

# Urban Studies Institute Research Report

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## INDICATORS OF FINANCIAL CONDITION IN PRE- AND POST-MERGER LOUISVILLE

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### *Abstract*

*Proponents of metropolitan consolidation identify a range of benefits that may be realized through merger, including improved financial health. There is little agreement as to the actual outcomes across localities that have consolidated, even when limiting the scope to the four major urban mergers, including the merger of Louisville, Kentucky with Jefferson County in 2003, which is under consideration here. One likely reason for conflicting results is the limitation of reflexive analysis as a means of assessing financial impact. In the private sector, analysts would use financial ratio analysis to determine whether the new merged entity was financially healthier after merger. Though a political merger differs from a private sector merger, financial ratio analysis can still be used for pre-and post- analysis of merger effects on financial health. Further, when enough time has passed since merger, quasi-experimental designs like interrupted time series can test the hypothesis that merger had no significant financial impact on the entity at all.*



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As demands on local governments grow and resources to finance them remain stagnant or decline, proponents of consolidated government sometimes assert that a larger entity creates an economy of scale at the local level. The argument seems especially persuasive when an urban area contains multiple contiguous suburban governments, each with their own economic development programs and service delivery infrastructure. Such was the case in Louisville, Kentucky where city of Louisville and Jefferson County merged to become Louisville Metro in 2003, the first successful US metropolitan consolidation in thirty years. In fact, there are very few consolidations of large urban areas. Only four US city-county consolidations have involved populations greater than 500,000: Nashville-Davidson County consolidated in 1962; Jacksonville and Duval County in 1967; Indianapolis and Marion County consolidated in 1969; and Louisville- Jefferson County.

Advocates of city-suburban consolidations, especially in major metropolitan areas, tend to focus on the benefits of better coordinated and more equitable service provision and the enhanced ability of the new metro area to attract capital. A lesser but equally important consideration is improvement in the financial health of the entities after merger, much like one would expect after the merger of two private entities. Naturally, evaluations of the consolidation experience tend to follow those criteria. This manuscript will briefly describe the findings for efficiency, growth and equity from the four major metropolitan consolidations. Then financial condition analysis will be applied to Louisville - Jefferson County for the period 1999 to 2011 to discern the financial impacts of consolidation. While underutilized in the public sector, financial condition analysis is a well-established and objective approach to assessing the impact of merger on the financial health of a jurisdiction.

## **Consolidation Results**

Growth, efficiency and equity appear to be the core arguments for consolidation. The research record is definitely mixed as to results (Reese, 2004). Consolidated government should reduce unit cost of services and increase efficiencies through economies of scale (Stephens and Wilkstrom, 2000). The limitations of labor-intensive entities like local governments to realize efficiencies through scale have been noted (Boyne 1992), however some smaller cities appear to have enjoyed reduced service costs and lower tax rates (Bunch and Strauss, 1992). In larger consolidations, as interests us here, evidence for the efficiency argument is limited. Benton and Gamble (1984) concluded that the Jacksonville consolidation did not improve efficiency, a finding later affirmed by Swanson (2000). The evidence on Nashville is limited by the early date of consolidation (1962), but two early evaluations showed mixed results (Booth, 1963; Grant 1964). Savitch, et al. (2009) found no evidence for efficiencies in the merged Louisville metro, either in cost reduction or service improvement.

The second argument for consolidation is to attract economic development and finance growth. Consolidation creates a larger resource base to attract new business and might coordinate planning and streamline placement for development (Leland and Thurmaier, 2004). The evidence for economic development advantage is limited. Of the four large urban consolidations, there is modest evidence of economic development benefits in Louisville (Savitch, Vogel and Ye, 2010) but none in Jacksonville (Fieock and Carr, 1997). Indianapolis enjoyed downtown revitalization (Rosentraub, 2000), employment growth (Blomquist and Parks, 1995) and increased investment in the urban core (Segedy and Lyons, 2001). The Nashville impact is difficult to assess, but evaluations have been generally positive (Coomer and Tyer, 1985).

The third argument for consolidation is more complex and well beyond the scope of this manuscript. Broadly, it is the reform agenda. Fragmentation creates externalities, results in service and income disparities and adversely affects both prosperity and democracy. Consolidation theoretically reduces disparity and lifts all boats (Downs, 1994; Rusk, 1995; Barnes and Ledebur, 1998; Lowry, 2000, et al.). As broadly and on the other hand, public choice scholars see allocative efficiency in fragmentation (Schneider, 1989) and assert that consolidation merely provides an opportunity for its advocates to enjoy selective advantage (Fieock, Carr and Johnson, 2006).

The evidence is again mixed in the four major metropolitan consolidations. Swanson (2000) concluded that Jacksonville city residents bore the cost of extending urban services to the suburbs – exacerbating inequality rather than ameliorating it – and electoral participation declined significantly after consolidation (Seamon and Fieock, 1995). Rosentraub (2000) concluded that consolidation resulted in greater inequalities in Indianapolis. The evidence from Nashville is inconclusive (Zuzak, McNeil and Bergerson, 1971) as is the evidence from Louisville. Income and housing flowed into the suburbs before and after merger in Louisville, leading Savitch et al. (2010) to conclude that none of the advertised “break out” benefits followed the merger in social or economic terms.

The ability of the scholarly community to reach consensus on consolidation effects is limited because the number of city-county consolidations is limited. Moreover, the conclusions reached by scholars have depended upon the particular effects studied. To further complicate matters, Martin and Schiff (2011) assert that much of the literature seems to be more concerned with marshaling evidence to reinforce a previously taken position on the issue rather than objective analysis of demonstrated outcomes. This contribution is essentially atheoretical. That is, we want to answer a very simple question: Did Louisville’s financial condition change as a result of consolidation and, if so, in which direction.

## **The Jefferson County – City of Louisville Merger**

Louisville's history with consolidation spans more than two decades and illustrates how difficult it is to parse the efficiency, development and equity arguments surrounding merger. In the first vote in 1982 (49.6% for, 50.4% against), working class blacks and whites in the west and southern areas of Jefferson County rejected consolidation while the middle and upper middle class residents of the eastern area of the county supported it (Savitch and Vogel, 2004).

An unsuccessful annexation bill introduced in 1985 that would have brought unincorporated areas into the city, along with the occupational taxes paid by their workforce, resulted in a tax-sharing compromise between the cities and county that gave rise to a decade of mutually beneficial coordinated planning and economic development. However, a bipartisan coalition of political and business elites continued to press the case that consolidated government would be more efficient in service production, more democratic for citizens, and especially more successful at attracting economic development.

On Election Day 2000, Louisville and Jefferson county residents voted to merge their governments effective January 2003. The consolidation legislation permitted Jefferson County's 83 incorporated cities to continue operating as they did before (taxing residents, providing services, holding council elections). The former city of Louisville was established as an "urban service district" with one tax rate and service mix. It would be more accurate to describe the consolidation as a merger of the city and the unincorporated areas of Jefferson County. For those who advocated consolidation as a cure for tax and service disparities, the Louisville merger was structured to disappoint. The result has been characterized as suburbs without a city more than a city without suburbs (Savitch and Vogel, 2004).

However, the management structure of the merged entity closely resembled that of the city. In fact, the Metro's strong mayor structure gave the former three term mayor of the city even more power after was elected Metro mayor in 2003 (after waiting out a four year term limit) with 74% of the vote. The two county executive offices, judge executive and fiscal court (three members), were retained because Kentucky's Constitution requires each county to have them, but stripped of power (Savitch, Vogel and Ye, 2009). Legislatively, the twelve member city council was increased to 26 members (ten city, twelve suburban and two at-large). Most direct service county employees (e.g., school district employees) were unaffected by merger as were employees of the county's elected offices (sheriff, clerk, assessor, property valuation administrator). Indirect service employees (budget, human relations, economic development) were largely subsumed into the city's management structure.

The financial terms of consolidation were relatively simple. The property tax base of Jefferson County became the base of Louisville Metro, and the debts of the two entities were owned by the single entity. Cash and investments of the two entities were combined. Even though this analysis does not include capital assets or assets of component units, they were also combined. Accounts payable and receivable of both entities became payables and receivables of the Metro.

**Table 1. Selected Financial Data from Pre- and Post-Merger Louisville Metro, Fiscal Years 2002 – 2003, in Thousands, and Percent Change for the Period**

	Fiscal 2002	Fiscal 2003	% Change
Total Revenue	\$361,456	\$597,412	65%
Total Expenditures	\$370,501	\$633,699	71%
Principal Payments on Long Term Debt	\$1,105	\$19,643	1678%
Interest Payments on Long Term Debt	\$1,162	\$14,372	1137%
Cash and Cash Equivalents	\$15,816	\$19,894	26%
Investments	\$142,978	\$134,280	-6%
Current Liabilities	\$45,064	\$79,243	76%
Available Fund Balance	\$170,922	\$168,180	-2%
General Obligation Long Term Debt	\$72,140	\$257,421	257%
Assessed Value Real Property	\$12,671,360	\$55,306,737	336%

Transaction costs associated with the merger are expected to create volatility in expenditure data near the merger, but may persist in subtle ways periods after the merger is complete. This is one reason why comparison of data from one period to the next is undesirable as a way to discern the effects of merger. Looking at the immediate financial consequences of the Metro merger, one sees that revenues and expenditures of the merged entity were largely offsetting (6%). The addition of the Jefferson County’s tax supported debt and debt service (the portion of debt that must be repaid in the current period) increased the Metro’s debt load substantially. However, the increase in the value of the property tax base that supports the debt was also substantial (336%). Current assets (cash and investments, 26% increase net) were insufficient for current liabilities (76% increase), but the fund balance of both entities was sufficient to cover any immediate shortfall. There was actually a very small change in the overall ending position of the new merged government, as indicated by a reduction in available fund balance of 2%.

This type of analysis is called reflexive analysis, and it is the most commonly used methodology for assessing cost impacts of consolidation. It typically involves aggregating expenditures, number of employees, fund balances or other indicators before the merger and

comparing them to the same indicators in the consolidated government. The limitations of this approach are numerous, but perhaps the greatest danger is attributing changes (or lack thereof) to merger that are actually a result of exogenous factors like economic conditions, state mandates, grant conditions or local situations that necessitated unplanned spending.

A comparative approach is less common but more satisfying. The indicators (expenditures, employees, etc.) of similar uninvolved communities are compared to the consolidated government. The strength of this approach lies in the ability to match the control group governments to those involved in the merger. The better the match, the more closely the control group governments simulate the counterfactual – what would have occurred had the consolidation not taken place (Martin and Scorsone, 2011). However, the comparative approach is compromised by the element of time as well. In both the reflexive and comparative approaches, the decision when to “take the snapshot” in a cross sectional analysis may be more important than the selection of the indicator.

The technique used here employs an interrupted time series design using indicators of financial condition. The time series begins in 1991 and continues through merger in 2003 to the most recent year, 2011. The interrupted time series design is favored by many social researchers because the addition of pre-intervention and post-intervention observations helps separate intervention effects (the merger) from other long-term trends. For example, the effect of merger on governmental service costs could be better understood by looking at the long term trend before and after the merger year on the separate entities and the merged entities. However, our concern is not with comparative cost behavior. Rather we want to address whether merger changed the financial condition of the City of Louisville and if, so, in what way. Though one might suggest that Metro’s enduring management structure could qualify it as the “acquiring” entity, no such argument is needed because the analysis is limited to financial condition ratios pre- and post-merger, not the elements of ratios like revenues and expenditures. It is an important distinction, as one could combine elements of both entities prior to merger and after merger, but one cannot combine ratios for comparison.

## **Financial Condition Analysis**

Financial condition may be operationalized differently based on the researcher’s interest (i.e., fiscal stress, cash flows) but the consensus definition of financial condition is the ability of a government to meet its financial obligations in a timely fashion. The obligations of government take the form of ability of existing resources to meet expenditures and repayment (principal and interest) of the current portion of long-term debt. There may be almost universal agreement that financial condition is important, but there are legitimate differences in opinion among researchers as to what indicators of condition are appropriate (Wang, Dennis and Tu,

2007). Those differences are often resolved by the researcher deciding what aspect of financial condition is most important to understand, For example, a bond rater would be interested in the debt to equity ratio while the banker might look at a quick ratio (cash + investments + receivables divided by current liabilities). Just as the private sector investor would look at different financial ratios before making his/her investment decision, government “investors” use ratios to analyze the financial condition of public organizations.

The application of financial indicator analysis to governments emerged in the early 1980s, largely due to the work of the International City/County Manager’s Association (ICMA). Their financial trend monitoring system was developed to assist local governments identify emerging financial problems early enough to take corrective action (Groves and Valente, 1980). The twelve financial condition factors and thirty-six indicators proved useful for assessing financial strengths and weakness, but were more a way to organize factors affecting financial condition than an indicator of financial condition (Groves, Godsey and Shulman, 2001). One limitation on the development of financial condition indicators involved the way that governments reported their activities on the general purpose external financial statements.

In 1999 the Governmental Accounting Standards Board (GASB) issued Statement #34, the most sweeping changes to the local government financial reporting model ever promulgated, for the express purpose of providing users of financial statements information that would allow them to assess a government’s overall financial position (GASB, 1999). After phased implementation, there was renewed interest in financial monitoring and financial condition assessment. The new reporting model permitted assessment of financial position *and* financial condition across multiple types of financial activities typical to larger governments. The new required presentation of governmental funds (those flows of resources used to satisfy current obligations in the current period) and enterprise funds (the proceeds from business-type activities of governments that are supposed to be self-funding and that are accounted for like private sector entities) separately *and* in a combined government-wide financial statement provided more information to users of financial statements.

To the extent there is consensus on local government financial condition analysis, it is that ratio analysis in the public sector should communicate the same type of information as the private sector uses to assess financial condition, namely “flow” and “stock” (Berne and Schramm, 1986). Flow ratios can be derived from the financial statement that shows revenue and expenditures of the period. In private entities this is the income statement. Stock ratios can be derived from the financial statement that shows assets, liabilities and equities, the balance sheet of private entities. Though governmental accounting has different names for these statements, the concept is the same. It is important to know both the flow of revenues and

expenditures in the current period and the cumulative effects of previous financing decisions on current financial health.

Several researchers have offered governmental financial indicators around the stock and flow concepts (see Mead, 2006; Ives, 2006; and Wang, Dennis and Tu, 2007). Rivenbark, Roenigk and Allison (2010) developed a set of indicators for resource flow and stock that was selected for this analysis because the focus of this analysis is 1) exclusively financial condition 2) local governments and 3) the analysis of funds by type – in this case governmental funds. Funds, in government accounting, are self-balancing fiscal entities with their own ledger. Governmental funds reflect the operations of government that are not enterprises, or self-funding from their own revenue stream (such as a water utility). They have their own basis of accounting (modified accrual) which differs from the accounting basis of enterprise funds (accrual). The effects of merger should not theoretically affect the enterprise or business-type activities of the two merged entities. The assets and the liabilities of enterprises are reported separately from those of the general government, and are not considered in this analysis.

The dimension of flow and stock, indicators and interpretation for governmental funds is shown in Table 2.

**Table 2. Dimensions and Indicators of Resource Flow and Stock, with Interpretation, Governmental Funds.**

	<b>Financial Dimension</b>	<b>Financial Indicator</b>	<b>Interpretation</b>
<b>Resource Flow</b>	Service obligation	Operations ratio	A ratio of one or higher indicates that a government lived within its annual revenues.
	Dependency	Intergovernmental ratio	A high ratio may indicate that a government is too reliant on other governments.
	Financing obligation	Debt service ratio	Service flexibility decreases as more expenditures are committed to annual debt service
<b>Resource Stock</b>	Liquidity	Quick ratio	A high ratio suggests a government can meet its short-term obligations.
	Solvency	Fund balance as a % of expenditures	A high ratio suggests a government can meet its long-term obligations.
	Leverage	Debt as a % of assessed value	A high ratio suggests a government is overly reliant on debt.

Source: Rivenbark and Roenigk, 2011, page 247.



Using the audited financial statement of the City of Louisville from 1991-2002 and Louisville Metro from 2003-2011, each indicator was calculated annually for the period fiscal 1999 through fiscal 2003. Figure 1 shows the behavior of the indicator during the interval.

### ***Flow Indicators***

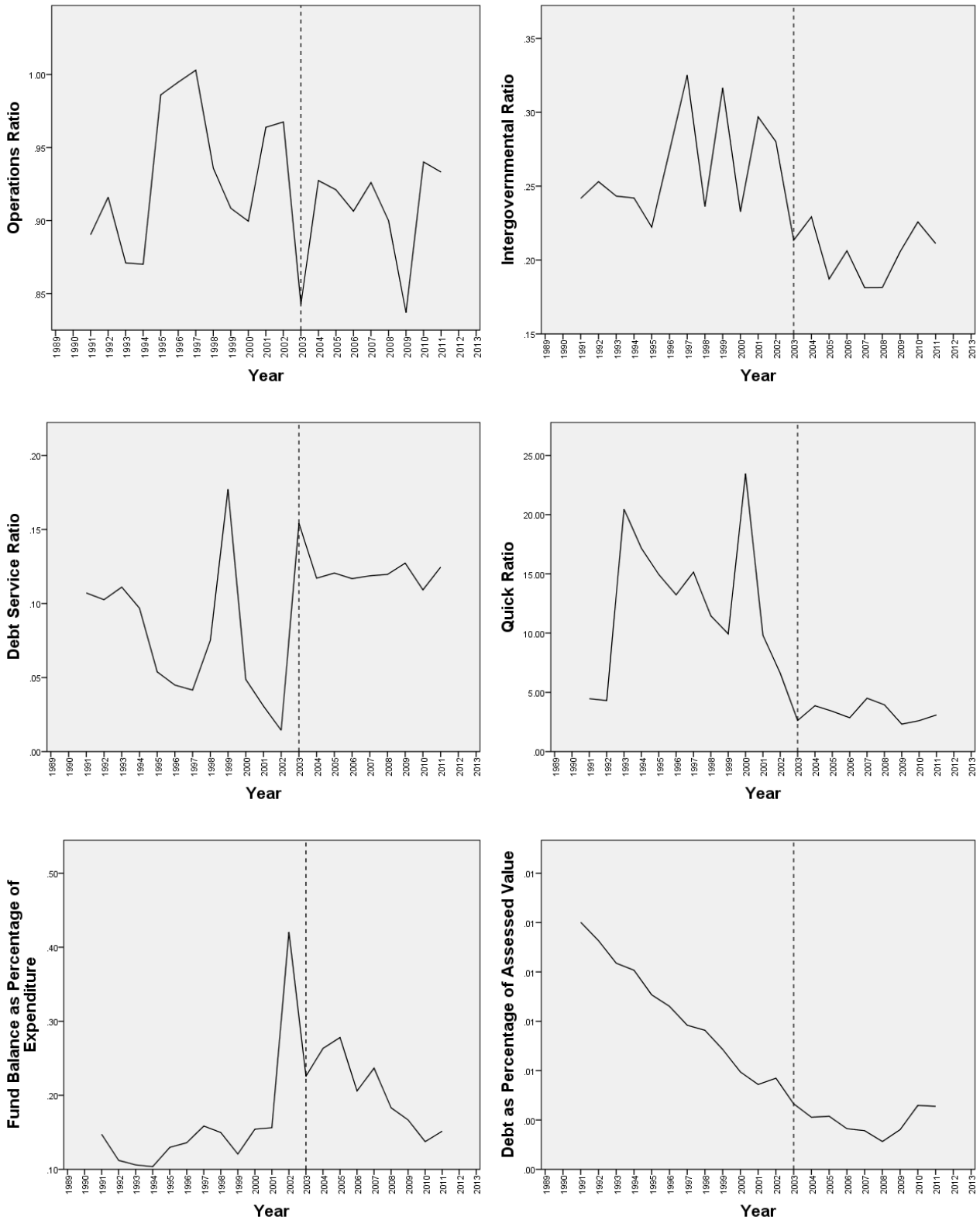
The first three graphs, service obligation, dependency and financing obligation are resource flow indicators. Each element of their calculation can be found on the statement of revenues, expenditures and changes in fund balance for the period. This statement is very much like the income statement one would find in the private sector, where revenues and expenses (in governmental accounting, expenditures) are detailed by source. In the private sector, the result would be net income. In the public sector, the difference between revenues and expenditures creates a positive or negative change in fund balance, the results of previous operations of government that was carried forward into the current period.

The financial indicator for service obligation is calculated dividing total revenues by total expenditures, plus transfers to the debt service fund and less proceeds from capital leases. An operations ratio greater than 1 indicates the government is able to meet current expenditures from current obligations. Louisville's operations ratio shows the expected sensitivity to economic downturns and a sharp decline in the first year of merger. Otherwise, the ratio is generally between .9 and .95 for the period, indicating a recurring use of fund balances to meet current obligations.

The financial dimension of dependency is calculated by the percent of total revenue comprised by revenue from other governments. Pre-merger Louisville was more reliant on intergovernmental revenue than post-merger Louisville, but the proceeds, usually from state sources, were much more volatile. Less than a quarter of total revenue comes from other governments since merger, indicating low dependence.

It is important to approach debt service indicator analysis from an understanding of how governments manage their long-term general obligation (tax supported) debt. As market conditions change, especially interest rates, governments sometimes refinance or defease debt to smooth the flow of debt repayment (called debt service) or to expand capacity for new debt, especially when the state government imposes limits on tax supported local debt. Volatility in debt service can indicate aggressive debt management rather than mismanagement, though a smoother debt service ratio around 10% of total expenditures is generally favored by the major bond rating companies. After merger, Louisville debt service ratio smoothed and remained in the 10-15% range.

**Figure 1. Flow and Stock Financial Indicators for Louisville, 1999-2011**



## ***Stock Indicators***

The three remaining graphs in Figure 1 are resource stock indicators. Their elements can largely be found on the balance sheet of the local government (tax base is located in the notes to the financial statements). The balance sheet for governmental funds of a government is not unlike the balance sheet of a private entity, except that only current assets and the portion of long term debt that is currently due are presented. This is because the modified accrual basis of accounting with its focus on current resources is used for governmental funds.

Liquidity is one of the most common financial ratios for all entities. It indicates the government's ability to meet short term obligations, and is calculated by the ratio of current assets to current liabilities. Prior to merger, the ratio showed more volatility, especially from 1999 to 2001 when cash and investment holdings nearly doubled, presumably in anticipation of the current liabilities of Jefferson County that would be assumed after the merger. Indeed, the ratio has been more stable after merger, but never approached below the minimum "safe" zone of 1:1. Since merger, the Metro's quick ratio has fluctuated between 2.5 and 5.

Solvency, or the ratio of unrestricted fund balance to expenditures, indicates the government's ability to meet its longer term obligations. Like liquidity, it is one of the most used indicators of financial health. Unrestricted fund balance merits an explanation because it has recently been redefined by the GASB to more closely describe funds that remain after the year's operations are complete but are not obligated for the future. Obligations may come in a variety of forms. Examples include encumbrances (or funds committed in one period to be expended in a subsequent period) and bond covenants ("forced" savings required as a condition of bond sale that governments agree to in order to secure a lower interest rate). Again we see volatility in the indicator immediately prior to merger and stabilizing since. However, prior to merger, solvency was clearly in the "danger zone" or well below .20. Since merger, the steepest part of the decline, from 2008-2010 can be easily explained by the economic downturn, where the Metro chose to use unrestricted fund balances to meet current obligations as an alternative to tax increases or drastic budget reductions. Since merger, the solvency indicator has improved overall, despite the economic crisis to an average of about .20, considered the "safe zone."

Finally, leverage is an important dimension for governments since they, like private entities, can become overleveraged, or too dependent on borrowing to finance operations. Local governments cannot finance current operation through long-term borrowing, as they face a balanced budget requirement imposed by state government. However, local governments use long term debt to invest in infrastructure, which is critical to their ability to attract private investment and maintain economic growth. Only the leverage indicators shows a consistent

trend before and after merger, one of steady decline until 2006 where a modest increase was realized. Low leverage may be popularly associated with financial health, but a government that is not investing in its infrastructure is unlikely to prosper in future periods. Unlike conventional wisdom where no debt is considered desirable, most government financial analysts (like the bond firms) consider zero or little long-term debt a warning signal for future decline. It is important to note that some states severely restrict the amount of general obligation debt a locality can hold. These restrictions, coupled with a need to grow and invest, have given rise to alternative debt instruments that do not appear as tax-supported debt. That discussion is beyond the scope of these indicators, but it is prudent to point out that the total long-term obligations of a government may not be captured by this indicator.

Interpreting these indicators over time is useful, but not ideal. The best way to assess the financial health of any entity is to compare it with its peers. Benchmarking to competitors is commonplace in the private sector, and benchmarking to similar sized governments is becoming more accepted in government. Faculty and staff of the School of Government at the University of North Carolina maintain a dashboard of financial indicators for North Carolina local governments comprised of these indicators and others appropriate for enterprise (business-type activity) funds. Users of the dashboard are encouraged to compare their indicators to those of similarly-sized and like governments to assess their results in a meaningful way (Rivenbark, Roenigk and Allison, 2009).

### **Interrupted Time-Series Analysis using OLS Regression Method**

The purpose of the paper is not to compare Metro's financial health to like-sized governments but to assess the impact of merger on financial health. There are limited options in terms of a viable control group, and timing difficulties in a comparison with other merged entities. Trend analysis then becomes the best approach, where the financial condition of Louisville is compared to the financial condition of Metro over the pre and post-merger periods. A one-group pretest-posttest design can identify variation between trends before and after the intervention (Campbell, 1969). An interrupted time series analysis using segmented regression (or a regression discontinuity design) to measure short term and long term effects is the method used in this paper (see Meier, Brudney, and Bohte, 2012). An ordinary least squares regression method using time as predicting variable and financial strength indicators as dependent variables was used to compare between pre-consolidation and post-consolidation trends.

If consolidation had had no effect on the financial indicators there will be no change in their trends over time. The pre-consolidation trend of the six dependent variables are tested for an immediate change in trend at the time of consolidation, and a long term post-consolidation

change until the current time period. The effects of other variables on the financial indicators, which are not considered in this study, are assumed to be producing similar variations in the pre-consolidation and post-consolidation time periods and hence have a zero net effect on the trend comparison.

The time series for each of the financial indicators ranges from 1991 to 2011. With the consolidation taking effect on 2003, there are altogether twelve data points to explain pre-consolidation trend and nine data points explaining the trend after consolidation took effect. Three different time variables are created to compare changes in the trends of the dependent variables. The time variable  $T_1$  captures the overall trend from the start to the end of the series; the variable  $T_i$ , which is a dummy variable coded as “0” or “1” for data points before and after consolidation respectively captures the immediate change taken place at the time of consolidation; and the variable  $T_2$  captures the trend after consolidation until 2011. Following is the basic model employed in this study:

$$Y_t = \beta_0 + \beta_1 T_1 + \beta_i T_i + \beta_3 T_2 + e_t$$

Where,

$T_1$  = Time from the start of the observed time series increasing 1 unit every subsequent year.

$T_i$  = Dummy variable coded “0” for years prior to intervention and “1” for years after intervention.

$T_2$  = time since the intervention took place increasing 1 unit every subsequent year. All years before intervention are coded as zero.

$e_t$  = Random variation at time t not explained by the model.

$\beta_0$  = Value of  $Y_t$  at time  $t=0$

$\beta_1$  = Coefficient or slope of the trend line prior to intervention.

$\beta_i$  = Coefficient that measures changes in the financial indicator as a result of merger compared to a scenario where there was no merger.

$\beta_3$  = Coefficient measuring slope after intervention until the end of the time series.

The same model is run separately for all the six financial indicators. Predicted values for each financial indicator using the model coefficients are calculated and are graphed separately for the ease of understanding the results.

## Summary of Findings

Table 3 contains model statistics and coefficients obtained after OLS Regression on all the six dependent variables. Out of the six models tested, three turned out to show highly significant relationship between the independent variables and the dependent variable. The statistics for model 2, model 4, and model 6 show that the changes in three dependent variables, Intergovernmental Ratio, Quick Ratio, and Debt as Percentage of Assessed Value, are explained by the changes in the independent variable – *the before consolidation slope (1991-2003) and the after consolidation slope (2004-2011)*.

In all the three models, the independent variables explain more than 50% of the variation in the dependent variables at the 99.9% confidence level. The time series variables were able to explain around 47% of the variation occurring in Debt Service Ratio and Fund Balance as Percentage of Expenditure at the 95% confidence level. Variation in Operations Ratio is not significantly explained by the time series variables.

**Table 3. Model Statistics and Coefficients**

Models	1	2	3	4	5	6
DV	Operations Ratio [Y <sub>1</sub> ]	Intergovernmental Ratio [Y <sub>2</sub> ]	Debt Service Ratio [Y <sub>3</sub> ]	Quick Ratio [Y <sub>4</sub> ]	Fund Balance as Percentage of Expenditure [Y <sub>5</sub> ]	Debt as Percentage of Assessed Value [Y <sub>6</sub> ]
Model Statistic						
R <sup>2</sup>	0.23	0.612	0.466	0.531	0.473	0.979
Adj R <sup>2</sup>	0.094	0.544	0.372	0.448	0.381	0.976
F	1.695	8.955***	4.954**	6.421***	5.095**	269.65***
Coefficients						
β <sub>0</sub>	0.899***	0.236***	0.113***	11.457***	0.069*	0.012***
β <sub>1</sub>	0.005	0.004*	-0.006*	0.174	0.014*	-0.001***
β <sub>i</sub>	-0.078*	-0.082***	0.09***	-10.043**	0.049	-0.001**
β <sub>3</sub>	-0.002	-0.004	0.004	-0.223	-0.029***	0.001***

Significance: \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001

The pre-consolidation trend coefficient for Debt as Percentage of Assessed Value is statistically significant at 99.9% as is the post-consolidation trend coefficient. Fund Balance as Percentage of Expenditure also has a statistically significant post-consolidation trend coefficient. The immediate effects of consolidation are apparent in all of the dependent variables except Operations Ratio and Fund Balance as Percentage of Expenditure.

Compared to the scenario where there is no intervention, all the dependent variables except Operations Ratio and Fund Balance as Percentage of Expenditure responded to the consolidation intervention at time  $T=2003$ . Intergovernmental Ratio, Quick Ratio, and Debt as Percentage of Assessed Value show a statistically significant drop caused due to consolidation, whereas Debt Service Ratio shows a statistically significant increment.

A set of diagrams representing the trend calculated using estimated values of the financial indicators using model coefficients are shown in Figure 2. Quick visual inspection of the six graphs of flow and stock indicators suggests that the intervention point, the 2003 merger, had some effect on the slope of the indicator trends regressed across time. However, it is important to recall that there was considerable volatility in the elements of both flow and stock indications just prior to and just after consolidation. This volatility reflects the city of Louisville's preparation for the merger by adjustments to its long term debt and debt service plans, among other things. The analysis results are not compromised by the interruption effect because there are sufficient observations before and after the interruption to establish a slope.

## **Conclusion**

This effort to describe the financial impact of merger in Louisville-Jefferson County in 2003 is useful in that it avoids both the reflexive and comparative approaches most often employed in favor of a quasi-experimental design, the interrupted time series or regression discontinuity model. The results of the analysis are satisfying as to significance, and we can state with certainty that the merger had a financial impact on Metro Louisville, and it was generally positive. However, the Louisville merger experience had some unique features that should caution the reader as to generalizability to other jurisdictions.

First, Louisville preserved the special taxing districts that existed prior to merger. As a consequence, relatively small geographic areas could elect to tax themselves in order to provide higher levels of service, such as their own police departments and solid waste services. The original city of Louisville, now called the Urban Service District, also faces a special assessment on real property in addition to the ad valorem tax on real property for all Louisville Metro residents. For the most part, tax effects of the merger are limited because separate taxing structures still exist (Louisville Metro Revenue Description, 2012).

Moreover, occupational taxes are charged to all persons working in Louisville Metro regardless of place of residency. Prior to merger, these taxes (1.25% on employee wages and business net profits) were distributed to the city and county respectively. After merger they support Metro functions, including public education. Some controversy surrounding the occupational tax was inevitable during merger discussions as the more affluent eastern portion of Jefferson County was experiencing faster payroll growth than the city. In fact, Savitch, Vogel and Li (2009) characterized improvements to the city's financial standing as a "paper performance" (p. 12) because the payroll transactions of suburban business are frequently recorded in downtown financial offices.

These factors unique to the Louisville merger should provoke caution when drawing broader policy implications from the merger experience. The stock and flow indicators reflect the increase in both the economic base (property values) and revenue changes (occupational tax receipts). Most any consolidation that results in the acquisition of higher valued property, improved overall economic growth and increased own-source revenue will drive some financial indicators in a positive direction. Yet improvement in financial indicators has very real effects.

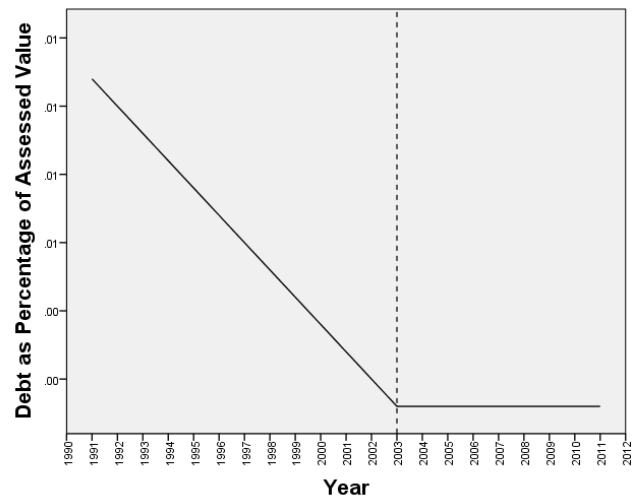
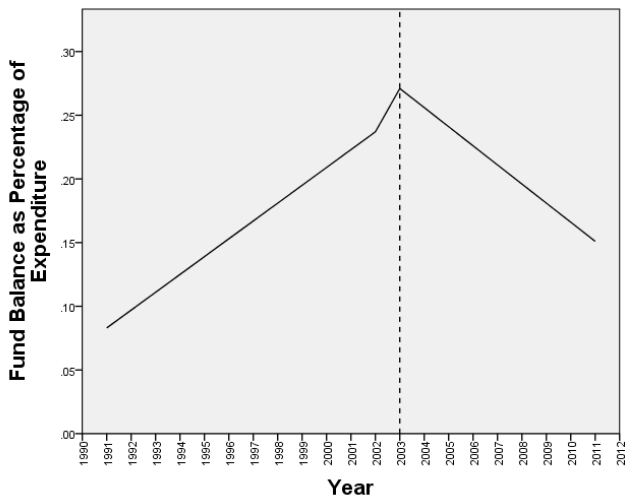
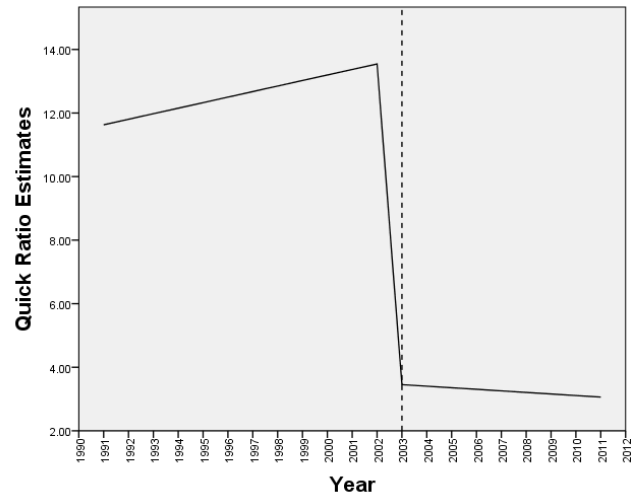
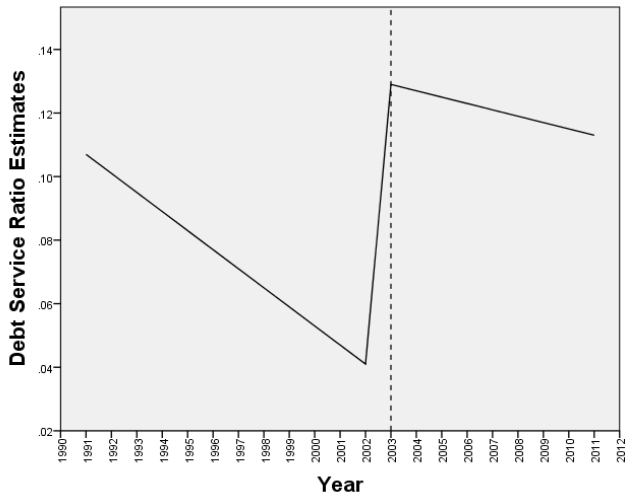
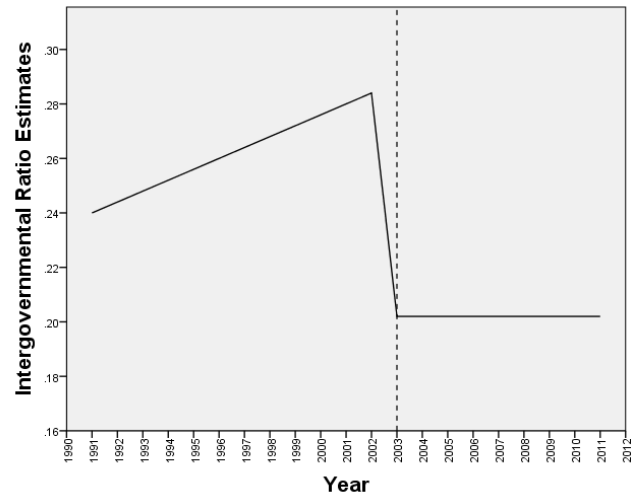
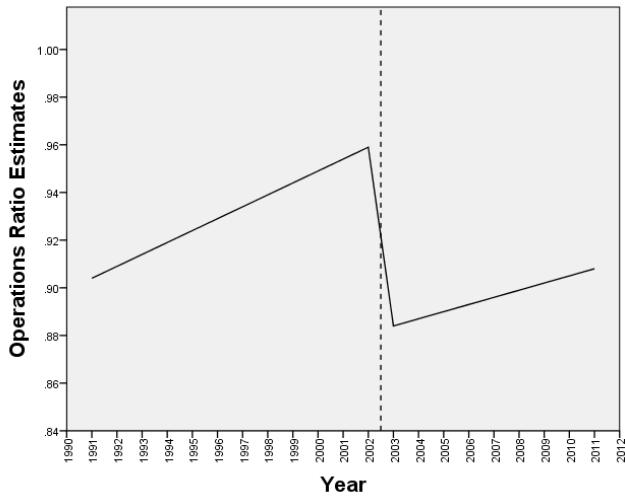
Bond ratings remain the key indicator if a jurisdiction's fiscal health and rating firms depend on ratio analysis for their criteria. One indicator of the financial impact of merger can be seen in changes to the jurisdiction's credit rating after consolidation. When upgrading Metro's rating in 2004, Fitch cited the diversified economy and commitment to economic development of the newly formed metro government ("Fitch Rates Louisville," 2004). The rating was upgraded again in 2010 from AA+ to AAA, the highest rating given by Fitch ("Fitch rates Louisville-Jefferson County", 2010).

Finally, the positive assessment of merger on financial health should be tempered with the caution that most of the stock and flow indicators were within the "safe zone" before and after merger. That is, the interpretation of the ratio would not have suggested financial distress. In general, the ratios tended to "smooth" somewhat after merger, an indicator of stability prized by the rating agencies. The exception is solvency, which was in the danger zone during several periods prior to merger, but improved immediately after merger as the merged entity was able to hold larger fund balances.

We have not moved the argument for or against merger by major metropolitan areas any closer to consensus as to efficiency or equity, but it does appear that economic development may have been improved in Metro Louisville by the necessity of coordination of suburban growth and downtown redevelopment. If nothing else, the merger strengthened the financial portfolio of both the city and county once they were joined, resulting in greater financial stability for the consolidated entity.



**Figure 2. Estimated Values of the Dependent Variables Plotted Against Time**



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