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Why hedge? Extent, nature, and determinants of derivative usage in U.S. municipalities ☆

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A B S T R A C T

Using a hand-collected dataset of over 300 observations of large U.S. cities and counties, this paper investigates the extent, nature and determinants of derivatives usage in the municipal sector. Over half of our sample entities engage in derivative transactions and a vast majority of these transactions are intended to manage interest rate risk. Swaps, by far, are the most popular derivative instrument. In terms of the determinants of derivative usage, we find that the propensity to use derivatives as well as the extent of derivative usage is higher for municipalities that are larger and more financially constrained. We do not find growth to be related to municipal derivative usage. Contrary to suggestions made in the popular press, we fail to find managerial opportunism to be a significant factor in municipal derivative usage. We also find that more sophisticated managers of large municipalities and less sophisticated managers of small municipalities are more likely to engage in derivative transactions.

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1. Introduction

In recent years, the use of derivative instruments by municipalities has attracted much attention from the popular press.[1] The heightened attention was mainly due to highly publicized cases of ill-managed derivative deals that cost the taxpayers billions of dollars and pushed some municipalities to the brink of financial collapse. For instance, Jefferson County, Alabama filed for bankruptcy in November 2011 – the most expensive U.S. municipal bankruptcy at the time – primarily due to ballooning financial liabilities brought about by imprudent use of interest rate swaps related to a series of sewer debt issues (Braun, 2009; McDonald, 2010; Nolan, 2011). Bets gone wrong on derivative transactions cost the City of Detroit close to $400 million (Christoff and Preston, 2013; Francis et al., 2009).[2] According to a 2010 report by Bloomberg News, ill-conceived derivative contracts entered into by governmental entities have cost the U.S. taxpayer more than $4 billion since 2008 in termination fees alone (McDonald, 2010). Notwithstanding these highly publicized cases of mismanagement, it is argued that municipal derivatives are beneficial to the taxpayer not only because they reduce risk, but also because they reduce (interest) expenses associated with debt issues (Dodd, 2010).

While the body of both theoretical and empirical research on derivative usage by the corporate sector is vast, little to no research exists in the domain of derivatives usage by municipalities. Consequently, our understanding of this issue that has significant public policy implications is very limited. Why do municipalities use derivatives? Specifically, what are the determinants of their derivative usage? Is municipal derivative usage consistent with serving the taxpayer or self-serving opportunistic behavior by officials? This paper aims to answer some of these questions by analyzing a comprehensive, hand-collected dataset of derivative usage by the largest cities and counties in the U. S. over the period of 2005–2008. Our sample consists of over 300 observations from 61 cities with populations of over 250,000 and 25 counties with populations of over 1,000,000.

We begin our analysis by examining the nature and the extent of derivative usage in our sample. 55% of our sample municipalities (58% of cities and 46% of counties) engage in derivative transactions. Among the derivative users, the extent of usage is quite significant with the notional values amounting to $574.3 million on average ($667.8 million for cities and $285.6 million for counties).

The vast majority of derivatives relate to managing interest-rate risk. 92% of derivative users (95% of derivative user cities and 82% of derivative user counties) employ interest rate derivatives while 11% of users (seven percent of derivative user cities and 22% of derivative user counties) employ exchange rate derivatives. Among derivative users, only three percent (four percent of derivative user cities and zero percent of derivative user counties) use derivatives associated with commodity prices. The dominance of interest rate derivatives is even greater in terms of the notional value. Based on notional value, 98% of all derivatives held (99% for cities and 95% for counties) are interest rate derivatives. Swaps are the most popular derivative instrument among U.S. municipalities with 83% of all derivative users holding swaps. 17% use swaptions and 14% use forward/futures contracts. Option usage is limited to less than five percent of derivative users.

These findings are broadly consistent with the limited number of related prior studies. These studies indicate the most common exposure hedged through municipal derivatives is interest rate risk with swaps being the most popular derivative instrument (Dotson et al., 1994; Stewart and Cox, 2008). Our analyses also highlight the rapid growth of municipal derivative market over the recent years. For instance, Stewart and Cox (2008) report that in financial year 2003, only 23 of the 100 largest U.S. cities used derivatives. These derivative positions carried a total notional value of $10.6 billion. In comparison for the year 2008, our data covers 59 large U.S. cities and 34 of them use derivatives. Further, the notional value of these derivative positions exceeds $27 billion.

The main objective of this study is to investigate the determinants of municipal sector derivative usage in terms of both the decision to use derivatives and the extent of its usage. Despite the rapid growth of the municipal derivatives market over the years and the numerous controversies surrounding it, currently, there are no systematic academic studies addressing this issue. In developing theories

[1] In this paper, we use the term "municipalities" to denote both cities and counties.

[2] On July 18 2013, Detroit filed for bankruptcy, making it the largest municipal bankruptcy in the U.S. history.