Research Article

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# Decoding the Relationship Between Economic Growth and Fiscal Health:
## Insights from Local Governments in North Carolina

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This article explores the relationship between local economic development and local government fiscal health, emphasizing the critical role of fiscal policy in determining long-term success. Using data from 2017 to 2022 for all counties in North Carolina, we apply Granger causality analysis to examine the relationship between a county's economic growth and its fiscal condition. Our findings show that fiscal health significantly influences local economic growth, indicating a unidirectional causality where better fiscal health can facilitate economic development. These observations add much-needed empirical evidence to the continuing literature on the importance of economic growth and the related fiscal policy choices.

Keywords: Economic Growth, Fiscal Health, Local Governments

Fiscal health is an area of research that should be prioritized as it is critical for ensuring local governments' long-term viability and resilience. Understanding the dynamics of fiscal health is critical for sustaining strong financial administration practices, especially in light of worldwide economic uncertainties and potential future financial challenges (McDonald et al., 2024). Fiscal health refers to the government's capacity to deliver public services while meeting current and future obligations (Maher et al., 2020). Research has primarily focused on analyzing the information related to fiscal conditions centered on solvency (Nollenberger et al., 2003). Financial indicators, assessed through solvency measures, are used to evaluate the ability of public administrations to fulfill their financial obligations to providers. Likewise, one of the challenges confronting local governments revolves around their ability to fulfill their basic level of service commitments and obligations (Jacob & Hendrick, 2012).

In this context, scholars have found interest in the interlinkages between a local government's fiscal health and its economic growth, with fiscal policy having an essential function in determining the long-term success of these governments (Hendrick, 2011; Miller & Russek, 1997; Schneider, 1992). Understanding the constantly shifting relationship between

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economic indicators and fiscal conditions is important because it allows local governments to make rational and informed choices that encourage economic growth while maintaining financial stability (Pasichnyi, 2017). Economic indicators such as GDP, unemployment rates, and sources of revenue provide essential data about a community's economic health and future growth trajectory. Governments can establish strategies that promote sustainable growth, manage resources efficiently, and limit financial risks by examining these indicators alongside fiscal conditions such as budget balances, debt levels, and expenditure patterns (Chugunov et al., 2021). However, to date, only a limited number of studies have focused on examining how the fiscal health of local governments and their determining factors, such as economic growth, are related. Especially the extent to which fiscal health influences and is influenced by economic growth at the municipal level remains unanswered (Easterly & Rebelo, 1993; Valickova et al., 2015; Van Cauwenberge et al., 2016). Therefore, further research on this topic is warranted.

This paper aims to assess the relationship between the fiscal health and economic growth of local governments, specifically in North Carolina counties. Such variables are measured through county-level GDP and the fiscal condition of North Carolina counties using Brown's 10-point test over the period of 2017-2022. Brown's 10-point test, a widely recognized method to measure local government fiscal health, offers a structured approach for examining numerous fiscal variables (Maher & Nollenberger, 2009). This method allows local government finance officials to assess their governments' relative fiscal condition over time, allowing for more informed decision-making and strategic planning (Rivenbark & Roenigk, 2011). Our findings demonstrate that fiscal health strongly predicts economic growth, implying that improving fiscal management might result in large financial benefits. However, the opposite was not found, indicating that economic growth does not always mean that there is improved fiscal health. This study adds to the existing literature by giving empirical evidence on the causality between a county's economic growth and fiscal health, which provides valuable insights for policymakers and practitioners. This study offers financial officers a helpful and approved tool for tracking and maintaining the local government's fiscal health over time.

## Background

Fiscal health and economic growth are essential components influencing local governments' and communities' economic landscape and well-being (Miller & Russek, 1997; Schneider, 1992). Fiscal health is defined as the financial stability of local governments, as evaluated by measures such as revenue stability and debt levels (Honadle et al., 2003). In contrast, economic growth, measured by GDP growth, job creation, and overall prosperity, highlights the local economy's expansion and prosperity (Everett et al., 2010). This section will look at the relationship between fiscal health and economic growth, their impact on one another, and what it means for governance and policies.

### What is Fiscal Health?

Fiscal health is a broad notion that is an important indication of a local government's financial sustainability and stability (McDonald & Maher, 2020). It represents a government's fiscal management capabilities, including its capacity to satisfy financial obligations, deliver critical services, and respond to financial crises (McDonald et al., 2024). Maintaining financial stability

or ensuring strong economic health involves multiple elements. First, income stability is important to ensure fiscal health since it entails determining the dependability and sustainability of income sources such as taxes, fees, and grants (Jacob & Hendrik, 2012). A consistent income stream from such sources is required to fund government operations, investments, and public services, ensuring stability and dependability in financial planning. Second, monitoring debt levels compared to the government's ability to repay is critical for determining fiscal sustainability, as it entails assessing the volume of borrowing, debt conditions, and the long-term consequences of debt for financing infrastructure, public projects, and services (Maher et al., 2023). Guaranteeing revenue stability and monitoring debt levels enable them to negotiate fiscal issues, encourage economic development, and invest in infrastructure, public services, and community well-being, all of which contribute to their community's overall prosperity and well-being (Justice & Scorsone, 2012). By focusing on fiscal health and following sound fiscal management practices, local governments may lay a strong financial foundation that supports long-term growth, creates economic resilience, and improves citizens' quality of life (Chung & Williams, 2021).

Economic Growth

Economic growth is a frequently discussed subject among scholars of public budgeting (Idrisov & Sinelnikov-Murylev, 2013). At its heart, economic growth is often considered a process marked by expansion, suggesting a quantitative increase in economic activity within a specific region or jurisdiction (Everett et al., 2010). Real Gross Domestic Product (GDP) is a widely used measure that reflects economic growth (Hobijn & Steindel, 2009). Real GDP, often known as the inflation-adjusted measure of a country's economic output, is also used at the local government level to determine its economic growth and development (Landefeld et al., 2008). In detail, real GDP is a comprehensive and standardized estimator of the total market value of all products and services produced within a region's borders, adjusted for inflation impacts (Bureau of Economic Analysis, 2023). This adjustment accounts for fluctuations in nominal GDP, which can be influenced by inflation or deflation, resulting in a more realistic portrayal of long-term economic growth (Mankiw, 2021). The importance of real GDP as a measure of economic growth has been well-recognized in economic literature and research. According to Hobijn and Steindel (2009), real GDP is a fundamental indication of regional economic success and prosperity. Real GDP changes represent economic activity swings, capturing local economic expansions and declines (Stewart, 2009). A rise in real GDP signifies growth, expansion, and higher economic activity, whereas a fall implies recession, decline, and decreased economic activity (Ramey & Zubairy, 2018).

The economy (i.e., economic growth) and fiscal health are inextricably linked and constantly changing (Hendrick, 2011). A government's fiscal health is critical to encouraging economic growth (Easterly & Rebelo, 1993). Governments that preserve fiscal health by managing debt effectively and guaranteeing income stability are better positioned to invest strategically in public infrastructure, technology, and human capital (Miller & Russek, 1997). These investments increase the economy's productivity and have the potential to attract private investment, which is critical for long-term economic growth (Hendrick, 2011). Local governments often see greater tax revenues and stronger fiscal positions during economic booms caused by increased consumer spending, company profits, and property values (Gorina et al., 2018). This infusion of revenue boosts a government's fiscal capability, allowing for better

service delivery without increasing debt levels (Afonso and Jalles, 2016). Such an environment promotes increased economic confidence and investment. Economic downturns, on the other hand, can put pressure on fiscal health by lowering tax collections while boosting spending on social services and unemployment benefits (Afonso & Jalles, 2016). Economic factors, such as GDP growth, unemployment, inflation, and interest rates, impact fiscal health by influencing income streams, expenditures, and financial planning (Afonso & Sousa, 2012).

Furthermore, a region's economic structure and diversification are important factors in improving fiscal resilience and stability (Kim & Warner, 2016). In such instances, governments may need to increase borrowing, raise taxes, or reduce public spending to meet fiscal obligations. These policies have the potential to hinder economic recovery, highlighting how fiscal health and economic success are inextricably linked, with each having a considerable impact on the other.

To summarize, the economy considerably impacts fiscal health through economic cycles, economic diversification, and external variables. Understanding these processes and their interdependence is crucial for local government officials, policymakers, and stakeholders involved in fiscal oversight. This understanding enables them to effectively navigate economic challenges and make informed choices that support long-term economic growth and development. Understanding how fiscal health and economic growth are related allows these key stakeholders to build policies that address immediate economic challenges while also laying the groundwork for long-term development at the local level.

While fiscal health and economic growth are intrinsically interconnected, they influence local governments differently (Honadle et al., 2003). Fiscal health is primarily concerned with local governments' financial stability and sustainability (Justice & Scorsone, 2012). It evaluates the government's capacity to manage its finances successfully by looking at issues such as revenue management, spending control, debt management, and the establishment of financial reserves (Volkerink & De Han, 2001). The goal of ensuring financial sustainability is to ensure that the government can meet its financial responsibilities, provide important services, and handle economic problems without jeopardizing its fiscal integrity. In contrast, economic growth is focused on increasing the overall size and development of the local economy (Idrisov & Sinelnikov-Murylev, 2013). Its objective is to increase economic activity, promote business development, and attract investment to foster innovation, provide job opportunities, raise living standards, and boost economic prosperity (Jones, 2016).

Furthermore, the indicators and metrics used to evaluate and monitor fiscal health and economic progress vary greatly (McDonald, 2019). The Brown ten-point test is a commonly used approach to assess fiscal health, including revenue stability, expenditure management, debt levels, and reserves (Hendrick, 2004). Such measurements provide information about the local government's financial management procedures and capacity to maintain fiscal sustainability. This method has been developed, evolved, and complemented by scholars in public budgeting communities (Maher & Nollenberger, 2009; McDonald, 2018). In contrast, Todaro and Smith (2020) state that economic growth is often quantified using GDP growth, employment rates, corporate investment, and consumer spending metrics. These indicators represent the local economy's general performance, activity, and health. Moreover, comparing fiscal health and economic growth across jurisdictions can be difficult due to disparities in measurement methodology, data availability, local contexts, and external factors. As a result, when assessing and comparing fiscal health and economic growth metrics, scholars should consider such aspects to ensure both internal and external validity.

The relationship between fiscal health and economic growth is dynamic, with each influencing the other in a nuanced way (Riera-Crichton et al., 2015). On the one hand, a fiscally sound local government can help drive economic growth by fostering a stable financial climate that attracts business investment, encourages entrepreneurship, and increases economic activity (Potter, 2005). Local governments can improve their fiscal discipline and resilience by practicing smart financial management, effective expenditure control, and strategic investments in infrastructure and public services, all of which contribute to job creation, prosperity, and overall economic development (Hackler, 2011). Economic growth, on the other hand, is critical to improving fiscal health because it boosts consumer spending, creates new job possibilities, and creates more tax revenue (Ramey & Zubairy, 2018). Such advantages enhance a local government's ability to maintain financial stability, meet financial obligations, and successfully handle economic problems (Reinhart & Rogoff, 2014). As a result, the relationship between fiscal health and economic growth is defined by mutual reinforcement and feedback loops, mutually influencing and supporting each other in repeated cycles (Khan et al., 2021). Fiscal health may provide a strong financial basis for economic growth, while economic progress creates the resources and revenues required to support and improve revenues, resulting in a mutually beneficial relationship that supports long-term development and prosperity.

However, the majority of research exploring the links between fiscal health and economic development has predominantly concentrated on national and regional levels, with fewer studies focusing on the local level, particularly the degree to which fiscal health impacts and is impacted by economic growth (Easterly & Rebelo, 1993; Valickova et al., 2015; Van Cauwenberge, 2016). Based on the discussion above, we hypothesize that an improvement in a government's fiscal health leads to an improvement in its economic growth. We also hypothesize the inverse, that economic growth can lead to fiscal health, demonstrating a bidirectional causality between the two in the United States.

## Data and Methods

This study focuses on 100 counties in North Carolina from 2017 to 2022. The dataset initially consisted of 600 observations, representing annual data points for each county spanning six years. For the study utilizing a two-year lag to assess the effects of fiscal health on GDP growth and vice versa, the effective sample was adjusted to 400 observations to accommodate the lag structure required for the accuracy of our methodologies.

To test our hypotheses, we need data on the measurement of fiscal health and the economic condition of the counties. To measure fiscal health, we turned to Brown's 10-point test. This test provides a thorough and uniform method by computing ten ratios using financial information. Data for the calculations were extracted from the annual financial reports of the counties, as provided by North Carolina's Department of State Treasurer.

We calculated Brown's ten-point test based on the process established by Brown (1993) and updated by Maher and Nollenberger (2009). Brown's ten-point test offers a comprehensive evaluation of fiscal health by assessing ten distinct ratios that reflect various aspects of financial stability and management at the county level. These ratios encompass income generation, revenue diversification, local tax reliance, spending control, revenue-expenditure equilibrium, revenue stability, liquidity, debt management, debt sustainability, per capita debt, and debt service burden. Each ratio is ranked based on quartiles, with higher scores indicating stronger

Table 1. Brown's Ten-point Test Measurement

| Ratio | Description | Dimension | Unit | Points assigned to each quartile | | | | Sum |
|---|---|---|---|---|---|---|---|---|
| | | | | 0-25 *(a)* | 25-50 *(b)* | 50-75 *(c)* | 75-100 *(d)* | (a+ b + c+ d) |
| Ratio 1 | Total revenues/population | Revenue | Dollars | -1 | 0 | 1 | 2 | Sum ratio 1 |
| Ratio 2 | Total intergovernmental revenues/total revenues | Revenue | Percentage | -1 | 0 | 1 | 2 | Sum ratio 2 |
| Ratio 3 | Property tax, or own source tax revenues/total revenues | Revenue | Percentage | -1 | 0 | 1 | 2 | Sum ratio 3 |
| Ratio 4 | Operating expenditure/ total expenditures | Expenditure | Percentage | -1 | 0 | 1 | 2 | Sum ratio 4 |
| Ratio 5 | Total revenues/total expenditures | Operating position | Ratio | -1 | 0 | 1 | 2 | Sum ratio 5 |
| Ratio 6 | Unreserved balance/total revenues | Operating position | Ratio | -1 | 0 | 1 | 2 | Sum ratio 6 |
| Ratio 7 | Cash investments/debt service expenditure | Operating position | Ratio | -1 | 0 | 1 | 2 | Sum ratio 7 |
| Ratio 8 | Total general obligation debt/general fund revenues | Debt | Percentage | -1 | 0 | 1 | 2 | Sum ratio 8 |
| Ratio 9 | Total general obligation debt/population | Debt | Dollars | -1 | 0 | 1 | 2 | Sum ratio 9 |
| Ratio 10 | Debt service expenditure/total revenue | Debt | Percentage | -1 | 0 | 1 | 2 | Sum ratio 10 |

Note: Adapted from Brown (1993) and Maher & Nollenberger (2009)

Table 2. Variable Names and Descriptive Statistics

| Variable Name | Definition | Mean | S.D. | Min | Max | Source |
|---|---|---|---|---|---|---|
| Fiscal Health | Brown's ten-point test score of a country, ranging from -20 to +20 | 5.448 | 4.486 | -7 | 17 | a |
| Economic Growth | Total real GDP of a county in dollars | 6,414,034 | 16,400,000 | 115,545 | 152,000,000 | b |

*Note:* a=County Annual Financial Information Report (AFIR) by North Carolina's Department of State Treasurer; b=County gross domestic product (GDP) from Bureau of Economic Analysis

fiscal health (Brown, 1993). By computing these ratios for North Carolina counties from 2017 to 2022, an aggregate score is generated to provide a holistic assessment. This approach allows for a detailed examination of fiscal health, highlighting areas of strength and potential concerns across counties. Table 1 provides an overview of the 10-point test.

To account for economic growth's role in our study, we used real county GDP, as measured by the Bureau of Economic Analysis. Table 2 provides descriptive statistics for the data.

Our approach to estimating the relationship between fiscal health and economic growth relies upon Granger causality. Granger causality is a statistical test used to see whether the historical data of one time series contributes to forecasting the future values of another variable in addition to what can already be predicted solely from the past values of that variable (Barrett et al., 2010). Unlike correlation analysis, which only identifies connections between variables, Granger causality analysis provides a more in-depth understanding of causality by investigating whether changes in one variable precede and anticipate changes in another. This time perspective is critical for disentangling complex linkages, such as those between economic growth and fiscal health, where the direction of influence is not always obvious. Furthermore, Granger causality research acknowledges the concept of bidirectional causality, recognizing that the relationship between economic growth and fiscal health might act in both directions. Like the chicken and the egg problem, this flexibility allows us to depict the relationship's intricate dynamics, including feedback loops and mutual effects throughout time (Thurman & Fisher, 1988).

We use Granger causality analysis to determine if changes in economic growth (measured by real county GDP) can predict changes in fiscal health (measured by Brown's score) for each North Carolina county and vice versa. This method allows us to determine the bi-directionality and degree of the causal relationship between these two variables to understand the pattern of economic growth and fiscal health, providing useful information for policymakers. Our study uses this test to investigate how fiscal health indicators from prior years (years *t-2* and *t-1*) affect GDP growth in succeeding periods. This approach enables us to capture the delayed effects of fiscal health on economic outcomes, reflecting a forward-looking perspective consistent with economic theories that imply that the benefits of fiscal policy manifest over time rather than immediately.

Before performing the Granger causality analysis, we run the Vector Autoregression (VAR) model, which accurately predicts how different variables interact and change over time. VAR model was used to examine the dynamic relationship between the variables, accounting for the impact of lagged values of fiscal health and GDP growth on one another. By running a VAR model first, we prepare for a more informed and statistically correct Granger causality analysis. This method increases the dependability of our findings and provides a thorough picture of how the variables interact with one another throughout time. We can account for each county's distinctive characteristics and causal relationships by calculating distinct VAR models. This method ensures that our study is adapted to each county's unique dynamics, resulting in a more accurate and comprehensive understanding of the relationship between economic growth and fiscal health.

By evaluating these tests, we may identify the temporal patterns that drive the relationship between economic growth and fiscal health. If economic growth causes fiscal health, then measures focused on promoting economic growth may have a favorable influence on county fiscal health. Conversely, if fiscal health causes economic growth, then sustaining strong fiscal policies may result in fiscal advantages. Understanding these relationships gives useful information for policymakers and stakeholders promoting sustainable development and financial resilience in North Carolina counties.

Table 3. Granger Causality Model Output

| Variable Pair | Chi-Squared | P-value | Granger Causality |
|---|---|---|---|
| GDP → Fiscal Health | 0.184 | 0.668 | No |
| Fiscal Health → GDP | 2.732 | 0.098 | Yes* |

* Indicates statistical significance at p <0.10

## Results and Discussion

Our analysis focuses on the bidirectional causal relationship between fiscal health and economic growth. We lagged the effect by two years as fiscal policies and their impact on economic indicators often manifest over long periods of time, and a two-year timeframe is consistent with local government budget cycles, allowing us to capture the entire effect of fiscal adjustments on economic growth. This lag period also corresponds to the time it takes for policy implementations to impact the economy, ensuring that our analysis considers the gradual nature of these economic changes and provides a more accurate picture of the dynamic relationship between fiscal health and economic growth.

The Granger causality tests provided noteworthy findings, as outlined in Table 3. It demonstrated that causality between fiscal health (i.e., Brown's score) and real GDP is statistically significant at 0.1 with a chi-squared value of 2.732 and a p-value of 0.098. This indicates that these past two-year values of fiscal health have statistically significant predictive power on changes to a county's GDP. In comparison, there is no indication that a county's GDP Granger causes fiscal health, as demonstrated by a low chi-squared value (0.184) and a high p-value (0.668). This means that the past two years' values of total real GDP-based economic growth may not predict changes in fiscal health, as measured by the Brown ten-point test, within our study's time span and context. According to this analysis, there is evidence to suggest that past values of fiscal health Cause changes in GDP, but there is no significant evidence to support the reverse relationship.

These findings emphasize the importance of promoting fiscal health to support and improve economic prosperity. However, the lack of a statistically meaningful association on the reverse relationship between fiscal health and economic growth calls for further investigation and thoughtful consideration in policy-making. The bidirectional relationship between economic growth and fiscal health has far-reaching consequences for policymakers and stakeholders alike. While fiscal health is not necessarily an immediate indicator of economic growth, it can drive long-term economic prosperity. This highlights the importance of a collaborative approach that blends sound budgetary management techniques and economic development initiatives. The Granger causality findings underline the significance of fiscal health as a possible driver of budgetary health in North Carolina counties.

The findings highlight the need to address government fiscal health as an addition and a cornerstone of economic development initiatives. By aligning fiscal health initiatives with broader economic goals, policymakers can forge a path toward sustainable economic growth and prosperity in North Carolina counties. This strategy views excellent government fiscal management as a critical investment in economic development rather than traditional techniques that rely primarily on subsidies and favorable to business incentives. This method provides long-term fiscal stability and economic strength, emphasizing the need for solid legislative practices in promoting economic growth.

The relationship between economic growth and fiscal health is characterized by dualism, impacting policy on multiple levels. Economic growth enhances fiscal health by generating additional revenues and relies on robust fiscal management to sustain such growth. This dualism underlines the importance of a holistic approach in policy-making that seamlessly integrates economic development with sound fiscal management practices. The absence of a statistically significant causality between GDP and Brown's score implies that immediate economic growth may not always lead to short-term swings in fiscal health. Policymakers should have a long-term view when developing economic and budgetary policies. Strategies that prioritize short-term economic gains over long-term fiscal implications may result in unsustainable fiscal practices and stifle long-term economic growth.

## Conclusion

This study offers insight into the bidirectional relationship between economic growth and fiscal health. The Granger causality test yielded noteworthy results, where fiscal health appeared to have a causal effect on economic growth. On the other hand, economic growth does not drive fiscal health. These findings imply that while fiscal health may drive improvements in economic growth over time, the effect of economic growth on fiscal health may be less significant in the short run or need more time to show its impact.

Our findings have consequences beyond academic discourse, including real-world policy-making and governance. First, this paper adds to the expanding body of research on the relationship between economic growth and fiscal health at the local government level. It contributes vital insights into evidence-based decision-making and policy formation by applying rigorous analytical methodologies and tapping into robust data sources. Second, in a real-world context, understanding the relationship between economic growth and fiscal health is critical for policymakers and stakeholders working to promote long-term development, prosperity, and sustainability in their communities.

The wide range of Brown scores across North Carolina counties highlights the necessity for special policy interventions suited to each county's unique fiscal challenges and prospects. While some counties may need assistance boosting revenue through economic development projects, others may benefit from strategies that improve fiscal discipline and spending management. Recognizing these disparities in economic health is essential for legislators because it enables them to craft tailored policies that successfully address each county's unique demands. For example, counties with lower Brown scores may benefit from capacity-building initiatives aimed at improving local government budgetary management abilities. In contrast, those with higher scores may focus on leveraging their fiscal health to attract investments and boost economic growth. Recognizing the bidirectional nature of this link enables policymakers to develop targeted interventions and policies that use fiscal health management to promote economic opportunities and vice versa.

Since we found the dynamic relationship between fiscal health and economic growth, we see value in exploring the causality over more time-series data. With only six years of data being used for the study, it might not be long enough to see the impact of economic growth on fiscal health. Moreover, it is also invaluable to expand this analysis to other states or areas to see if similar patterns develop in various settings. Additionally, investigating the influence of external economic forces, governance effectiveness, and policy decisions in shaping the relationship

between economic growth and fiscal health may yield new insights into this intricate relationship. Future research could investigate other variables, such as the effect of population dynamics and declining fiscal health on economic development. This new layer of study may provide more detailed insights into the complicated interactions that define regional economic landscapes.

## Disclosure Statement

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