Innovative Applications of O.R.

Assessing financial distress where bankruptcy is not an option: An alternative approach for local municipalities

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ABSTRACT

The goal of this paper is to build an operational model for evaluating the financial viability of local municipalities in Greece. For this purpose, a multicriteria methodology is implemented combining a simulation analysis approach (stochastic multicriteria acceptability analysis) with a disaggregation technique. In particular, an evaluation model is developed on the basis of accrual financial data from 360 Greek municipalities for 2007. A set of customized to the local government context financial ratios is defined that rate municipalities and distinguish those with good financial condition from those experiencing financial problems. The model's results are analyzed on the 2007 data as well as on a subsample of 100 local governments in 2009. The model succeeded in correctly classifying distressed municipalities according to a benchmark set by the central government in 2010. Such a model and methodology could be particularly useful for performance assessment in the context of several European Union countries that have a similar local government framework to the Greek one and apply accrual accounting techniques.

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1. Introduction

The assessment of local government performance has become a major issue worldwide since municipalities take on increasingly more responsibility in terms of providing essential services to taxpayers. The increasing decentralization in decision-making from central to local governments has made the measurement and evaluation of their financial performance critical. Within this context, one could define sound financial performance as a municipality's ability to meet its financial obligations and to satisfy its service obligations to its citizens, currently and in the foreseeable future. Municipalities with poor financial performance are not able to offer quality municipal services to their residents, a fact that causes a plethora of problems to the local community. Thus, local government interested parties would like to know the indicators that signal the prospect of a municipality's financial distress, as the implications to political, social and economic state of affairs could be significant (Carmeli, 2003). This is of outmost importance, as municipalities, with rare exceptions, cannot declare bankruptcy. In the same vein, the recent global financial crisis of 2007 has considerably influenced the financial condition of local governments obliging them to cut down costs and to focus more on efficiency improvements.

In the private sector the recent collapse of a significant number of large corporations has resulted in an increased interest in distress modeling (e.g., Altman, 2001; Neofytou and Mar Molinero, 2004). Distress prediction models are extensively used for screening and monitoring purposes such as going concern, loan default and corporate performance assessment. On the other hand, limited amount of effort has been devoted to develop such models for the not-for-profit sector, despite the fact that these would provide important insights for local government performance, albeit with notable exceptions (Kloha et al., 2005; Murray and Dollery, 2005; Jones and Walker, 2007; Zafra-Gómez et al., 2009a,b).

The scope of our research is to construct an operational rating model for evaluating municipalities according to their financial conditions and distinguishing those that have a sound financial position from those that exhibit poor performance. The model is built on the basis of financial performance indicators of local governments, which can be easily derived from published accrual financial data. The model rates municipalities according to their financial status and it constitutes a practical early warning system of financial distress for both external stakeholders as well as municipality management. Such a model would be useful to policymakers and stakeholders to identify a potential crisis, and also to assist municipalities that face financial trouble. Moreover, our research is timely, at least for Greece, where the recent financial crisis has considerably affected the financial condition of local governments. It is interesting that Moody's has recently (June, 2011) downgraded the municipality of Athens, the biggest municipality in Greece that

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hosts the capital of the country with the reasoning that the financial condition of the country could unavoidably influence local governments as well due to the high level of integration of its local economic base with that of the national economy.[1]

The model is developed by using a multicriteria decision making methodology (Doumpos and Zopounidis, 2002; Zeleny, 1982), based on a simulation approach, which enables the consideration of a large number of different evaluation scenarios to be examined. At a second stage, the results of the simulation analysis are aggregated to build up an operational evaluation model, which can be used to evaluate and rate the performance of any municipality at any point in time. The model is developed on the basis of data retrieved form a large sample of Greek municipalities for year 2007. However, we expect this model to have a wider application, as there has been a recent shift towards accrual accounting adoption in the European local government area (Pina et al., 2009). As the majority of European Union countries have a financial reporting framework that shares similarities to the Greek one, we anticipate that such a model and the proposed multicriteria methodology could be of particular use to assess their performance as well. Moreover, our study expands research on local governments' financial distress in a European context, as past research has been mainly focused on US and Australia.

The paper is structured as follows: in Section 2 we present the literature review. Section 3 provides a short description of the characteristics of local governments in Greece. Section 4 is devoted to the description of the methodology. In Section 5 we present the results of the application of the methodology to our sample. Finally, the last section of the paper discusses the conclusions of our study.

2. Literature review

Even though there are a number of models that predict financial distress in the private sector, such models are rare in the public sector. There are two main reasons for this. Firstly, the majority of municipalities in Europe started publishing accrual accounting financial statements only a few years ago, in contrast to the US local government sector that has a long reporting history albeit under fund accounting (i.e. modified accrual accounting). Thus, the calculation of financial ratios (i.e. liquidity ratios, activity ratios and capital structure ratios) that are commonly used in corporate distress prediction models becomes feasible only after the aforementioned accounting reform. Secondly, as municipalities in the majority of countries cannot declare bankruptcy, the researchers cannot rely on historical data to identify the characteristics that distinguish failed municipalities from healthy ones. Nevertheless, there are some well-known cases of local financial crises in the US such the New York City's in 1976, Philadelphia's in 1990, Orange County's in 1994 and Miami's in the 1990's (Honalde, 2003).

On the other hand, the application of private sector financial distress models in the public sector is unsuitable. This is because both the interpretation of the financial ratio values and their desirable magnitude is different in the public sector compared to the private sector due to the intrinsic characteristics of the former. For example, the existence of high ROA (return on assets) and ROCE (return on capital employed) values that characterize efficient private sector corporations, is not a socially desirable outcome for municipalities due to their non-profit character. Increased profitability may be interpreted not as an indication of efficiency but as a result of unjustified high taxes imposition. In a similar vein, extensive debt exposure may not result into debt default as the central government can help municipalities to overcome liquidity

problems. Moreover, the archetypal two-state failure model (i.e. failed vs non failed) that is commonly used in the private sector is not applicable in the public sector, as financially distressed entities do not actually declare bankruptcy.

While there have only been a few attempts to predict local government financial distress in the research literature, several different techniques have been employed to identify municipalities that may be facing financial difficulties. These techniques range from heuristic approaches, such as financial statement analysis to more sophisticated methods such as statistical modeling approaches.

The majority of these studies have been conducted in US and Australia where the financial reporting systems are demanding in accounting information disclosures. More specifically, Kleine et al. (2003) after reviewing existing assessment models developed a simple fiscal distress index based on a weighting of nine variables for assessing the performance of local governments. The same authors applied their model to a sample of Michigan local governments and reported that it performed better than Michigan's current system of identifying potentially distressed local councils (Kloha et al., 2005).

Honadle (2003) in his survey that included fifty states in the US, found that less than half of these states made some attempt to predict local government's fiscal crises. Their prediction was mainly based on reviewing audit reports, local government reporting, or from information gathered from discussions or regional workshops. Murray and Dollery (2005) developed an econometric distress prediction model, applied it on Australian councils and tested its validity against the results of a "watch list" compiled by a state government agency. The categorization in which they resulted was different from that of the government agency. Jones and Walker (2007) developed a statistical model to explain sources of distress in local governments. Their main finding was that the degree of distress, defined as the cost of restoring infrastructure, in local councils is positively associated with the size of the population they serve and the size and composition of their revenues. Zafra-Gómez et al. (2009a) developed a model, which indicates whether a local government heads for financial trouble and tested it in Spanish local governments. Their model scores local governments and makes an assessment of their financial condition that ranges from emergency to excellent. Nevertheless, they mostly use budgetary variables in their model that they consider to be more relevant for their research setting.

An important aspect of the financial distress surveys is the proxy used in order to distinguish local governments that experience financial problems from the healthy ones. Several variables have been proposed for this purpose such as ratio indicators (Clark, 1977; ICMA, 2003; Berne, 1992), the incidence of mergers or amalgamations, the quantity or quality of service delivery and the cost of restoring infrastructure assets to satisfactory condition (Jones and Walker, 2007).

3. Characteristics of greek municipalities

Greek municipalities provide traditional local government services such as the local registry, refuse collection, development and maintenance of local infrastructure, cultural activities and events. Recently they have also assumed several other responsibilities due to the decentralization policy followed by the central government. As a result they offer primary and secondary education services, transportation services, health services, etc. Municipalities' revenues include taxes and fees as well as subsidies. Municipalities are forbidden to institute their own taxes, while their fees and charges can only be varied between certain legal boundaries and must be used for the specific purpose addressed by the fee or charge. The subsidies cover both operating and

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[1] http://www.moodys.com/research/Correction-to-Text-June-2-2011-Release-Moodys-downgrades-City-PR_220733 (accessed 14th October 2011).