Corporate Social Responsibility and Economic Growth

ABSTRACT

This study investigates the relationship between corporate charitable giving and regional economic growth in the United States, drawing on the economic literature on the private provision of public goods, externalities, and regional development. A central contribution is the construction of a comprehensive corporate social responsibility (CSR) database using an artificial intelligence (AI) driven methodology that integrates natural language processing, large language models, automated information extraction, and systematic validation procedures. Drawing on corporate filings, sustainability reports, news archives, and other publicly available disclosures from 2000 to 2025, the AI-assisted approach identifies, classifies, and quantifies corporate charitable activities, including nonfinancial contributions frequently excluded from conventional CSR datasets. The resulting database contains 295,957 CSR observations covering 1,069 firms, providing a detailed measure of corporate philanthropy across charitable purposes, geographic locations, and contribution forms. Using this dataset, we examine whether donation amounts and donation counts are associated with annual state-level nominal GDP growth. Donations are aggregated by recipient state and corporate headquarters state, yielding 1,239 and 1,036 state-year observations, respectively. Regression models incorporate demographic and labor market controls, industry characteristics, and alternative state and year fixed effects. The results reveal substantial heterogeneity across donation measures and geographic aggregation methods. Donation amounts are not significantly associated with economic growth under recipient-state aggregation, while positive associations under donor-state aggregation disappear after controlling jointly for state and year effects. In contrast, donation counts remain positively associated with GDP growth across all donor-state specifications, including the two-way fixed effects model. Additional analyses reveal differences across charitable purposes, geographic scope, and contribution forms, although these relationships depend on model specification. The findings contribute to the economic literature by demonstrating how AI-assisted CSR measurement can facilitate large-scale empirical investigation of corporate philanthropy and its relationship with regional economic performance, while highlighting the importance of donation frequency, geographic allocation, and contribution composition. The results establish conditional associations rather than causal effects.

Keywords: Corporate charitable donations; Corporate social responsibility (CSR); Corporate philanthropy; Regional economic growth; State GDP; Local economic development; Nonfinancial contributions

JEL Classification: M14; R11; O47; L31

INTRODUCTION

Regional economic growth is influenced by demographic conditions, labor market dynamics, human capital, productivity, and the geographic concentration of economic activity. Economic research emphasizes that differences in regional performance arise not only from conventional inputs such as labor and physical capital but also from agglomeration economies, knowledge spillovers, and institutional characteristics. Glaeser and Gottlieb (2009) demonstrate the importance of spatial equilibrium and agglomeration economies in explaining economic outcomes across U.S. cities and regions. Similarly, Moretti (2004a, 2004b) provides evidence that human capital generates benefits extending beyond the individuals acquiring education, contributing to local productivity and wage growth. These findings suggest that economic activities capable of generating benefits beyond their immediate participants may influence regional economic performance.

Corporate social responsibility (CSR) represents one potential mechanism through which private firms contribute resources to activities that may generate broader social and economic benefits. CSR encompasses corporate activities addressing social, environmental, and stakeholder concerns beyond firms' immediate production and financial objectives. From an economic perspective, CSR can be understood partly through the private provision of public goods and the generation of externalities. Besley and Ghatak (2007) conceptualize CSR as corporate involvement in the provision of public goods or the reduction of public bads, while Kitzmueller and Shimshack (2012) examine the economic incentives and market conditions underlying socially responsible corporate behavior. Within this framework, corporate charitable donations represent a particularly relevant dimension of CSR because they transfer identifiable resources to organizations engaged in education, health, environmental protection, social services, cultural activities, and community development.

Corporate charitable donations may be associated with regional economic growth through several channels. Contributions to educational institutions and community programs may support human capital development, while donations to health and social service organizations may strengthen local conditions relevant to economic participation and productivity. Environmental contributions may support improvements in community conditions, and other forms of corporate philanthropy may provide resources to nonprofit organizations delivering services within regional economies. These potential mechanisms are consistent with research demonstrating that human capital, social institutions, and other community characteristics are associated with regional economic outcomes (Glaeser & Gottlieb, 2009; Moretti, 2004a, 2004b; Rupasingha et al., 2002).

Prior research also establishes connections between corporate activity, charitable giving, and local economic resources. Card et al. (2010) document a relationship between the presence of corporate headquarters and charitable contributions to local nonprofit organizations, highlighting the importance of corporate location in understanding the geographic distribution of charitable resources. At the firm level, Lev et al. (2010) find that corporate charitable contributions are associated with subsequent revenue growth, particularly among firms whose performance is sensitive to consumer perceptions. Cheng et al. (2014) further document an association between CSR performance and access to financing. Collectively, these studies suggest that corporate philanthropy and broader CSR activities may be related to economic

outcomes through community-level and firm-level mechanisms. However, evidence concerning whether corporate charitable giving is systematically associated with aggregate regional economic growth remains comparatively limited.

The relationship between corporate charitable donations and regional economic growth is nevertheless theoretically ambiguous. Although charitable contributions may finance activities that generate positive externalities, donations are transfers of resources and do not automatically represent additional economic production. The economic benefits of charitable activities may also be difficult to capture through conventional measures of GDP, particularly when contributions improve social welfare without directly increasing measured output. Furthermore, corporate donations may substitute for other sources of nonprofit funding, and their beneficiaries may be located outside the geographic region in which the donating corporation operates. Corporate philanthropy may also serve strategic business objectives, including reputation enhancement, stakeholder engagement, and political influence (Bertrand et al., 2020; Lev et al., 2010). Consequently, the existence, direction, and magnitude of the association between corporate giving and regional economic growth cannot be assumed and require empirical investigation.

An additional challenge concerns the measurement of CSR. Corporate social responsibility is multidimensional, and aggregate CSR or ESG measures may combine activities with different underlying motivations and economic implications. Crifo and Forget (2015) emphasize the diversity of economic mechanisms associated with CSR, while Raghunandan and Rajgopal (2022, 2024) illustrate limitations in interpreting corporate sustainability classifications and commitments as direct evidence of underlying social outcomes. Corporate charitable donations provide a more specific measure of CSR because they can be identified and classified according to monetary value, charitable purpose, geographic scope, and contribution form. Nevertheless, the measurement of charitable giving remains challenging because corporate disclosures vary in completeness and consistency, particularly for nonfinancial contributions such as donated goods, services, and employee volunteering.

Motivated by these theoretical and measurement considerations, this study investigates the association between corporate charitable donations and regional economic growth in the United States. We construct a comprehensive dataset of corporate charitable activities covering 2000 through 2025 using publicly available corporate filings, sustainability and CSR reports, corporate websites, news articles, social media disclosures, and other relevant sources. The data collection process incorporates artificial intelligence, natural language processing, large language models, and systematic validation procedures to identify and classify corporate charitable activities. In addition to monetary donations, the dataset includes estimated values for nonfinancial contributions, allowing the analysis to distinguish different forms of corporate giving.

The study examines two complementary measures of corporate philanthropy: the monetary value of donations and the number of donations. This distinction is important because the amount contributed and the frequency of charitable activities may capture different dimensions of corporate engagement. We also employ two geographic aggregation approaches. Recipient-state aggregation assigns donations to the states in which charitable recipients are located, whereas donor-state aggregation assigns donations according to the headquarters locations of contributing corporations. These approaches allow us to

examine whether the relationship between corporate philanthropy and economic growth differs according to the geographic location of charitable resources and corporate donors.

An important methodological contribution of this study is the development of a comprehensive corporate social responsibility (CSR) database through the integration of artificial intelligence (AI), natural language processing (NLP), and large language models (LLMs). Traditional CSR research frequently relies on aggregate ESG ratings, self-reported corporate disclosures, or commercially available databases that may provide incomplete coverage of charitable activities, particularly nonfinancial contributions and geographically dispersed philanthropic initiatives. To address these limitations, we employ an AI-assisted data construction framework that systematically processes large volumes of unstructured information from corporate regulatory filings, sustainability reports, news archives, corporate websites, and other public disclosures. The process begins with approximately 1.2 billion news articles, applies keyword screening and an LLM classifier trained on 95,932 labeled articles, and integrates automated extraction with systematic validation to identify and classify corporate charitable activities. This approach produces a database containing 295,957 CSR observations across 1,069 firms over the 2000–2025 period. Importantly, the methodology extends beyond conventional monetary donation measures by identifying and estimating the economic value of nonfinancial contributions, including employee volunteering, donated goods and services, and other forms of corporate support. From an economic research perspective, this AI-assisted approach addresses a significant measurement challenge by transforming fragmented qualitative disclosures into structured, quantifiable observations suitable for large-scale empirical analysis. It also enables a more detailed examination of the geographic distribution, frequency, monetary value, and composition of corporate philanthropy. Accordingly, the study contributes not only to the literature on CSR and regional economic development but also to emerging empirical research methodologies that use AI to construct economic datasets from large-scale unstructured information.

Our primary dependent variable is annual nominal state GDP growth, which measures changes in the current-dollar value of regional economic production. We employ regression specifications controlling for lagged GDP growth, population growth, unemployment, labor force growth, and industry characteristics. Alternative specifications incorporate state fixed effects, year fixed effects, and both sets of fixed effects. The principal analyses include 1,239 state-year observations under recipient-state aggregation and 1,036 observations under donor-state aggregation. To evaluate the sensitivity of the findings to the measurement of economic activity and extraordinary economic conditions, we also conduct robustness analyses using real GDP growth and excluding the COVID-19 year of 2020.

The empirical findings reveal substantial heterogeneity in the association between corporate charitable giving and regional economic growth. For donation amounts, the recipient-state results do not indicate statistically significant associations with nominal GDP growth across the four regression specifications. Under donor-state aggregation, donation amounts exhibit positive and statistically significant associations in models without both state and year fixed effects, but the association becomes insignificant in the fully adjusted specification. The findings for donation counts differ. Under recipient-state aggregation, donation counts are positively associated with GDP growth in specifications without year fixed effects, but the relationship does not persist after year effects are introduced. Under donor-state aggregation, donation counts remain positively and significantly associated with nominal GDP growth across all four specifications, including the model incorporating both state and year fixed effects. These findings suggest

that the association between corporate philanthropy and regional economic performance depends not only on the geographic attribution of donations but also on whether charitable activity is measured by its monetary value or frequency.

Additional analyses indicate that the characteristics of corporate giving also matter. Donations to environmental causes exhibit positive associations with nominal GDP growth in specifications without year fixed effects under both geographic aggregation methods, but these associations do not persist in the fully adjusted models. Arts and Humanities donations exhibit positive associations in selected specifications, including the fully adjusted donor-state model. Social Services donations are positively associated with economic growth in several donor-state specifications, while Education donations exhibit negative associations at marginal significance levels in selected models. Geographic scope also produces different results. Local donations are positively associated with GDP growth in the fully adjusted recipient-state specification, whereas the corresponding donor-state association is insignificant. Financial and nonfinancial contributions exhibit significant associations in selected models, but neither form remains statistically significant in the fully adjusted specification under either geographic aggregation approach.

The robustness analyses further qualify these findings. Reestimating the regressions using real GDP growth produces limited evidence of statistically significant associations between corporate giving and inflation-adjusted regional economic performance. Excluding 2020 yields additional positive associations in selected specifications, particularly under donor-state aggregation. However, these associations generally do not persist in the models incorporating both state and year fixed effects. Together, these findings emphasize the sensitivity of the relationship between corporate charitable donations and regional economic growth to variable measurement, geographic aggregation, and model specification.

This study contributes to the literature in several ways. First, it extends research on CSR and corporate philanthropy beyond predominantly firm-level outcomes by examining their association with regional economic performance. Whereas prior studies have documented relationships between charitable giving and corporate financial outcomes or local nonprofit resources (Card et al., 2010; Lev et al., 2010), this study investigates whether corporate charitable activities are associated with broader state-level economic growth. Second, the study demonstrates the importance of distinguishing donation amounts from donation counts and recipient-state from donor-state aggregation. The differences observed across these measures suggest that treating corporate philanthropy as a single homogeneous construct may obscure meaningful variation in its relationship with regional economic activity.

Third, the study contributes to the measurement of CSR by employing a comprehensive donation dataset that incorporates both financial and nonfinancial corporate contributions and distinguishes donations by charitable category and geographic scope. This disaggregated approach provides a more detailed understanding of how different dimensions of corporate philanthropy relate to regional economic outcomes. Finally, the findings have implications for policymakers, corporate managers, and researchers interested in the economic significance of corporate charitable activities. They indicate that conclusions about the relationship between CSR and regional growth depend on how corporate giving is measured and geographically assigned. Because the empirical analysis is observational, the findings are interpreted as conditional associations rather than causal effects.

The remainder of the paper proceeds as follows. The next section reviews the relevant literature and develops the research hypothesis. The subsequent section describes the data, variable construction, and empirical methodology. The results section presents the primary regression findings, additional analyses, and robustness tests. The final section discusses the implications, limitations, and directions for future research.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Determinants of Regional Economic Growth

Regional economic growth is shaped by demographic, human-capital, productivity, institutional, and agglomeration forces. Unlike national economic growth, regional growth reflects differences in the economic characteristics and spatial distribution of workers, firms, and resources. Glaeser and Gottlieb (2009) emphasize that U.S. cities' economic performance depends on spatial equilibrium, population, income, housing markets, and agglomeration economies. In particular, the concentration of economic activity can generate productivity benefits by facilitating the exchange of ideas, specialization, and interactions among firms and workers. These mechanisms imply that economic conditions in one region may differ substantially from those in another even when regions operate within the same national institutional environment.

Human capital is another important determinant of regional economic performance. Economic growth theories emphasize the role of knowledge accumulation, education, and innovation in generating sustained productivity growth. Jones (2002), for example, develops a model in which educational attainment and research intensity are important sources of U.S. economic growth. At the regional level, the importance of human capital is also reflected in evidence on productivity spillovers. Moretti (2004) finds that productivity increases more in plants located in cities experiencing larger increases in the share of college graduates, consistent with positive human-capital externalities. Similarly, Moretti (2004) finds evidence that the social return to education extends beyond the individual receiving the education, because a larger concentration of educated workers is associated with higher wages for other workers in the same city. These findings are particularly relevant to the present study because they demonstrate that activities affecting individuals and communities can generate economic consequences that extend beyond the direct recipients.

Social and institutional conditions can also contribute to differences in regional economic performance. Rupasingha et al. (2002), using U.S. county-level data, find that social and institutional characteristics help explain differences in economic growth rates after accounting for other factors. In particular, their evidence indicates a positive association between social capital and county economic growth. This literature suggests that regional economic growth cannot be explained solely by conventional measures of physical and human capital. Social conditions and institutions may influence the productivity of regional resources and the ability of communities to generate and sustain economic activity. Consequently, corporate activities that alter the resources available to local communities may have economic implications beyond the boundaries of the individual firm.

The Measurement of Corporate Social Responsibility

Although CSR has become an important area of accounting, finance, economics, and management research, measuring CSR remains challenging. CSR is multidimensional and encompasses activities involving employees, customers, communities, the environment, human rights, corporate governance, and other stakeholders. Consequently, a single aggregate CSR score may combine activities with substantially different economic consequences. Crifo and Forget (2015), in their review of the economics of CSR, emphasize that CSR can arise from different market imperfections and can involve public goods and bads, competition, and incomplete contracts. They also identify a gap between the literature explaining why firms undertake CSR and the evidence concerning the social and environmental consequences of those activities.

Recent accounting research provides additional reasons for caution when interpreting aggregate ESG or CSR measures. Raghunandan and Rajgopal (2022) examine ESG-labeled mutual funds and find that ESG scores are correlated with voluntary ESG-related disclosure but not necessarily with firms' underlying compliance records or carbon emissions. Their findings suggest that measured ESG performance can capture aspects of firms' disclosure and classification that do not fully correspond to underlying social or environmental outcomes. More recently, Raghunandan and Rajgopal (2024) compare firms that signed the Business Roundtable's stakeholder-oriented statement with their peers and report that the signatories' stated commitments were not accompanied by improvements in several observable stakeholder-related outcomes. These findings do not imply that CSR measures are universally invalid; rather, they illustrate the importance of carefully defining and measuring the underlying construct that a CSR variable is intended to capture.

Accounting research also suggests that CSR disclosures may contain information about firms' incentives and expectations rather than simply documenting socially beneficial activities. Lys et al. (2015), for example, find that CSR expenditures are associated with firms' expectations about future financial performance and argue that corporate accountability reporting can provide information to outsiders about firms' private information concerning future prospects. This evidence reinforces the importance of distinguishing between CSR as a broad disclosure construct and specific corporate activities that can be observed and quantified directly.

Corporate charitable donations provide one potentially useful way to address some of these measurement challenges. Unlike a composite CSR score, charitable donations can often be identified as specific activities involving identifiable resources transferred to charitable or nonprofit organizations. Donations can also be classified according to their monetary value, geographic scope, charitable purpose, and form. This allows researchers to examine not only whether CSR is associated with an economic outcome but also whether particular dimensions of corporate social activity are associated with that outcome. Such disaggregation is important because two firms with identical aggregate CSR scores may engage in fundamentally different activities and therefore have different implications for the communities in which they operate.

The Association Between Corporate Donations and Economic Growth

The economic consequences of corporate charitable giving can be understood through the theory of private provision of public goods. Besley and Ghatak (2007) explicitly model CSR as the creation of

public goods or the reduction of public bads and demonstrate a direct relationship between CSR and the traditional economic theory of voluntary provision of public goods. Under this framework, firms may devote resources to activities that generate benefits beyond the firm's direct production process. Corporate donations can therefore be interpreted as one mechanism through which private firms contribute resources to activities that may have broader social and economic consequences.

The public-goods perspective provides several potential channels through which corporate donations could be associated with regional economic performance. Donations to education may increase the resources available for human-capital development; donations to health-related organizations may support activities that improve community health; environmental donations may improve local environmental conditions; and donations to community organizations may increase the resources available for locally provided services. If these activities generate benefits that extend beyond the direct recipients, they may create positive externalities. Such externalities are consistent with the broader regional-growth literature, which demonstrates that human capital, knowledge, and other community-level characteristics can generate spillovers within local economies (Glaeser & Gottlieb, 2009; Moretti, 2004).

Evidence from the corporate philanthropy literature also indicates that corporate activity can influence local charitable resources. Card et al. (2010) examine the relationship between corporate headquarters and charitable giving in U.S. cities and find that attracting or retaining a publicly traded corporate headquarters is associated with higher contributions to local nonprofit organizations. Importantly, their evidence indicates that much of this relationship operates through the presence of highly compensated individuals rather than direct corporate donations. Nevertheless, their findings demonstrate that corporate activity can affect the resources available to nonprofit organizations within local communities. This is relevant to the present study because nonprofit organizations frequently provide services associated with education, health, social services, and cultural activities that form part of the social infrastructure of regional economies.

Corporate philanthropy may also affect firms through stakeholder and market mechanisms. Cheng et al. (2014) find that firms with stronger CSR performance face lower capital constraints and provide evidence that stakeholder engagement and transparency are mechanisms underlying this relationship. Lev et al. (2010), focusing specifically on corporate charitable contributions, find that charitable giving is associated with subsequent revenue growth and that the association is particularly pronounced among firms that are sensitive to consumer perceptions. They also document a positive relationship between charitable contributions and customer satisfaction. These findings suggest that corporate philanthropy can have consequences for the donating firm, which may subsequently affect employment, investment, and other components of regional economic activity.

The relationship between corporate donations and economic growth is nevertheless not necessarily positive or one-directional. Public-goods theory implies that corporate giving can supplement the provision of socially valuable goods, but it does not imply that every donation generates an increase in measured regional output. Donations can finance activities that produce social benefits without directly increasing market production. They may also substitute for other sources of funding, including government grants or contributions from other donors. In addition, the beneficiaries of a corporate donation may be geographically dispersed, making it difficult to identify an effect on the particular region

in which the donating firm is located. Card et al. (2010), for example, explicitly consider the possibility that additional private contributions could crowd out other sources of funding, although they do not find evidence of crowding out of government grants in their setting.

Corporate donations can also reflect strategic objectives that are not directly related to regional economic development. Bertrand et al. (2020) provide evidence that some corporate philanthropy may be used as a means of political influence, illustrating that charitable giving can serve multiple objectives. Similarly, Lys et al. (2015) caution against interpreting associations between CSR expenditures and subsequent firm performance as evidence that CSR expenditures themselves cause improved performance. Their evidence suggests that firms may undertake CSR expenditures when they anticipate stronger future performance. Taken together, this literature indicates that corporate donations may generate social benefits, firm-level benefits, or strategic benefits, and these mechanisms need not produce a measurable change in regional GDP.

These competing mechanisms create an important empirical question. If corporate donations provide resources for public goods that generate local productivity spillovers, donations may be positively associated with regional economic growth. If, however, donations primarily redistribute resources, finance activities outside the measured region, substitute for other sources of funding, or generate social benefits that are not captured by GDP, the association with regional economic growth may be weak or statistically indistinguishable from zero. The theoretical ambiguity therefore motivates an empirical examination of the relationship rather than an assumption that corporate giving necessarily promotes regional economic growth.

Corporate Donations and the Measurement of GDP

An additional issue in examining the relationship between corporate donations and economic growth concerns the measurement of economic activity itself. The System of National Accounts (SNA) distinguishes transfers from transactions that represent production. Under the 2008 SNA, voluntary donations to nonprofit institutions serving households are classified as current transfers. Paragraph 8.132 states that current transfers to nonprofit institutions serving households include voluntary donations and explains that such transfers are intended to finance the nonmarket production of these institutions or other current transfers. Thus, the donation itself is not equivalent to the production of a market good or service and should not automatically be interpreted as an addition to GDP merely because resources are transferred from a corporation to a nonprofit organization (United Nations, 2009).

This distinction is important for the present study because corporate financial reporting and national economic accounting serve different purposes. Corporate financial statements record transactions and expenses according to financial reporting requirements, whereas national accounts seek to measure production, income, expenditure, and transfers consistently across sectors. Consequently, information disclosed by corporations about charitable activities may not map directly into the national accounts. The distinction is especially relevant for nonmonetary donations, donated goods, employee volunteering, and other forms of corporate social activity for which the accounting treatment may differ from the economic value attributed to the activity in corporate communications.

The measurement issue also provides a rationale for examining corporate donations separately from broader CSR ratings. A CSR score may indicate that a firm has relatively strong or weak social

performance, but it generally does not identify the dollar value of a particular activity, its geographic destination, or the type of resources transferred. By contrast, a donation-based measure can potentially identify the amount, recipient, location, and purpose of a contribution. The present study therefore treats charitable donations as a more specific and observable component of CSR and investigates whether incorporating such information changes the measured relationship between corporate social activity and regional economic growth.

The distinction between financial and nonfinancial donations is also theoretically and empirically important. Financial donations involve identifiable monetary transfers, whereas nonfinancial contributions can include donated goods, services, employee time, technical expertise, or other resources. Such activities may generate social value and potentially affect economic activity, but their valuation and treatment in national economic statistics are less straightforward. Consequently, examining these categories separately can provide evidence about whether the association between corporate social activity and regional economic growth differs according to the form in which resources are contributed.

The preceding literature suggests two competing mechanisms. Under the private-provision-of-public-goods perspective, corporate donations can provide resources for socially valuable activities and may generate positive externalities. If these activities improve human capital, health, environmental quality, social infrastructure, or other productive characteristics of a region, corporate donations could be associated with higher regional economic growth. This mechanism is consistent with evidence that human capital and other community-level characteristics can generate productivity spillovers in local economies (Glaeser & Gottlieb, 2009; Moretti, 2004; Rupasingha et al., 2002).

An alternative mechanism implies little or no systematic association between corporate donations and measured regional GDP growth. Donations are transfers of resources and do not necessarily represent additional market production. The social benefits generated by donations may occur outside the region, may substitute for other sources of funding, or may improve welfare without producing a measurable change in GDP. In addition, corporate philanthropy may be motivated partly by firm-specific objectives, including customer relationships, access to finance, reputation, or political influence (Bertrand et al., 2020; Cheng et al., 2014; Lev et al., 2010). These mechanisms imply that the relationship between corporate donations and regional GDP need not be uniform across firms, regions, or types of donations.

Accordingly, rather than assuming that corporate donations necessarily increase regional economic growth, this study empirically examines whether a statistically significant association exists between corporate charitable donations and regional GDP growth. The first hypothesis is therefore stated in the null form. The use of a null hypothesis is particularly appropriate given the competing theoretical mechanisms. A positive association would be consistent with public-goods and externalities mechanisms, whereas an insignificant association may reflect social benefits not captured by regional GDP.

The public-goods perspective suggests that corporate philanthropy may support local productive capacity, whereas transfers, crowding out, and geographic spillovers may weaken any association with measured GDP. Accordingly, the primary test is nondirectional and evaluates the null of no conditional association.

H1 (null): Aggregate corporate charitable donations are not significantly associated with annual state GDP growth, conditional on the specified controls and fixed effects.

The following analyses assess heterogeneity rather than establishing additional confirmatory causal hypotheses. They examine whether associations differ by charitable purpose, local versus national geographic scope, and financial versus nonfinancial form.

RESEARCH METHODOLOGY

Sample and CSR Data

We examine the association between corporate charitable donations and regional economic growth using a comprehensive database of corporate social responsibility activities in the United States from 2000 through 2025. To develop a comprehensive and standardized database of corporate social responsibility (CSR) activities, we employ an artificial intelligence (AI) driven methodology that integrates Natural Language Processing (NLP), Large Language Models (LLMs), and automated data extraction techniques. We begin with firms identified in the 42nd through 46th editions of the Corporate Giving Directory (CGD), which provide detailed information on major corporate foundations and charitable giving programs in the United States. These editions identify 1,169 firms that serve as the initial population for our data collection. Our study covers the period from 2000 to 2025 and draws on publicly available information to identify, classify, validate, and quantify corporate charitable contributions. To overcome the fragmentation and inconsistencies associated with traditional CSR reporting, we systematically collect information from multiple sources, including:

1. SEC EDGAR filings, including Forms 10-K, 10-Q, and 8-K.
2. Corporate sustainability reports, CSR reports, and corporate websites.
3. ESG-related disclosures and databases.
4. News articles, including Common Crawl News Archive and CSRwire.
5. Social media platform X (formerly Twitter).
6. IRS foundations forms (IRS990).

Our data construction process combines large-scale news screening with LLM-based extraction and validation. We initially examine approximately 1.2 billion news articles published between 2000 and 2025. Using CSR-related keywords and corporate donor names, we reduce this universe to approximately 116 million potentially relevant articles. We then apply a fine-tuned LLM classifier, trained on 95,932 labeled articles, to identify approximately 5.2 million CSR-related articles. After eliminating duplicates, verifying source accessibility, and validating article content, the process produces approximately 1.1 million unique CSR-related news articles. In parallel, we collect regulatory filings, sustainability reports, and social media disclosures for the CGD firms, including SEC filings for 505 publicly traded firms matched to Central Index Key identifiers. We employ keyword-based text extraction and LLM analysis to identify voluntary corporate contributions to charitable and community organizations. A secondary validation process excludes activities that do not qualify as charitable contributions, including commercial sponsorships, regulatory compliance expenditures, litigation settlements, and political spending. This multistage approach improves the consistency and reliability of the resulting CSR database.

An important contribution of our methodology is the systematic identification and valuation of nonmonetary CSR activities, which are frequently omitted from conventional CSR databases because

they are disclosed in narrative rather than financial terms. We classify corporate contributions into categories that include direct monetary donations, employee volunteering, donated products and services, fee waiver programs, training and capacity-building initiatives, and access to corporate facilities or infrastructure. For monetary donations, we record the disclosed contribution amounts. For nonmonetary activities, we apply replacement-cost valuation methods and standardized assumptions to estimate their economic value. Specifically, the valuation process involves:

1. Classifying each CSR activity according to its nature and charitable purpose.
2. Converting narrative descriptions into measurable units, such as volunteer hours, donated products, or waived transactions.
3. Assigning monetary values using wage benchmarks, market replacement costs, and industry-specific adjustments.
4. Evaluating estimation uncertainty through confidence scores and distinguishing directly reported amounts from imputed values.

This methodology produces an initial database of 295,957 CSR observations covering 1,069 firms during 2000–2025. The nonmonetary valuation approach generates approximately $9 billion in estimated contributions across roughly 12,000 records. To support empirical analysis, we standardize the observations by firm, year, donation type, charitable category, and geographic scope, including local, national, and international contributions. We subsequently integrate the CSR database with firm-level accounting information, corporate governance characteristics, industry classifications, and relevant socioeconomic indicators. The broader CSR database retains observations that cannot be linked to these financial and governance databases, allowing its use in additional analyses of corporate giving and economic activity. By integrating AI-based extraction, systematic validation, and economic valuation techniques, our methodology provides a scalable framework for measuring corporate charitable contributions and examining their broader economic significance.

Measurement of Regional Economic Growth

Our primary dependent variable is the annual percentage change in nominal state gross domestic product (Nom_GDP%). State GDP measures the value of goods and services produced within a state's geographic boundaries and provides a comprehensive indicator of regional economic activity. The use of state-level GDP allows us to align the geographic measurement of economic performance with the location of corporate charitable donations. Specifically, we examine donations aggregated according to the recipient's state and, separately, the donating corporation's headquarters state. This distinction enables us to investigate whether the association between corporate charitable giving and regional economic growth differs depending on where charitable resources are received and where the donating corporations are located.

We use nominal rather than real GDP growth as the primary dependent variable for several reasons. First, corporate charitable donations are measured in monetary terms, reflecting the dollar value of resources contributed by corporations. Nominal GDP measures economic activity at current prices, providing a conceptually consistent basis for examining the relationship between the monetary value of corporate giving and the monetary value of regional production. By contrast, real GDP adjusts for changes in prices and is more appropriate for measuring changes in the volume of production independently of inflation

(Bureau of Economic Analysis [BEA], n.d.; United Nations et al., 2009). Because our primary objective is to investigate whether corporate charitable contributions are associated with the measured dollar value of regional economic activity, nominal GDP growth provides a relevant primary outcome.

Second, corporate charitable giving can involve monetary transfers, donated goods, services, and other nonfinancial contributions that are valued in monetary terms. These activities may be associated with regional expenditures, nonprofit operations, employment, and other transactions reflected in current-dollar economic accounts. The System of National Accounts distinguishes transfers of resources from the production of goods and services, emphasizing that charitable contributions do not automatically constitute additional GDP (United Nations et al., 2009). Nevertheless, the resources provided through corporate philanthropy may support activities that contribute to measured economic production. Examining nominal GDP growth therefore allows us to assess whether corporate giving is associated with changes in the current-dollar value of regional output without assuming that donations themselves are directly included in GDP.

Third, nominal GDP growth captures changes in both the quantities of goods and services produced and their prices. This distinction is relevant because the monetary value of charitable activities and the economic resources they support may change over time as a result of both price movements and changes in activity. However, we recognize that nominal GDP growth does not isolate changes in real productive activity and may reflect inflationary pressures unrelated to corporate charitable giving. Accordingly, we supplement the primary analysis with robustness tests using real GDP growth, which removes the effects of price changes and provides a more direct measure of changes in regional production. This approach allows us to evaluate whether the observed associations are sensitive to the distinction between current-dollar economic activity and inflation-adjusted economic growth (BEA, n.d.; United Nations et al., 2009).

The empirical model includes lagged nominal GDP growth (Nom_GDP%t−1) to account for persistence in regional economic conditions. We additionally control for population growth (Population%), unemployment (Unemployment%), and labor force growth (Labor_force%). These variables capture demographic and labor market characteristics that may be associated with both corporate charitable activity and regional economic performance. Population growth reflects changes in the size of the regional population, while unemployment and labor force growth capture labor market conditions and changes in labor supply. Industry controls are also included to account for differences in economic structure across states. Furthermore, alternative specifications incorporate state and year fixed effects to account for time-invariant state characteristics and common economic shocks affecting states in a given year.

The final sample consists of 1,239 state-year observations for the recipient-state aggregation and 1,036 state-year observations for the donor-headquarters-state aggregation. The use of these two geographic approaches, together with alternative fixed effects specifications and robustness analyses employing real GDP growth, provides a more comprehensive assessment of the association between corporate charitable donations and regional economic performance.

Empirical Model

Baseline state-year regression

$$GDPGrowth_{st} = \alpha + \beta \ln(Donations_{st}) + \rho\, GDPGrowth_{s,t-1} + \gamma_1\, PopulationGrowth_{st} + \gamma_2\, Unemployment_{st} + \gamma_3\, LaborForceGrowth_{st} + \delta' IndustryControls_{st} + \mu_s + \lambda_t + \varepsilon_{st}.$$

Here s denotes state and t denotes year. The state effect μ_s and year effect λ_t are omitted or included according to Models (1)–(4). GDPGrowth is annual nominal state GDP growth. β is the principal coefficient of interest.

Disaggregated-donations regression

$$GDPGrowth_{st} = \alpha + \Sigma_k\, \beta_k \ln(Donations_{k,st}) + \rho\, GDPGrowth_{s,t-1} + \gamma' X_{st} + \mu_s + \lambda_t + \varepsilon_{st}.$$

The index k denotes the charitable category, geographic scope, or form analyzed in the corresponding table; X includes the controls described above. These are associational specifications, not causal identification strategies.

To test our hypothesis, we estimate the association between aggregate corporate charitable donations and regional economic growth using the following general specification:

The dependent variable $GDPGrowth_{st}$ is the annual percentage change in nominal GDP for state in year . $\ln(Donations_{k,st})$ represents aggregate corporate charitable donations received in state during year t. The coefficient of primary interest is β, which captures the conditional association between corporate charitable giving and regional economic growth.

We estimate four specifications that progressively account for observable and unobservable differences across states and years. Model (1) includes aggregate corporate donations, lagged GDP growth, population growth, unemployment, labor force growth, and industry controls without state or year fixed effects. Model (2) adds state fixed effects. Model (3) instead incorporates year fixed effects. Model (4) includes both state and year fixed effects. This four-model structure corresponds to the empirical design reported in the H2 regression tables, which identify the specifications as no fixed effects, state fixed effects, year fixed effects, and state and year fixed effects, respectively.

State fixed effects control for time-invariant characteristics that differ across states and could be correlated with both corporate charitable giving and economic performance. These characteristics can include persistent differences in geography, institutions, economic structure, and other state specific attributes. Year fixed effects capture common temporal shocks, including national economic conditions and other developments affecting states during the same year. Model (4), which incorporates both sets of fixed effects, therefore provides the most restrictive specification of the four models.

The inclusion of lagged GDP growth further accounts for persistence in regional economic performance. Population growth, unemployment, and labor force growth control for contemporaneous demographic and labor market conditions that may independently affect state economic growth.

Because corporate donations are not randomly assigned across states, the coefficient on Donations should be interpreted as a conditional association rather than a causal effect. This distinction is particularly important because economic conditions may themselves affect corporate giving. For example, stronger

economic conditions could increase firms' available resources for charitable activities, whereas adverse economic conditions could stimulate corporate responses to community needs. The observational nature of the research design therefore does not permit the baseline regression alone to distinguish fully among these possibilities.

RESULTS

Descriptive Statistics

Table 1 reports descriptive statistics separately for recipient-state aggregation (Panel A) and donor-headquarters-state aggregation (Panel B). Panel A contains 1,239 state-year observations. Mean nominal GDP growth is 0.0459 (4.59%), with a standard deviation of 0.0360 and a median of 0.0445. Its 25th and 75th percentiles are 0.0286 and 0.0624. The logarithmic donation measure (ldonations) has a mean of 8.2241, standard deviation of 3.2481, and median of 8.0517. Lagged nominal GDP growth averages 0.0461; population growth averages 0.0075; unemployment averages 5.2729; and labor-force growth averages 0.0070.

Panel B contains 1,036 observations, fewer than Panel A. Mean nominal GDP growth is 0.0451, with a standard deviation of 0.0333 and a median of 0.0436. The mean and median of ldonations are 6.6039 and 6.8778, respectively, with a standard deviation of 3.5171. Mean lagged GDP growth is 0.0453, population growth 0.0073, unemployment 5.3578, and labor-force growth 0.0068. These statistics show differences in the distribution of donations across geographic aggregation methods. The 75th-percentile entries in the manuscript's Panel B currently display “1,036” for every variable, duplicating the observation count; those entries require correction from the source data and are not interpreted here.

Correlation Analysis

Table 2 presents Pearson correlations above the diagonal and Spearman correlations below the diagonal for each aggregation. In Panel A, the Pearson correlation between nominal GDP growth and ldonations is 0.07 (significant at 5%), and the Spearman correlation is 0.11 (significant at 1%). In Panel B, the corresponding correlations are 0.04 (not significant) and 0.06 (significant at 10%). Thus, the univariate positive relationship is weaker under donor-state aggregation.

GDP growth is positively associated with lagged GDP growth in both panels: Pearson correlations are 0.26 and 0.27 and Spearman correlations are 0.37 and 0.36 for recipient and donor aggregation, respectively. GDP growth is negatively correlated with unemployment (Pearson: −0.41 and −0.43; Spearman: −0.41 and −0.42) and positively correlated with labor-force growth (Pearson: 0.39 and 0.40; Spearman: 0.39 and 0.38). Population growth and labor-force growth are positively correlated in both panels (Pearson: 0.53 and 0.51). These are unadjusted relationships and do not establish an independent association between giving and growth.

Corporate Charitable Donations and Economic Growth

Table 3 examines donation amounts, while Table 4 examines the number of donations. Both tables report four specifications: no fixed effects, state fixed effects, year fixed effects, and both state and year fixed effects. Industry controls are included throughout. The recipient-state regressions use 1,239 observations and the donor-state regressions use 1,036.

For donation amounts (Table 3, Panel A), the coefficients on ldonations are 0.0005 (t = 1.65), 0.0004 (t = 0.99), −0.0001 (t = −0.23), and 0.0001 (t = 0.16). None is statistically significant. Panel A R^2 increases from 24.35% in Model (1) to 64.92% in Model (4). In contrast, Table 3, Panel B reports positive coefficients of 0.0008 (t = 2.65), 0.0010 (t = 2.35), 0.0003 (t = 1.66), and 0.0003 (t = 1.06). These are significant at the 5%, 5%, and 10% levels in Models (1), (2), and (3), respectively, but not in the two-way fixed-effects Model (4). Donor-state R^2 ranges from 26.62% to 71.82%. Therefore, the absence of a significant relationship in the fully adjusted model holds for both aggregation methods, although the less restrictive donor-state specifications yield positive associations.

Table 4 evaluates donation counts. In Panel A, the coefficients are 0.0010 (t = 3.02), 0.0010 (t = 2.60), −0.0003 (t = −0.69), and −0.0001 (t = −0.19). The first two estimates are significant at the 1% level, but neither specification containing year fixed effects is significant. Panel A R^2 ranges from 24.72% to 64.92%. Panel B shows positive and statistically significant count coefficients in all four models: 0.0009 (t = 2.84), 0.0013 (t = 3.59), 0.0006 (t = 2.26), and 0.0009 (t = 2.57). The first two are significant at 1%, and the latter two at 5%. R^2 ranges from 26.67% to 72.02%. This is the clearest aggregate result that differs by geographic assignment: the count measure remains positively associated with nominal GDP growth in the donor-state two-way fixed-effects specification, but not in the recipient-state specification.

Across Tables 3 and 4, unemployment is negative and statistically significant in every model, and labor-force growth is positive and statistically significant throughout. Lagged GDP growth is generally positive and significant in specifications containing year fixed effects, whereas the population-growth coefficient changes sign or significance across fixed-effects structures. The increase in R^2 with year effects indicates that common time variation accounts for a substantial share of observed GDP-growth variation. The estimates are conditional associations, not evidence of causation.

Additional Analyses

Tables 5 through 7 examine heterogeneity by charitable purpose, geographic scope, and contribution form, with recipient-state results in Panel A and donor-state results in Panel B. Because these specifications include multiple donation measures simultaneously, their coefficients should be interpreted conditional on the other categories and the included economic controls.

Charitable Donation Categories

Table 5 disaggregates donations into eight charitable categories. In the recipient-state results (Panel A), environmental donations are positively associated with GDP growth in Models (1) and (2), with coefficients of 0.0008 (t = 3.74) and 0.0008 (t = 3.71), both significant at 1%. This relationship is not significant in Models (3) and (4), where the coefficients are 0.0001 (t = 0.44 and 0.35). Arts and Humanities donations are significant only in Model (4), with a coefficient of 0.0002 (t = 1.78), at the 10% level. Education is negative and significant at the 10% level in Model (3), with a coefficient of −0.0003 (t = −1.87). Other category estimates in Panel A do not reach conventional significance levels. Panel A R^2 ranges from 25.48% to 65.08%.

The donor-state results (Panel B) differ substantially. Arts and Humanities donations are positive and significant in Model (4), at 0.0003 (t = 2.03; 5%). Environmental donations are positive and significant in Models (1) and (2), both 0.0004 (t = 2.18 and 2.31; 5%), but not in Models (3) or (4). Education

donations are negative and significant at the 10% level in all four models (t = −1.86, −1.92, −1.67, and −1.74). Civic and Public Affairs is positive and significant at the 10% level in Model (3), at 0.0002 (t = 1.66). Social Services is positive and significant in Models (1), (2), and (4): 0.0005 (t = 1.84; 10%), 0.0006 (t = 2.78; 1%), and 0.0003 (t = 2.27; 5%). The remaining donor-state category coefficients are not statistically significant. Panel B R^2 ranges from 27.87% to 72.28%. These results indicate category-specific associations, but their direction and robustness depend on the geographic aggregation and fixed-effects specification.

Local versus National Corporate Donations

Table 6 distinguishes local from national donations. In Panel A, local donations have coefficients of 0.0003 (t = 2.94; 1%), 0.0006 (t = 4.37), 0.0001 (t = 0.58), and 0.0002 (t = 2.02; 5%). The Model (2) t statistic indicates a strong positive association, although its significance stars are omitted in the manuscript table. Local donations are therefore positively associated with GDP growth in Models (1), (2), and (4), but not Model (3). National donations are insignificant in all four recipient-state models, with t statistics of 0.59, −0.28, −1.22, and −1.34. Panel A R^2 ranges from 24.58% to 65.06%.

In Panel B, local donations are statistically significant only in Model (2), with a coefficient of 0.0005 (t = 1.71; 10%). The corresponding coefficients in Models (1), (3), and (4) are 0.0003 (t = 1.26), approximately zero (t = −0.04), and 0.0000 (t = 0.02), respectively. National donations are significant only in Model (2), at 0.0004 (t = 1.66; 10%); their other t statistics are 1.63, 1.48, and 1.42. Panel B R^2 ranges from 26.73% to 71.89%. The positive local-donation association in the recipient-state two-way fixed-effects model does not carry over to donor-state aggregation. Accordingly, the evidence does not support a uniformly stronger local association across geographic definitions.

Financial versus Nonfinancial Corporate Donations

Table 7 examines the form of contributions. In Panel A, financial donations are insignificant across all four models, with coefficients of 0.0003 (t = 1.11), 0.0003 (t = 0.95), −0.0001 (t = −0.23), and approximately zero (t = 0.17). Nonfinancial donations are positive and significant in Models (1) and (2), at 0.0007 (t = 4.08; 1%) and 0.0006 (t = 3.72; 1%), but not in Models (3) and (4), at 0.0001 (t = 1.08) and 0.0002 (t = 1.54). Panel A R^2 ranges from 25.05% to 64.95%.

Panel B instead shows significant positive associations for financial donations in Models (1), (2), and (3): 0.0004 (t = 1.69; 10%), 0.0006 (t = 2.05; 5%), and 0.0004 (t = 2.39; 5%). The Model (4) coefficient is 0.0003 (t = 1.29) and is not significant. Nonfinancial donations are significant in Models (1) and (2), both 0.0003 (t = 2.16 and 2.14; 5%), but not in Models (3) and (4), where the estimates are approximately −0.0001 (t = −0.61) and zero (t = −0.22). Panel B R^2 ranges from 26.72% to 71.83%. Thus, the financial-versus-nonfinancial patterns depend on aggregation and the inclusion of year effects; neither form is statistically significant in the fully adjusted Model (4) in either panel.

Taken together, the results demonstrate that the association between corporate charitable donations and nominal state GDP growth depends on how donations are measured and assigned geographically. Donation amounts are not significant in the recipient-state regressions and lose significance in the donor-state two-way fixed-effects model. Donation counts, by contrast, are positive and significant in all donor-state models, including the two-way fixed-effects specification, but lose significance after year effects are

introduced in recipient-state models. The disaggregated analyses show selective associations for environmental, arts and humanities, education, and social-services donations; local giving in recipient-state models; and financial and nonfinancial giving in selected specifications. No category or contribution-form result is uniformly significant across all specifications and both aggregation approaches. These patterns support a nuanced interpretation of heterogeneity rather than a general causal claim about the effect of corporate philanthropy on economic growth.

Robustness Analysis Using Real GDP Growth

To examine whether the association between corporate charitable donations and regional economic growth is sensitive to the measurement of economic activity, we reestimate the primary regression models using real GDP growth instead of nominal GDP growth. The untabulated results indicate that the association varies according to the geographic aggregation of donations. Under recipient-state aggregation, the coefficients on donation amounts are not statistically significant in any of the four specifications, with t statistics of −0.21, −1.33, 1.05, and 0.22, respectively. Similarly, the number of donations is not significantly associated with real GDP growth in any specification, with t statistics of 1.42, 0.69, 1.01, and −0.23. Under donor-state aggregation, however, donation amounts exhibit a positive association with real GDP growth in Model (3), which includes year fixed effects (coefficient = 0.0006; t = 3.08; p = 0.0022). This association is not statistically significant in Models (1), (2), or (4). The number of donations is also not statistically significant at the 5 percent level in any donor-state specification, although Model (3) approaches conventional significance (coefficient = 0.0005; t = 1.95; p = 0.0518). Overall, the real GDP results provide limited evidence of a positive association between corporate charitable giving and inflation-adjusted regional economic growth. The significant donor-state association for donation amounts in Model (3) does not persist after controlling for both state and year fixed effects.

Robustness Analysis Excluding the COVID-19 Year

To assess whether the findings are influenced by the extraordinary economic conditions associated with the COVID-19 pandemic, we reestimate the real GDP growth regressions after excluding 2020. This restriction reduces the sample from 1,239 to 1,188 observations under recipient-state aggregation and from 1,036 to 990 observations under donor-state aggregation. For recipient-state aggregation, the untabulated results suggest that donation amounts remain statistically insignificant across all four models, with t statistics of 0.73, 0.21, 1.07, and 0.13. In contrast, the number of donations is positively and significantly associated with real GDP growth in Models (1) and (2), with coefficients of 0.0013 in both specifications and t statistics of 5.81 and 5.35, respectively (both $p < 0.0001$). However, this association becomes statistically insignificant after introducing year fixed effects in Models (3) and (4). Under donor-state aggregation, donation amounts exhibit positive and statistically significant associations in Models (1), (2), and (3), with coefficients of 0.0006, 0.0005, and 0.0006 and corresponding t statistics of 2.43, 1.98, and 3.09, respectively. The association becomes insignificant in Model (4), which includes both state and year fixed effects (coefficient = 0.0003; t = 1.49). The number of donations is also positively associated with real GDP growth in donor-state Model (2) (coefficient = 0.0006; t = 2.05), with weaker evidence in Models (1) and (3), which are significant only at the 10 percent level. Overall, excluding 2020 reveals additional positive associations between corporate charitable giving and real GDP growth, particularly for donor-state aggregation. Nevertheless, none of the donation measures remains statistically

significant in the fully specified model incorporating both state and year fixed effects, suggesting that the results are sensitive to the fixed effects structure.

DISCUSSION AND FUTURE RESEARCH

DISCUSSION AND FUTURE RESEARCH

This study examines the association between corporate charitable giving and regional economic growth in the United States, contributing to the economic literature on the private provision of public goods, externalities, and regional development. The findings indicate that the relationship between corporate philanthropy and state-level economic performance depends on how charitable giving is measured, where donations are geographically assigned, and which dimensions of corporate giving are examined. Importantly, the evidence does not support a uniform positive association between the monetary value of corporate donations and regional GDP growth. Instead, the results reveal differences between donation amounts and donation counts, as well as between recipient-state and donor-headquarters-state aggregation.

The primary regression results demonstrate the importance of distinguishing the monetary value of donations from the frequency of charitable activity. When donations are aggregated according to recipient location, aggregate donation amounts are not statistically significantly associated with nominal GDP growth in any of the four specifications. Under donor-state aggregation, donation amounts exhibit positive associations in some model specification, but the relationship becomes statistically insignificant after incorporating both state and year fixed effects. These findings suggest that the conditional association between the monetary value of corporate philanthropy and regional economic growth is sensitive to geographic attribution and the treatment of unobserved state and time characteristics.

The results for donation counts differ substantially. Under recipient-state aggregation, the number of donations is positively and significantly associated with GDP growth in specifications without year fixed effects, but this association disappears when year effects are included. In contrast, under donor-state aggregation, donation counts remain positively and significantly associated with nominal GDP growth across all four specifications, including the two-way fixed effects model. This represents one of the study's most notable empirical findings. The distinction between donation counts and monetary values suggests that the frequency of corporate charitable engagement may capture aspects of corporate activity that are not reflected in aggregate contribution amounts. However, donation counts may also reflect the number and characteristics of reporting firms, disclosure practices, and the economic conditions of headquarters states. Consequently, the observed association should not be interpreted as evidence that increasing the number of corporate donations would necessarily increase regional economic growth.

These findings have implications for the economic interpretation of corporate philanthropy. Besley and Ghatak (2007) conceptualize corporate social responsibility within the theory of private provision of public goods, while Kitzmueller and Shimshack (2012) emphasize the economic incentives and market conditions underlying socially responsible corporate behavior. From this perspective, corporate donations may provide resources for activities that generate benefits beyond the donating firm. Nevertheless, the provision of charitable resources does not automatically translate into additional measured production. Donations may support activities that improve welfare, redistribute resources, or finance services whose benefits emerge over extended periods. The absence of a consistently significant association between

donation amounts and GDP growth is therefore not necessarily inconsistent with the existence of socially valuable corporate philanthropy.

The geographic aggregation results also contribute to the literature on regional economic development. Card et al. (2010) demonstrate that corporate headquarters are associated with the geographic distribution of charitable resources, highlighting the importance of corporate location in understanding local nonprofit funding. The present study extends this geographic perspective by distinguishing donations according to recipient location and donor headquarters. The differences between the two aggregation approaches suggest that charitable resources received within a state and philanthropic activities attributed to corporations headquartered in that state may capture different economic relationships. Recipient-state measures are more closely aligned with the destination of charitable resources, whereas donor-state measures may reflect the economic characteristics, organizational activities, and philanthropic engagement of corporations headquartered within a region.

The additional analyses provide evidence of heterogeneity across the geographic scope of charitable giving. Under recipient-state aggregation, local donations exhibit a positive and statistically significant association with nominal GDP growth in some model specification, including the specification incorporating both state and year fixed effects. National donations are not statistically significant in any recipient-state specification. However, this pattern is not replicated under donor-state aggregation, where local and national donations are statistically significant only in the state fixed effects specification and neither is significant in the fully adjusted model. These results suggest that the relationship between local charitable resources and regional economic activity depends on the geographic definition used in the analysis. They do not establish that local donations are consistently more economically consequential than national donations.

The findings also indicate that the charitable purpose of corporate contributions matters in selected specifications. Environmental donations exhibit positive associations with nominal GDP growth in models without year fixed effects under both recipient-state and donor-state aggregation, but these associations do not persist once year effects are included. Arts and Humanities donations are positively associated with GDP growth in the fully adjusted donor-state model and are marginally significant in the fully adjusted recipient-state model. Social Services donations exhibit positive associations in several donor-state specifications, including the two-way fixed effects model, while Education donations exhibit negative associations at marginal significance levels in selected specifications. These patterns suggest that charitable categories are not economically homogeneous. Nevertheless, the sensitivity of the estimates to geographic aggregation and fixed effects, together with the number of category-specific comparisons, warrants caution in interpreting individual statistically significant coefficients as evidence of distinct economic mechanisms.

The distinction between financial and nonfinancial contributions provides further evidence of heterogeneity. Under recipient-state aggregation, nonfinancial donations are positively associated with nominal GDP growth in Models (1) and (2), whereas financial donations are not statistically significant in any specification. Under donor-state aggregation, financial donations exhibit positive associations in Models (1), (2), and (3), while nonfinancial donations are significant in Models (1) and (2). Neither financial nor nonfinancial contributions remain statistically significant in the fully adjusted model under either geographic aggregation approach. These findings indicate that the apparent association between the form of corporate giving and regional economic performance is sensitive to the inclusion of year and state effects. Moreover, the valuation of nonfinancial contributions introduces additional measurement

uncertainty because donated goods, services, and employee time must often be assigned estimated monetary values rather than directly observed transaction prices.

The robustness analyses further qualify the main findings. Replacing nominal GDP growth with real GDP growth produces limited evidence of statistically significant associations between corporate charitable giving and inflation-adjusted regional economic performance. Under recipient-state aggregation, neither donation amounts nor donation counts are significant in any specification. Under donor-state aggregation, donation amounts are positively associated with real GDP growth in the year fixed effects model, but this association does not persist in the two-way fixed effects specification. Excluding 2020 from the real GDP analysis yields additional positive associations, particularly for donor-state donation amounts and recipient-state donation counts in less restrictive models. Nevertheless, none of the donation measures remains statistically significant in the fully adjusted models after excluding 2020. These results indicate that the conclusions depend partly on whether regional economic performance is measured in current dollars or inflation-adjusted terms and on the inclusion of extraordinary pandemic-period observations.

The contrast between nominal and real GDP growth is particularly important for interpreting the economic significance of the findings. Nominal GDP growth reflects changes in both output quantities and prices, whereas real GDP growth more directly captures changes in the volume of regional production. Accordingly, a positive association with nominal GDP growth does not necessarily imply an association with real productive expansion. The weaker findings in the real GDP specifications suggest that caution is warranted when interpreting nominal GDP associations as evidence of broader improvements in regional productive capacity. This distinction reinforces the importance of separating the economic value of charitable transfers from the production of goods and services recorded in national and regional accounts.

Several limitations should be considered when interpreting the results. First, corporate charitable giving is not randomly assigned across states or years. Economic conditions may influence firms' available resources for philanthropy, while corporate giving may respond to regional needs, economic disruptions, or strategic business considerations. Although state and year fixed effects account for time-invariant state characteristics and common annual shocks, they do not eliminate time-varying omitted variables, reverse causality, or other sources of endogeneity. The regression coefficients therefore represent conditional associations rather than causal effects.

Second, the construction of the corporate philanthropy dataset introduces potential measurement limitations. Corporate disclosures differ in completeness, reporting frequency, geographic specificity, and the level of detail provided about charitable activities. Donation counts may reflect differences in disclosure intensity as well as actual philanthropic engagement. Monetary donation measures may be influenced by unusually large contributions, while estimates of nonfinancial giving depend on valuation assumptions. These measurement issues may vary systematically across firms, industries, regions, and years, potentially influencing the observed associations.

Third, the state-year level of analysis may obscure more localized economic relationships. Corporate charitable activities frequently target communities, nonprofit organizations, or specific geographic areas that do not correspond precisely to state boundaries. Aggregating donations at the state level may therefore dilute associations that operate within metropolitan areas, counties, or smaller communities. Furthermore, assigning donations according to corporate headquarters may not identify the locations where philanthropic resources are ultimately used or where the economic benefits arise.

These limitations suggest several directions for future research. One priority is to examine the geographic transmission of charitable resources using county-level, metropolitan-area, or other substate data. More precise geographic matching could help distinguish the location of corporate decision-making from the location of charitable recipients and the communities benefiting from donated resources. This extension would be particularly valuable for investigating whether local philanthropy is associated with economic activity within recipient communities or whether potential benefits extend to neighboring regions.

Future studies should also examine the mechanisms connecting corporate philanthropy to economic outcomes. The literature on human capital and regional productivity suggests that education, knowledge, and community characteristics can generate economic spillovers (Glaeser & Gottlieb, 2009; Moretti, 2004a, 2004b). However, the present study does not directly identify these mechanisms. Subsequent research could examine employment, wages, business formation, educational attainment, health outcomes, nonprofit service provision, and regional productivity as intermediate outcomes. Such analyses could help determine whether the observed associations reflect productive spillovers, changes in the availability of public goods, corporate economic conditions, or other factors.

The timing of charitable activities also warrants further investigation. Donations supporting education, health, environmental improvements, and community infrastructure may generate benefits over multiple years rather than within the year in which the contribution is recorded. Distributed-lag models, cumulative donation measures, and analyses of longer-run regional outcomes could provide additional evidence about the timing and persistence of the relationships examined in this study.

Future research should place particular emphasis on identification strategies capable of addressing the endogenous allocation of corporate giving. Plausibly exogenous changes in corporate philanthropic resources, corporate headquarters relocations, or other institutional and economic shocks may offer opportunities to investigate causal relationships. Appropriate quasi-experimental designs would require careful assessment of identifying assumptions, including the possibility that such events directly affect regional economic activity through channels other than philanthropy.

Finally, research on corporate philanthropy should distinguish economic growth from broader social welfare. The System of National Accounts treats charitable transfers differently from the production of goods and services, and improvements in community well-being do not necessarily generate contemporaneous increases in measured GDP. Consequently, the absence of a statistically significant association with GDP growth should not be interpreted as evidence that charitable giving lacks social value. Future research integrating economic indicators with measures of education, health, environmental quality, community resilience, and social welfare could provide a more comprehensive understanding of the consequences of corporate philanthropy.

Overall, this study contributes to the economics of corporate social responsibility by showing that the association between corporate charitable giving and regional economic performance is heterogeneous rather than uniform. The most persistent primary result is the positive association between donation counts and nominal GDP growth under donor-state aggregation, including the two-way fixed effects specification. By contrast, donation amounts, charitable categories, geographic scope, and contribution forms exhibit associations that are generally more sensitive to model specification and geographic attribution. The findings underscore the importance of distinguishing the frequency, monetary value, location, and composition of corporate charitable activities when evaluating their relationship with regional economic development. They also highlight the need for further research to establish whether

and through which mechanisms corporate philanthropy contributes to measurable economic growth or generates benefits that extend beyond conventional measures of regional production.

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Table 1 - Descriptive Statistics

Panel A- Recipient-State Aggregation

Variable	N	Mean	STD	25P	50P	75%
Nom_GDP%	1239	0.0459	0.0360	0.0286	0.0445	0.0624
ldonations	1239	8.2241	3.2481	6.1312	8.0517	9.7605
Nom_GDP%$_{t-1}$	1239	0.0461	0.0360	0.0278	0.0440	0.0639
Population%	1239	0.0075	0.0070	0.0031	0.0065	0.0112
Unemployment%	1239	5.2729	1.9968	3.8273	4.8667	6.3000
Labor_force%	1239	0.0070	0.0121	0.0004	0.0069	0.0144

Panel B- Donor-State Aggregation

Variable	N	Mean	STD	25P	50P	75%
Nom_GDP%	1036	0.0451	0.0333	0.0284	0.0436	0.0605
ldonations	1036	6.6039	3.5171	3.9120	6.8778	8.8149
Nom_GDP%$_{t-1}$	1036	0.0453	0.0337	0.0281	0.0435	0.0610
Population%	1036	0.0073	0.0065	0.0030	0.0063	0.0107
Unemployment%	1036	5.3578	2.0642	3.8697	4.9417	6.4375
Labor_force%	1036	0.0068	0.0120	0.0002	0.0067	0.0143

Table 2 - Correlation Matrixes

Panel A: Recipient-State Aggregation

	Nom_GDP%	ldonations	Nom_GDP% $_{t-1}$	Population%	Unemployment%	Labor_force%
Nom_GDP%		0.07[b]	0.26[a]	0.15[a]	-0.41[a]	0.39[a]
ldonations	0.11[a]		0.10[a]	-0.18[a]	-0.12[a]	-0.09[a]
Nom_GDP%$_{t-1}$	0.37[a]	0.05[b]		0.23[a]	-0.43[a]	0.38[a]
Population%	0.18[a]	-0.20[a]	0.28[a]		-0.07[b]	0.53[a]
Unemployment%	-0.41[a]	-0.15[a]	-0.45[a]	-0.05[c]		-0.37[a]
Labor_force%	0.39[a]	0.01	0.43[a]	0.49[a]	-0.35[a]	

Panel B: Donor-State Aggregation

	Nom_GDP%	ldonations	Nom_GDP% $_{t-1}$	Population%	Unemployment%	Labor_force%
Nom_GDP%		0.04	0.27[a]	0.15[a]	-0.43[a]	0.40[a]
ldonations	0.06[c]		0.04	-0.19[a]	-0.01	-0.07[b]
Nom_GDP%$_{t-1}$	0.36[a]	0.03		0.25[a]	-0.47[a]	0.38[a]
Population%	0.16[a]	-0.20[a]	0.27[a]		-0.07[b]	0.51[a]
Unemployment%	-0.42[a]	0.04	-0.46[a]	-0.03		-0.38[a]
Labor_force%	0.38[a]	-0.02	0.40[a]	0.47[a]	-0.35[a]	

The upper-right corner shows the Pearson Correlation, and the lower-left corner shows the Spearman Correlation. Statistical significance is indicated by letter markers: “a” denotes significance at the 1 percent level, “b” at the 5 percent level, and “c” at the 10 percent level.

Table 3: Regression on the Association Between Corporate Charitable Donations Amount and Nominal GDP

Panel A: Recipient-State Aggregation

***DV*= Nom_GDP%**								
	Model (1)		**Model (2)**		**Model (3)**		**Model (4)**	
	Coeff.	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**
Intercept	0.0620***	9.99	0.0782***	10.74	0.0478***	10.00		
ldonations	0.0005	1.65	0.0004	0.99	-0.0001	-0.23	0.0001	0.16
Nom_GDP%$_{t-1}$	0.0302	1.25	0.0032	0.14	0.1207***	3.86	0.0904***	2.80
Population%	-0.1309	-0.72	-0.5243***	-2.70	0.4916***	3.59	0.1606	0.87
Unemployment%	-0.0055***	-11.94	-0.0071***	-11.41	-0.0024***	-3.80	-0.0042***	-3.16
Labor_force%	0.7780***	5.40	0.6619***	4.61	0.2917***	2.99	0.2511***	2.58
Industry	Included		Included		Included		Included	
R^2	24.35%		27.00%		63.79%		64.92%	
Fixed-Effect	No		State		Year		State & Year	
N	1,239		1,239		1,239		1,239	

Panel B: Donor-State Aggregation

***DV*= Nom_GDP%**								
	Model (1)		**Model (2)**		**Model (3)**		**Model (4)**	
	Coeff.	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**
Intercept	0.0560***	10.49	0.1202***	16.89	0.0412***	10.54		
ldonations	0.0008**	2.65	0.0010**	2.35	0.0003*	1.66	0.0003	1.06
Nom_GDP%$_{t-1}$	0.0093	0.30	-0.0192	-0.66	0.1151***	3.32	0.0789**	2.46
Population%	-0.0205	-0.11	-0.5657**	-2.05	0.6599***	4.48	0.3349	1.26
Unemployment%	-0.0053***	-11.19	-0.0067***	-12.66	-0.0024***	-3.80	-0.0043***	-3.52
Labor_force%	0.7701***	6.22	0.6394***	5.50	0.2187***	2.77	0.1598**	2.04
Industry	Included		Included		Included		Included	
R^2	26.62%		30.53%		69.86%		71.82%	
Fixed-Effect	No		State		Year		State & Year	
N	1,036		1,036		1,036		1,036	

*, **, *** represents significance level 10%, 5% and 1% respectively. Definitions of variables are in Appendix B.

Table 4: Regression on the Association Between the Number of Corporate Charitable Donations and Nominal GDP

Panel A: Recipient-State Aggregation

DV= Nom_GDP%								
	Model (1)		**Model (2)**		**Model (3)**		**Model (4)**	
	Coeff.	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**
Intercept	0.0594***	10.75	0.0745***	12.13	0.0479***	12.40		
ldonations	0.0010***	3.02	0.0010***	2.60	-0.0003	-0.69	-0.0001	-0.19
Nom_GDP%$_{t-1}$	0.0327	1.30	0.0048	0.20	0.1207***	3.87	0.0908***	2.82
Population%	-0.1095	-0.60	-0.4835**	-2.47	0.4880***	3.56	0.1592	0.87
Unemployment%	-0.0052***	-10.22	-0.0068***	-10.24	-0.0023***	-3.74	-0.0042***	-3.16
Labor_force%	0.7954***	5.56	0.6781***	4.74	0.2913***	3.04	0.2514***	2.60
Industry	Included		Included		Included		Included	
R^2	24.72%		27.36%		63.80%		64.92%	
Fixed-Effect	No		State		Year		State & Year	
N	1,239		1,239		1,239		1,239	

Panel B: Donor-State Aggregation

DV= Nom_GDP%								
	Model (1)		**Model (2)**		**Model (3)**		**Model (4)**	
	Coeff.	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**
Intercept	0.0624***	19.53	0.1234***	29.28	0.0437***	12.60		
ldonations	0.0009***	2.84	0.0013***	3.59	0.0006**	2.26	0.0009**	2.57
Nom_GDP%$_{t-1}$	0.0121	0.38	-0.0182	-0.61	0.1168***	3.38	0.0799**	2.52
Population%	-0.0276	-0.15	-0.6227**	-2.27	0.6786***	4.52	0.3409	1.30
Unemployment%	-0.0052***	-10.85	-0.0066***	-12.62	-0.0024***	-3.76	-0.0040***	-3.36
Labor_force%	0.7663***	6.29	0.6354***	5.55	0.2146***	2.75	0.1553**	1.98
Industry	Included		Included		Included		Included	
R^2	26.67%		30.87%		69.97%		72.02%	
Fixed-Effect	No		State		Year		State & Year	
N	1,036		1,036		1,036		1,036	

*, **, *** represents significance level 10%, 5% and 1% respectively. Definitions of variables are in Appendix B.

Table 5: Regression on the Association Between Corporate Charitable Donations by Categories and Economic Growth

Panel A: Recipient-State Aggregation

***DV*= Nom_GDP%**								
	Model (1)		**Model (2)**		**Model (3)**		**Model (4)**	
	Coeff.	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**
Intercept	0.0674***	13.77	0.0815***	15.60	0.0492***	12.14		
Arts_Humanities	0.0002	1.32	0.0002	1.15	0.0002	1.64	0.0002*	1.78
Civic_Public_Affairs	0.0001	0.48	0.0000	0.06	-0.0001	-0.88	-0.0002	-1.06
Education	-0.0001	-0.61	-0.0000	-0.07	-0.0003*	-1.87	-0.0002	-1.01
Environment	0.0008***	3.74	0.0008***	3.71	0.0001	0.44	0.0001	0.35
Health	-0.0001	-0.51	0.0000	0.01	0.0001	0.37	0.0001	0.56
Religion	0.0000	0.13	0.0001	0.36	-0.0001	-0.71	-0.0001	-0.88
Science	-0.0001	-0.26	0.0001	0.28	0.0002	0.75	0.0002	0.84
Social_Services	0.0001	0.30	0.0000	0.11	-0.0001	-0.78	-0.0002	-0.83
Nom_GDP%$_{t-1}$	0.0293	1.23	-0.0005	-0.02	0.1256***	4.06	0.0956***	2.98
Population%	-0.0990	-0.54	-0.5092***	-2.67	0.4904***	3.51	0.1644	0.90
Unemployment%	-0.0057***	-11.99	-0.0072***	-11.50	-0.0023***	-3.59	-0.0042***	-3.19
Labor_force%	0.7664***	5.33	0.6524***	4.63	0.2956***	3.00	0.2567***	2.60
Industry	Included		Included		Included		Included	
R^2	25.48%		28.25%		63.95%		65.08%	
Fixed-Effect	No		State		Year		State & Year	
N	1,239		1,239		1,239		1,239	

Panel B: Donor-State Aggregation

***DV*= Nom_GDP%**								
	Model (1)		**Model (2)**		**Model (3)**		**Model (4)**	
	Coeff.	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**
Intercept	0.0623***	16.77	0.1212***	27.47	0.0434***	12.87		
Arts_Humanities	-0.0000	-0.10	0.0002	0.67	0.0002	1.39	0.0003**	2.03
Civic_Public_Affairs	0.0003	1.45	0.0002	0.98	0.0002*	1.66	0.0002	1.15
Education	-0.0004*	-1.86	-0.0005*	-1.92	-0.0002*	-1.67	-0.0002*	-1.74
Environment	0.0004**	2.18	0.0004**	2.31	-0.0001	-0.72	-0.0001	-0.40
Health	0.0002	0.95	0.0003	1.34	0.0001	0.62	0.0002	1.37

Religion	-0.0003	-1.54	-0.0002	-1.20	-0.0001	-0.99	-0.0001	-0.66
Science	0.0001	0.50	0.0002	0.69	-0.0001	-0.53	-0.0001	-0.58
Social_Services	0.0005*	1.84	0.0006***	2.78	0.0002	1.33	0.0003**	2.27
Nom_GDP%$_{t-1}$	0.0070	0.23	-0.0204	-0.70	0.1131***	3.21	0.0769**	2.43
Population%	0.0087	0.04	-0.5683**	-2.08	0.6790***	4.50	0.3093	1.20
Unemployment%	-0.0054***	-11.44	-0.0067***	-12.23	-0.0024***	-3.67	-0.0041***	-3.36
Labor_force%	0.7774***	6.22	0.6462***	5.51	0.2078***	2.68	0.1474*	1.88
Industry	Included		Included		Included		Included	
R^2	27.87%		32.21%		70.17%		72.28%	
Fixed-Effect	No		State		Year		State & Year	
N	1,036		1,036		1,036		1,036	

*, **, *** represents significance level 10%, 5% and 1% respectively. Definitions of variables are in Appendix B.

Table 6: Regression on the Association Between Local vs National Corporate Charitable Donations and Economic Growth

Panel A: Recipient-State Aggregation

***DV*= Nom_GDP%**								
	Model (1)		**Model (2)**		**Model (3)**		**Model (4)**	
	Coeff.	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**
Intercept	0.0646	12.98	0.0830	13.86	0.0489	13.27		
Local	0.0003***	2.94	0.0006***	4.37	0.0001	0.58	0.0002**	2.02
National	0.0001	0.59	-0.0001	-0.28	-0.0003	-1.22	-0.0003	-1.34
Nom_GDP%$_{t-1}$	0.0323	1.32	0.0039	0.17	0.1225	3.91	0.0937***	2.91
Population%	-0.1167	-0.64	-0.5525***	-2.89	0.4960***	3.63	0.1538	0.86
Unemployment%	-0.0055	-11.80	-0.0071	-11.50	-0.0023***	-3.53	-0.0040***	-3.00
Labor_force%	0.7742	5.38	0.6506	4.59	0.2941***	3.00	0.2479**	2.55
Industry	Included		Included		Included		Included	
R^2	24.58%		27.68%		63.83%		65.06%	
Fixed-Effect	No		State		Year		State & Year	
N	1,239		1,239		1,239		1,239	

Panel B: Donor-State Aggregation

***DV*= Nom_GDP%**								
	Model (1)		**Model (2)**		**Model (3)**		**Model (4)**	
	Coeff.	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**
Intercept	0.0593***	13.77	0.1213***	19.71	0.0436***	11.80		
Local	0.0003	1.26	0.0005*	1.71	-0.0000	-0.04	0.0000	0.02
National	0.0003	1.63	0.0004*	1.66	0.0002	1.48	0.0003	1.42
Nom_GDP%$_{t-1}$	0.0073	0.23	-0.0224	-0.76	0.1136***	3.35	0.0769**	2.48
Population%	-0.0088	-0.05	-0.5384**	-1.99	0.6627***	4.59	0.3480	1.35
Unemployment%	-0.0052***	-11.24	-0.0066***	-12.66	-0.0024***	-3.74	-0.0042***	-3.47
Labor_force%	0.7691***	6.21	0.6384***	5.48	0.2235***	2.83	0.1660**	2.09
Industry	Included		Included		Included		Included	
R^2	26.73%		30.69%		69.92%		71.89%	
Fixed-Effect	No		State		Year		State & Year	
N	1,036		1,036		1,036		1,036	

*, **, *** represents significance level 10%, 5% and 1% respectively. Definitions of variables are in Appendix B.

Table 7: Regression on the Association Between Financial vs. Nonfinancial Corporate Charitable Donations and Economic Growth

Panel A: Recipient-State Aggregation

DV= Nom_GDP%								
	Model (1)		**Model (2)**		**Model (3)**		**Model (4)**	
	Coeff.	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**
Intercept	0.0624***	12.17	0.0774***	13.11	0.0473***	11.24		
Financial	0.0003	1.11	0.0003	0.95	-0.0001	-0.23	0.0000	0.17
NonFinancial	0.0007***	4.08	0.0006***	3.72	0.0001	1.08	0.0002	1.54
Nom_GDP%$_{t-1}$	0.0351	1.42	0.0088	0.37	0.1206***	3.85	0.0910***	2.83
Population%	-0.1051	-0.58	-0.4639**	-2.35	0.4880***	3.61	0.1524	0.84
Unemployment%	-0.0054***	-11.69	-0.0068***	-10.63	-0.0024***	-3.83	-0.0042***	-3.16
Labor_force%	0.7799***	5.43	0.6751***	4.68	0.2937***	3.02	0.2548***	2.62
Industry	Included		Included		Included		Included	
R^2	25.05%		27.53%		63.81%		64.95%	
Fixed-Effect	No		State		Year		State & Year	
N	1,239		1,239		1,239		1,239	

Panel B: Donor-State Aggregation

DV= Nom_GDP%								
	Model (1)		**Model (2)**		**Model (3)**		**Model (4)**	
	Coeff.	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**	**Coeff.**	**T Value**
Intercept	0.0600***	14.40	0.1248***	22.76	0.0416***	11.56		
Financial	0.0004*	1.69*	0.0006**	2.05	0.0004**	2.39	0.0003	1.29
NonFinancial	0.0003**	2.16	0.0003**	2.14	-0.0001	-0.61	-0.0000	-0.22
Nom_GDP%$_{t-1}$	0.0120	0.38	-0.0161	-0.54	0.1167***	3.37	0.0803**	2.51
Population%	-0.0065	-0.03	-0.5414*	-1.91	0.6610***	4.50	0.3346	1.23
Unemployment%	-0.0053***	-10.99	-0.0067***	-12.37	-0.0023***	-3.70	-0.0042***	-3.46
Labor_force%	0.7746***	6.27	0.6474***	5.55	0.2189***	2.77	0.1607**	2.04
Industry	Included		Included		Included		Included	
R^2	26.72%		30.63%		69.92%		71.83%	
Fixed-Effect	No		State		Year		State & Year	
N	1,036		1,036		1,036		1,036	

*, **, *** represents significance level 10%, 5% and 1% respectively. Definitions of variables are in Appendix B.