more recent legal issue. Prior to the Kentucky case, the Court of Appeals of Ohio affirmed in *Shaper v. Tracy*<sup>17</sup> that the state of Ohio could treat its bonds differently than other states' bonds with respect to taxation. Furthermore, this court claimed that "neither the Supreme Court nor any case law examined has applied the Commerce Clause to a case such as this, where one governmental entity is taxing its residents for the interest earned on bonds issued by another governmental entity."<sup>18</sup> According to their research, this was the first court case to address the legality of the tax preference for one's own bonds. The case was appealed to US Supreme Court and the appeal was not heard.

In *Davis v. Department of Revenue*, the Kentucky Court of Appeals examined the two key issues of the case: the constitutionality of Kentucky's tax treatment of interest earned from bonds issued by Kentucky and those issued by other states and the standing of the Davises.

The Kentucky Court of Appeals, in *Davis*, mentioned that the Department of Revenue's argument for the constitutionality of the different tax treatment relies heavily on the Shaper case. The Kentucky Court found that the "[Ohio] court failed fully to analyze the issue." The specific criticism is that the Ohio court found the tax preference constitutional simply because there were no prior rulings to the contrary (*Davis v. Department of Revenue*). Having dismissed *Shaper*, the Kentucky Court looked beyond Shaper at the other arguments made by the Department with regard to other aspects of the Commerce Clause. The Kentucky Court of Appeals concluded that

"Having found the Department's arguments are unavailing, we are left with a situation in which Kentucky's bond taxation scheme is facially unconstitutional under the Commerce Clause... we have no choice but to find that Kentucky's system of taxing only extraterritorial bonds runs afoul the Commerce Clause. Thus, the trial court's decision to grant summary judgment to the Department was erroneous."<sup>19</sup>

As mentioned above, the Kentucky Supreme court has decided not to hear an appeal of this case and the Kentucky Department of Revenue has

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<sup>17</sup> *Shaper v. Tracy*, 97 Ohio App.3d 760, 647 N.E.2d 550 (1994)

<sup>18</sup> *Shaper v. Tracy*

<sup>19</sup> *Davis v. Department of Revenue*

applied for a writ of certiorari to the US Supreme Court in an effort to overturn the appeals court position.

### 2.3 Related issues involving the Dormant Commerce Clause

Challenging Kentucky's taxation of other state bonds as a violation of the dormant Commerce Clause, puts the case of *Davis v. Department of Revenue* in a class of recent litigation that could have widespread effects on state and local governments' ability to finance infrastructure and economic development programs. Because the Commerce Clause of the Constitution gives congress power to regulate interstate commerce, the Dormant Commerce Clause restricts states from imposing taxes on interstate commerce that discriminate against other states. Hellerstein and Coenen provide an extensive overview of the legal issues involving the Dormant Commerce Clause and the use of tax incentives and subsidies.<sup>20</sup>

*DaimlerChrysler v. Cuno*,<sup>21</sup> a case recently argued before the US Supreme Court, focused on the Dormant Commerce Clause. The case revolved around the legality of tax incentives given to DaimlerChrysler to build a new Jeep production facility in Toledo. The legal issue was never resolved in the case because the Supreme Court ruled that the plaintiffs did not have standing to bring the case and at the same time they did not directly address the issue of the tax incentives.

## 3 Kentucky response to *Davis v. Department of Revenue*

To begin assessing the impact of the court ruling, a helpful starting point may be the current tax treatment of bonds issued by Kentucky state and local governments and currently held by Kentuckians. Essential in the assessment is how a potential change in exemption status could affect the yield of Kentucky's municipal bonds relative to municipal bonds issued by entities of other states as well as taxable bonds. The difference in the yield among the state's municipal bonds, other states' municipal bonds, and taxable bonds will affect investors' decisions of which bonds to invest in at the margin. The following equation relates the yield of a municipal bond, exempt from both federal and state taxation, to that of a taxable bond.

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<sup>20</sup>Hellerstein, Walter and Dan T. Coenen. (1996) "Commerce Clause Restraints on State Business Development Incentives" *Cornell Law Review* 81: 789-875

<sup>21</sup>*DaimlerChrysler Corporation v. Cuno*, Docket Number: 04-1724

$$Yield_{tax-exempt} = Yield_{taxable}(1 - [t_f + t_s - t_s t_f]) \quad (1)$$

Where  $t_f$  is an individual's marginal federal tax rate and  $t_s$  is the individual's marginal state tax rate. . If an individual invests in a taxable bond, their yield is reduced by the taxation of the interest earned at both the federal and state level. The effective yield of the taxable bond is lower than the stated yield due to taxation. For Kentuckians investing in Kentucky bonds, the potential benefit of these bonds is clear.

If Kentuckians invest in other state's municipal bonds, then they only realize the federal exemption of interest as seen below:

$$Yield_{tax-exempt} = Yield_{taxable}(1 - t_f) \quad (2)$$

Under the current system, given two identical municipal bonds (with equal yields), one issued by Kentucky and the other not, it is clearly advantageous for Kentuckians to invest in Kentucky bonds. Again, assuming that the court decision forces Kentucky to treat all municipal bonds the same with respect to taxation, they will have to exempt all municipal bonds from state taxation as in the first equation or subject all municipal bonds to taxation as in second equation.

If the Supreme Court hears and upholds the Kentucky Court of Appeals position and Kentucky responds by are exempting all municipal bonds from taxation (as in equation 1), Kentucky begins to subsidize the capital projects of other states and non-Kentucky bonds will become equally attractive as are Kentucky bonds to Kentucky investors. The non-Kentucky bonds would now have a higher effective yield to residents than previously due to the extended tax benefit of the state exemption. Where under the current system the effective yield of a Kentucky bond is higher than an equivalent non Kentucky bond, a change to total exemption for municipal bonds would eliminate this yield difference thus making non-Kentucky bonds relatively more attractive than currently.

If Kentucky responds to a potential Supreme Court ruling by taxing all municipal bonds as in equation 2, the Kentucky bonds become relatively less attractive than currently compared to other non-Kentucky municipal bonds. The effective yield of the Kentucky bonds is reduced by the preferential state treatment ( $t_s(1 - t_f)$ ). The elimination of this tax preference simply reduces the attractiveness of Kentucky bonds relative to non-Kentucky bonds.

In either scenario, high yield bonds from other states become more attractive to Kentuckians than Kentucky bonds. The demand for these Kentucky bonds would decrease and Kentuckians would demand more of

other high yield muni bonds as illustrated below. The potential effects of a Supreme Court endorsement of the Kentucky Court of Appeals can also be represented graphically. Figures 1 and 2 portray the bond demand and price effects of a change in Kentucky municipal bond taxing policy where all municipal bond interest is tax exempt. Note that yield and price are inversely related.

[figure 1 here]

[figure 2 here]

The demand for Kentucky munis decreases from  $D_k0$  to  $D_k1$ , decreasing the price (with this decrease in demand the yields for Kentucky bonds would increase). The decrease in demand also causes a change in the quantity of Kentucky bonds held by Kentuckians as represented by the movement from  $Q_k0$  to  $Q_k1$ . . The new equilibrium price for Kentucky bonds will be  $P_k1$  The demand for non-Kentucky munis increases from  $D_nk0$  to  $D_nk1$ , increasing the price and decreasing the yields. The increase in demand also causes a change in the quantity of non-Kentucky bonds held by Kentuckians as represented by the movement from  $Q_nk0$  to  $Q_nk1$ . The new equilibrium price for non-Kentucky bonds will be  $P_nk1$ . The new equilibrium price will be the same for both the Kentucky muni and non Kentucky muni markets since the uniform tax treatment abolishes market segmentation ( $P_k1 = P_nk1$ ).

If the state were to choose to tax both their own bonds and the bonds of other municipalities, that would have the additional impact of making corporate bonds relatively more attractive to Kentucky investors. This is due to the narrowing of the effective yield between a corporate bond and a municipal bond by eliminating the state tax exemption of municipal bonds.

### 3.1 Potential market response to Davis v. Department of Revenue

A similar equation can be used to determine the cost of capital from the state and local governments' perspectives. For this discussion we first assume bonds issued by states are identical except in their tax treatment. Furthermore, the states with double tax exemption for municipal bonds creates a strong incentive for residents to invest in intrastate bonds, creating a market segmentation by state.

The tax exemption is a direct subsidy to the cost of capital for state and local government. In particular, the marginal income tax rates at the federal and state level determine the reduction in bond yields, and therefore

borrowing costs for the state. The relationship between tax rates and bond yields is given in 3.

$$Y_{e_i} = Y(1 - t_f - t_{s_i}) \quad (3)$$

$Y$  would be the yield on a municipal bond in the absence of any exemptions at the federal or state level.  $Y_{e_i}$  is the after tax yield on a municipal bond given the exemption for both the federal tax and state  $i$ . The marginal federal tax rate is  $t_f$ , and  $t_{s_i}$  is the marginal tax rate for state  $i$ . We can rewrite Equation 3 after distributing  $Y$  through on the right side of the equation as

$$Y_{e_i} = Y - Yt_f - Yt_{s_i} \quad (4)$$

Assuming that the federal exemption will impact all states equally, we treat  $Y - Yt_f$  as a constant ( $C$ ). Therefore

$$Y_{e_i} = C - Yt_{s_i} \quad (5)$$

The expression in 5 can be used to compare the after tax yields between two states with different marginal tax rates assuming market segmentation. For two given states  $i=1,2$ , then

$$\begin{array}{ll} Y_{e_1} > Y_{e_2} & \text{when} \\ C - Yt_{s_1} > C - Yt_{s_2} & \text{substituting from 5 then} \\ t_{s_1} < t_{s_2} & \text{subtract } C \text{ and divide by } -Y \end{array}$$

Thus the yield on municipal bonds issued from state 1 will be higher than the yield on (comparable) bonds from state 2 only when the marginal state income tax rate in state 2 is more than state 1. As long as the market remains segmented for municipal bonds that qualify for the double tax exemption, then yield differentials will persist. Empirical evidence for the market segmentation shows that Texas municipal bonds are penalized with higher yields because the state does not tax personal income.<sup>22</sup>

The implication of the *Davis v Department of Revenue* case is that states cannot tax instate bonds differently from out of state bonds and therefore the market segmentation motivated by the double income tax benefit would be eliminated. As noted previously, if the ruling in the case stands, then

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<sup>22</sup>Clarke, Wes and Robert L. Bland, 2000, "State Guarantees for School Debt and the Texas Penalty," *Municipal Finance Journal* 21(2):1-12.

states would have two options: exempt all municipal bond interest, or tax all municipal bond interest. The removal of the state market segmentation could have a dramatic impact on municipal bond yields in some states.

For the first scenario consider that all states (with a state income tax) tax interest on municipal bonds. Non preferential tax treatment eliminates the market segmentation by state and drawing from 3, the new equilibrium after tax yield,  $Y_{e^*}$ , shown in equation 6 will be determined by the federal marginal tax rate alone since states will no longer exempt municipal bond interest income from taxation the marginal state tax rate drops out of the equation.

$$Y_{e^*} = Y(1 - t_f) \quad (6)$$

Without the state income tax exemption the municipal bond yields would increase for all states except those without a state income tax. The amount that yields would increase for an individual state would be given by  $\Delta$  as defined

$$\begin{aligned} \Delta &= Y_{e^*} - Y_{e_i} & (7) \\ \Delta &= Y(1 - t_f) - Y(1 - t_f - t_{s_i}) \quad \text{using equations 6 and 4} \\ \Delta &= Yt_{s_i} \end{aligned}$$

The magnitude of the yield increase and thereby the cost of capital for a state is driven by the marginal tax rate for the state. A state without an income tax would not expect an increase in the cost of capital because there was not a double exemption prior to the change in tax exemptions. States with a high marginal tax rate currently benefit from a greater cost of capital subsidy and after the change would therefore see a greater increase in the cost of capital.

The second scenario considers that all states will exempt interest on municipal bonds from state income tax. In this case the state marginal tax rates will still influence the after tax rate on municipal bonds, but municipal bonds from any state will be exempt. Therefore the state market segmentation is eliminated since there is no preferential tax treatment (just differences in tax rates). Maintaining the state exemption across the board would create a scenario where arbitrage produces a market wide after-tax yield equilibrium in which some states are clearly winners and others are clearly losers. The new market wide equilibrium is expressed:

$$Y_{s^*} = Y(1 - t_f - \sum_{i=1}^{50} t_{s_i} \omega_i) \quad (8)$$

Where  $Y_{s^*}$  is the new equilibrium after tax yield on municipal bonds. The summation expresses the weighted average marginal state tax rate using  $t_{s_i}$  and  $\omega_i$  as the proportion of the total bond market issued by or within state  $i$ . Drawing on equation 7, the change in individual state bond yields can be measured as shown in equation 9. For convenience let the weighted average tax rate for the 50 states be represented by  $t_{wa}$ .

$$\begin{aligned} \Delta &= Y_{s^*} - Y_{e_i} & (9) \\ \Delta &= Y(1 - t_f - t_{wa}) - Y(1 - t_f - t_{s_i}) \quad \text{using equations 8 and 4} \\ \Delta &= Y(t_{s_i} - t_{wa}) \end{aligned}$$

If the change in  $\Delta$  is greater than zero the state will experience increased cost of capital in the non segmented equilibrium. The opposite is true for a negative change  $\Delta$ . The direction and magnitude of the change in the cost of capital for a state is driven by how the marginal tax rate for the state compares to the weighted average for all states. If the individual tax rate is less than the weighted average, then the change is negative and the state cost of capital will be lower under the new equilibrium. To illustrate, consider Tennessee bonds. There is no income tax in Tennessee and therefore  $t_{s_i}$  is zero. In absence of market segmentation, Tennessee should experience lower bond yields because of increased demand for Tennessee bonds by nonresidents. On the other hand, the bond yields for a high tax state like California would increase due to less demand for California bonds given the higher yields available on bonds issued from other states. In other words, states with a high marginal tax rate benefit from a greater subsidy for the cost of capital under segmented markets and experience a greater increase in the cost of capital in the new market equilibrium.

[Table 1 about here]

Table 1 demonstrates the relative effects of removing the preferential tax treatment for municipal bond interest. The change in bond yields in the second column from the right represents the change in the cost of capital for the state. This scenario looks only at the impact of the tax exempt effect, by holding the taxable yield constant across the states. In other words, the same bond issued by all the states would have the different yields in different states

prior to tax harmonization. After tax harmonization the after tax yield of that bond would be the same for all 50 states. The change in yield compares the pre harmonization yields to the post harmonization yields. The scenario demonstrates that states with high marginal state income tax rates will exhibit relatively larger increases in the cost of capital. These states include California, Maine, Minnesota, Oregon, and Rhode Island. On the other hand, states like Alaska, Florida, South Dakota, Tennessee and Texas without a state income tax will experience proportionally larger decreases in bond yields. A caveat on Table 1 is that bond yield changes shown are the result of just the market segmentation and marginal tax rates. Credit risk, maturity, across segmentation investing, bond insurance and other factors will determine the actual cost of capital post tax harmonization.

There is also the scenario that states will not react uniformly in tax treatment of municipal bonds. According to the Bond Market Association,<sup>23</sup> there are currently a number of states that exempt other state's municipal bonds (at least certain categories) from taxation in addition to exempting their own bonds from taxation. For a few states this is the result of them not taxing personal income. The following states do not have a personal income tax and do not tax municipal bonds-Alaska, Nevada, South Dakota, Texas, Washington and Wyoming.<sup>24</sup> Additionally, two states with personal income taxes-Indiana and Utah-employ reciprocal policies and do not tax bonds issued in other states where their own bonds are not taxed, nor do they tax their own bonds. Other states like Illinois, Iowa, Kansas, Oklahoma, and Wisconsin may tax some of their own bonds in addition to other state's bonds. There are similar divisions when looking at the corporate income tax and the treatment of municipal bonds. The yield implications would be mixed and given the mobility of capital invested in municipal bonds the mixed tax treatment could be very distortionary to the market yields.

## 4 Revenue Impacts

Using available data, we are able to estimate the revenue loss for some state that would be experienced if the result of *Davis v. Department of Revenue* leads states to exempt interest on all municipal bonds. For the state of New York<sup>25</sup> in 2003, there were 97,068 individuals that reported state and local

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<sup>23</sup><http://www.investinginbonds.com/learnmore.asp?catid=8&subcatid=53&id=225>

<sup>24</sup>Although Florida does not have an income tax, they do tax other state's municipal bonds through an intangible property tax. The intangible property tax, however had been repealed for 2007 <http://www.myflorida.com/dor/taxes/ippt.html>.

<sup>25</sup>New York Department of Taxation and Finance, 2003, *Analysis of 2003 PTI Returns*.

bond interest from bonds issued by other states. The total amount of interest income reported on these bonds was \$636.4 million. To estimate the revenue loss, we multiplied the amount of interest income claimed by each NY AGI class by the New York state tax rate for that AGI class.<sup>26</sup> The estimated revenue loss for New York is \$45.8 million.<sup>27</sup> Similar estimation was done for Colorado, Connecticut, and Oregon. In 1999,<sup>28</sup> Colorado<sup>29</sup> had 38,502 returns filed with interest income from out of state municipal bonds. The total amount of interest income from these bonds was \$239.9 million; the estimated revenue loss is \$11.1 million. The situation in Oregon<sup>30</sup> is similar to that of Colorado. In 2004, the state had 30,318 individuals report interest income on government bonds from other states. The amount of interest income earned was \$98.1 million, and revenue loss is estimated to be \$8.5 million. In Connecticut,<sup>31</sup> the amount of interest income claimed on state and local obligations that do not originate with Connecticut is \$1,214 million; the state also reports the “Mutual fund exempt-interest dividends from non-Connecticut state or municipal government obligations” which came to \$208.5 million. The estimated revenue loss to Connecticut from these two sources of income is \$70.9 million

Other states provide some information as to the potential costs of these activities. Kansas<sup>32</sup> reports that 26,460 filers claim income from “state and municipal bond interest not specifically exempt from Kansas income tax” and that taxing this income enhances state revenue by \$7.1 million

## 5 Conclusion

This paper has focused on a few of the issues and implications of a current court, *Davis v. Department of Revenue*, with respect to the potential elimination of a state’s tax preference for the bonds they issue. In addition to

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<sup>26</sup>To make the estimates conservative, we used applied tax rates from joint filers. Under this scenario the marginal tax rates increase less quickly than they do for single filers. To demonstrate, an individual with income between \$20-\$25 thousand faces a 6.85% marginal tax rate if he is a single filer, while if the individual, with the same level of income is a joint filer the applicable marginal tax rate would be 5.90%.

<sup>27</sup>Alternately, this is an estimate of state revenue that was collected by taxing out-of-state municipal bonds.

<sup>28</sup>The most recent year with available data.

<sup>29</sup>Colorado Department of Revenue, 1999, *Colorado Statistics of Income*, Table 10.

<sup>30</sup>Oregon Department of Revenue, 2004, *2004 Personal Income Tax Statistics*.

<sup>31</sup>Connecticut Department of Revenue Services, 2005, *2004 Personal Income Tax Statistics*

<sup>32</sup>Kansas Department of Revenue, 2004, *Tax Expenditure Report*, pg. 4.

providing some legal background and context for the current case, the paper addresses two key implications of this case. First, the paper presented a basic simulation of how yields would respond, across the states, under different state responses to the current case. This basic model suggests that bonds issued by states with higher marginal tax rates would see the yields increase on their obligations while states with lower than average marginal tax rates would see their yields decline. The yields would converge at new market equilibrium due to the elimination of tax preferences across the states. Second, the paper offers preliminary estimates of the direct revenue impact to states if they are no longer able to collect taxes from income earned on bonds issued by other states. These basic estimates suggest a good deal of variance in how much revenue each state will lose.

Other important issues that are not explicitly addressed in this paper include the change in the cost of bringing new issues to the market. In a post-*Davis* world the price that state and local governments pay to finance their capital projects would adjust due to the elimination of the current tax preference. Additionally, the market for state and local bonds would change dramatically. The trend in recent years has been toward more specialized bond funds that cater to specific sets of state investors. If the states' tax-exemption disappears, the market for municipal bonds will grow to a national market, where issuers must be able to compete with across the states. The signal that investors get from credit ratings may become relatively more important as the potential market investors can choose from expands.

Figure 1: The effect on demand for Kentucky bonds should all municipal bond interest be tax exempt

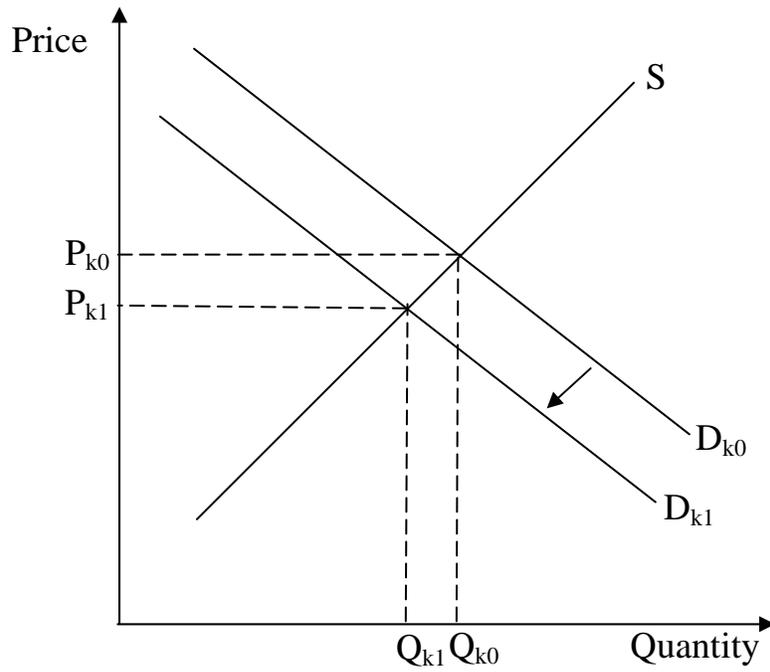
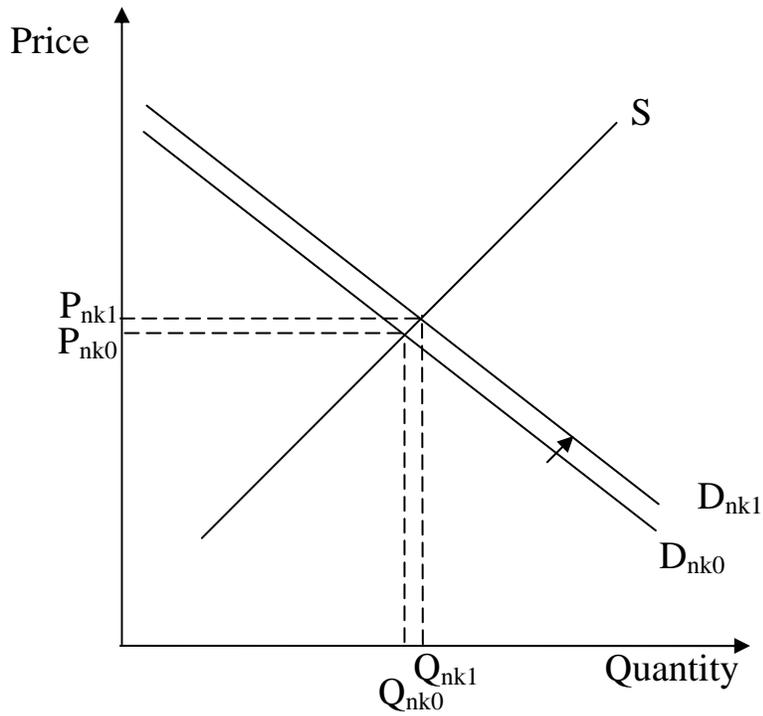


Figure 2: The effect on demand for non-Kentucky bonds should all municipal bond interest be tax exempt



**Table 1: Effects of elimination of tax preferential treatment for municipal bonds**

State Name	Marginal State Income Rate	Percentage of total state local bond issuance	Marginal Federal Income tax Rate	Average Tax Exempt Yield	New equilibrium yield	Change in yield *	Percent change in yield
Alabama	3.25	0.0112	34.91	4.268	4.177	-0.091	-0.0213
Alaska	0	0.0045	36.05	4.413	4.177	-0.236	-0.0536
Arizona	4.93	0.0156	34.32	4.192	4.177	-0.016	-0.0037
Arkansas	7.21	0.0054	33.53	4.09	4.177	0.087	0.0214
California	9.86	0.1409	32.6	3.971	4.177	0.206	0.0519
Colorado	4.77	0.0174	34.38	4.199	4.177	-0.022	-0.0053
Connecticut	5	0.0157	34.3	4.189	4.177	-0.012	-0.0029
Delaware	6.13	0.0032	33.91	4.138	4.177	0.039	0.0094
Florida	0	0.0567	36.05	4.413	4.177	-0.236	-0.0536
Georgia	5.83	0.0179	34.01	4.152	4.177	0.025	0.0061
Hawaii	8.04	0.0047	33.23	4.053	4.177	0.124	0.0306
Idaho	7.89	0.0021	33.29	4.059	4.177	0.118	0.029
Illinois	3	0.0533	35	4.279	4.177	-0.102	-0.0238
Indiana	3.4	0.0146	34.86	4.261	4.177	-0.084	-0.0197
Iowa	6.06	0.0059	33.93	4.141	4.177	0.036	0.0086
Kansas	6.51	0.0083	33.77	4.121	4.177	0.056	0.0135
Kentucky	6.18	0.0152	33.89	4.136	4.177	0.041	0.0099
Louisiana	3.92	0.0115	34.68	4.237	4.177	-0.06	-0.0142
Maine	8.76	0.0036	32.99	4.02	4.177	0.157	0.0391
Maryland	4.83	0.0143	34.36	4.197	4.177	-0.02	-0.0047
Massachusetts	5.3	0.0361	34.19	4.176	4.177	0.001	0.0003
Michigan	3.9	0.0293	34.69	4.238	4.177	-0.061	-0.0144
Minnesota	8.09	0.0173	33.22	4.05	4.177	0.127	0.0313
Mississippi	4.93	0.0053	34.32	4.192	4.177	-0.016	-0.0037
Missouri	5.91	0.0158	33.98	4.148	4.177	0.029	0.0069
Montana	7.11	0.0022	33.56	4.094	4.177	0.082	0.0201
Nebraska	7.65	0.0045	33.37	4.07	4.177	0.107	0.0262
Nevada	0	0.0093	36.05	4.413	4.177	-0.236	-0.0536
New Hampshire	0	0.0042	36.05	4.413	4.177	-0.236	-0.0536
New Jersey	6.37	0.0325	33.82	4.128	4.177	0.049	0.012
New Mexico	5.55	0.005	34.11	4.164	4.177	0.013	0.0031
New York	7.25	0.1114	33.51	4.088	4.177	0.089	0.0217

Shaded state indicates bond yields would decrease.

\* Amount of basis points that the average state yields will increase (decrease) in the new equilibrium.

Weighted average state income tax rate: 5.268

Weighted average federal income tax rate: 34.206

Assumes a taxable yield of 6.901 (estimated using average market values for equation #1)

**Table 1 Continued: Effects of elimination of tax preferential treatment for municipal bonds**

State Name	Marginal State Income Rate	Percentage of total state local bond issuance	Marginal Federal Income tax Rate	Average Tax Exempt Yield	New equilibrium yield	Change in yield *	Percent change in yield
North Carolina	8.5	0.0198	33.08	4.032	4.177	0.145	0.036
North Dakota	5.41	0.0016	34.16	4.17	4.177	0.007	0.0016
Ohio	7.18	0.0292	33.54	4.091	4.177	0.086	0.021
Oklahoma	6.29	0.0069	33.85	4.131	4.177	0.046	0.0111
Oregon	9.1	0.0125	32.87	4.005	4.177	0.172	0.043
Pennsylvania	3.07	0.0497	34.98	4.275	4.177	-0.098	-0.023
Rhode Island	9.28	0.0043	32.8	3.997	4.177	0.18	0.045
South Carolina	7.09	0.0133	33.57	4.095	4.177	0.082	0.02
South Dakota	0	0.002	36.05	4.413	4.177	-0.236	-0.0536
Tennessee	0	0.0124	36.05	4.413	4.177	-0.236	-0.0536
Texas	0	0.071	36.05	4.413	4.177	-0.236	-0.0536
Utah	6.14	0.0072	33.9	4.138	4.177	0.039	0.0094
Vermont	8.5	0.0017	33.07	4.032	4.177	0.145	0.0359
Virginia	5.83	0.0208	34.01	4.152	4.177	0.025	0.0061
Washington	0	0.0261	36.05	4.413	4.177	-0.236	-0.0536
Washington DC	9.1	0.0034	32.87	4.005	4.177	0.172	0.043
West Virginia	6.5	0.0043	33.77	4.122	4.177	0.055	0.0133
Wisconsin	6.75	0.0179	33.69	4.11	4.177	0.067	0.0162
Wyoming	0	0.001	36.05	4.413	4.177	-0.236	-0.0536

Shaded state indicates bond yields would decrease.

\* Amount of basis points that the average state yields will increase (decrease) in the new equilibrium.

Weighted average state income tax rate: 5.268

Weighted average federal income tax rate: 34.206

Assumes a taxable yield of 6.901 (estimated using average market values for equation #1)

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