Firm Location and Corporate Payout Policy: Evidence from the Global Financial Crisis and the COVID-19 Era

Miguel Ângelo Carvalho de Pinho Cunha

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Professor Jörg Stahl

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Abstract

The relation between firm location and corporate payout policies remains underexplored and is relevant as it severely impacts corporate governance. Building on the methodology of John et al. (2011), I utilise an expanded sample period (Jan. 1992 – Dec. 2023) with 6,260 unique firms incorporated in the United States to test this relation across three different periods: the full sample period, the Global Financial Crisis and the COVID-19 pandemic. As dividends are commonly used as a commitment mechanism to shareholders, they take special importance throughout the study. For the full sample, I discover that firms remotely located continue distributing higher dividends to address agency conflicts. During the Global Financial Crisis, the influence of geographic remoteness on dividend payouts remains stable but during the COVID-19 pandemic, the effect of geographic location on dividend policies not only diminish but invert completely as centrally located firms increase their dividend payouts more aggressively during this period. Overall, this study finds that firm location still greatly impacts corporate dividend policies while also suggesting that this relation can be impacted not only by firm-specific governance factors but also by macroeconomic circumstances, adding a relevant perspective to the topic's literature.

Author: Miguel Ângelo Carvalho de Pinho Cunha

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Resumo

A relação entre a localização da empresa e as políticas de remuneração ao acionista desta continua a ser pouco explorada e é relevante, uma vez que tem um impacto expressivo na governação empresarial. Com base na metodologia de John et al. (2011), utilizo um período de amostra alargado (Jan. 1992 - Dez. 2023) com 6,260 empresas únicas constituídas nos Estados Unidos para testar esta relação em três períodos diferentes: o período total da amostra, a crise financeira global e a pandemia de COVID-19. Uma vez que os dividendos são normalmente utilizados como um mecanismo de compromisso para com os acionistas, assumem especial importância ao longo do estudo. Para toda a amostra, concluo que as empresas localizadas remotamente continuam a distribuir dividendos mais elevados para resolver os conflitos de agência. Durante a crise financeira mundial, a influência do afastamento geográfico na distribuição de dividendos mantém-se estável, mas durante a pandemia de COVID-19, o efeito da localização geográfica nas políticas de dividendos não só diminui como se inverte completamente, uma vez que as empresas localizadas no centro da cidade aumentam a distribuição de dividendos de forma mais agressiva durante este período. De um modo geral, este estudo conclui que a localização das empresas continua a ter um grande impacto nas políticas de dividendos das empresas, sugerindo também que esta relação pode ser afetada não só por fatores de governação específicos da empresa, mas também por circunstâncias macroeconómicas, acrescentando uma perspetiva relevante à literatura sobre o tema.

Autor: Miguel Ângelo Carvalho de Pinho Cunha

Título: Localização da Empresa e Política de Remuneração ao Acionista: Evidências da Crise Financeira Global e da era de COVID-19

Palavras-chave: Dividendos; Política de Remuneração ao Acionista; Localização da Empresa; Geografia; Crise Financeira Global; COVID-19

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List of Abbreviations

CARES - Coronavirus Aid, Relief, and Economic Security Act

CBSA - Core-Based Statistical Area

CMSA - Consolidated Metropolitan Statistical Area

CSA - Combined Statistical Area

GFC - Global Financial Crisis

OLS - Ordinary Least Squares

PHEIC - Public Health Emergency of International Concern

PMSA - Primary Metropolitan Statistical Area

SIC - Standard Industrial Classification

TARP - Troubled Asset Relief Program

U.S. - United States

WHO - World Health Organization

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1. Introduction

Corporate finance literature has become increasingly interested in explaining the determinants of firms' financial policies, including their dividend distribution policies. Dividends have two especially important functions as they can be a means to mitigate agency issues between managers and shareholders, and they also can represent a signal of a certain level of financial stability to investors. Traditional agency theory defends that companies with high free cash flow and limited investment opportunities use dividends as a mechanism to discipline management and reduce the risk of inefficient capital allocation (Jensen, 1986). Recent research has expanded on this classical approach by investigating how a firm's location can affect its dividend policies and, thus, influence investor oversight and governance mechanisms.

The study by John et al. (2011) explained the still underexplored relationship between a company's geographical location and its corporate dividend policies, highlighting that companies located in remote areas pay higher dividends than companies located in major financial centres. This evidence can be explained by the increased difficulty investors face in trying to monitor firms located far from financial centres, forcing such firms to use dividends to mitigate agency conflicts. Geographic remoteness increases shareholder monitoring costs and reduces direct supervision, thus making dividend payments an essential governance tool. They confirm that the relationship is strong in firms with high free cash flow and limited investment opportunities where the potential for managerial discretion is most significant, as the classical theory defends.

Recognition of the geography in corporate policy is also made more urgent by unprecedented economic shocks. The Global Financial Crisis (GFC) and the COVID-19 pandemic have been responsible for altering the financial landscape as both crises brought unique financial constraints and challenges that possibly influenced the level at which companies behaved in dividend distribution practices.

The collapse of the subprime mortgage market originated the GFC, causing liquidity issues across the board and exacerbating financial uncertainty. When confronted by this shock, many companies chose to reduce or suspend dividend payouts in an attempt to maintain cash reserves (Floyd et al., 2015). Evidence indicates that companies with a strong dividend payment history showed stronger reluctance to curtail payouts, thus supporting the perception that payouts signal financial strength (Lee et al., 2013). However, companies facing more financial distress,

especially those constrained with high leverage, were among the first to cut dividends to preserve liquidity (Hauser, 2013). Such effects were definitely magnified in distant companies, which usually face tighter capital constraints and rely much more heavily on payouts as a mechanism of corporate governance under normal operating conditions. The pandemic caused a unique type of interruption both in the financial and operational areas. Differently from the credit markets' driven breakdown of GFC, the pandemic caused operational lockdowns and supply chain disruptions. Companies in various industries adjusted their dividend policies with some reducing their dividends to maintain liquidity (Krieger et al., 2021), while others with strong cash reserves either maintained or increased distributions to reassure stakeholders (Ali, 2022). Empirical data supports the claim that companies with high financial flexibility underwent through the pandemic better since companies with large cash reserves and low debt levels saw much less sharp stock price declines (Fahlenbrach et al., 2021).

Building on the work of John et al. (2011), the current study expands on the approach used by the authors while extending the time frame of the data to cover the period from 1992 to 2023. Thus, this study questions whether the firm location-dividend relationship has been consistent over this larger period and whether the mentioned crises have impacted it. Methodologically, this study follows a two-stage strategy. First, it replicates the results of John et al. (2011) for the initial sample period of 1992 to 2006 to check consistency. Then, it extends the analysis from 1992 to 2023, adding dummy variables for crisis periods to check if payout behaviours showed differences during the financial crisis and the COVID-19 pandemic. I utilize univariate tests and Ordinary Least Squares (OLS) regressions to evaluate whether geographic determinants of corporate payout choices are consistent over time or undergo relevant changes in the presence of economic disruptions.

The structure of this dissertation is as follows: Section 2 presents a literature review focused on geography, corporate governance and dividend policies. Section 3 outlines the data and methodological approach. Section 4 presents the main results from the interaction between a firm's location and corporate dividend policies during normal periods and economic shocks. Section 5 provides relevant limitations notes, followed by Section 6 with the conclusion of this study.

2. Literature Review

2.1. Geography, Corporate Governance, and Payout Policies

The relationship between firm location and corporate dividend policies has been gaining increased attention in the corporate finance world as new studies have emerged in recent years, suggesting that remoteness plays a significant part in payout decisions as a mechanism for reducing agency costs. The pioneer work by John et al. (2011) is one of the examples that brought attention to this topic as they identify that remotely located firms, on average, distribute more dividends compared to centrally-located firms and use regular dividend payouts to mitigate agency costs, being even more common in companies with high free cash flow and limited investment and growth opportunities.

An essential factor in this relationship is the notion of agency costs, which is a concept introduced by Jensen and Meckling (1976) where they explain how conflicts arise between managers and shareholders and divide these agency costs between monitoring costs, bonding costs, and residual loss. Jensen (1986) later expands on these studies by arguing that firms with high free cash flow and limited investment opportunities face an increased risk of managerial overinvestment, leading to value destruction. A monitoring mechanism for these issues is dividends, as Easterbrook (1984) observes that firms are subjected to external capital market scrutiny when they are seeking external financing. Myers (2000) also emphasises that firms use dividends as a commitment mechanism to build credibility with investors and reduce agency concerns, which are even more common when managerial actions are more difficult to observe.

Geographical locations can impose a barrier to observing the referred actions and several literature has studied its importance in corporate decision making. Venture capitalists seem to be more involved in the governance of firms located nearby due to the lower cost of oversight (Lerner, 1995) and institutional investors also have a preference for companies headquartered nearby with even more interest in those that are smaller and more leveraged, and produce non-traded goods (Coval & Moskowitz, 1999) leading to a reduction in the need for dividends as a governance tool for these companies, which is expected to not be the case for remote firms as they need to compensate this lack of accessibility. Location can also affect investment decisions as Almazan et al. (2011) discover that firms in industry clusters prefer to conserve cash to be more competitive in strategic acquisitions rather than distribute dividends.

Urban or central firms have easier access in terms of financing when compared to remote companies due to information asymmetries. Loughran and Schultz (2005) defend that information flows more efficiently in urban environments leading to greater liquidity, and higher institutional ownership which makes equity financing easier for urban firms, reducing their reliance on dividends when compared to remote firms. The local ownership hypothesis aligns with this argument as it suggests that investors who are geographically close to firms have better access to private information while also enjoying superior returns in firms' acquisitions (Gaspar & Massa, 2007). Within the same rationale, Gao et al. (2011) also notice that the corporate headquarters location significantly impacts the capital structure largely due to local peer effects. These findings suggest that noneconomic factors also influence corporate financial policies in a geographically clustered manner.

Firms pay close attention to their surroundings when designing dividend policy strategies. According to Becker et al. (2011), companies make their payout policies conform to the type of local investors, especially those with a pronounced preference for stable dividend payouts in areas with high demand for dividend payment. Leary and Michaely (2011) state that companies that have stable investor bases tend to have a higher propensity to follow stable dividend policies with high dividend smoothing tendencies. According to their findings, companies that have high agency costs due to free cash flow tensions between management and outside shareholders have more stringent dividend smoothing policies. Such companies tend to be cash cows with low growth opportunities and poorer governance structures.

Following the above literature analysis, I formulate the following hypotheses to understand if the findings from John et al. (2011) still prevail for a longer period and the natural evolution of geography, corporate governance and dividend policies.

H1: For the full sample, firms remotely located continue distributing higher dividends to address agency conflicts.

2.2.The Global Financial Crisis Impact on Corporate Dividend Policies

The subprime mortgage market was a huge shock and originated the Global Financial Crisis, also known as the 2008 Financial Crisis, which had several implications for corporate financial policies, particularly dividend payouts. Factors such as geographical location and access to capital affected firms differently as this crisis disrupted financial markets. This subsection explores the impact of the GFC on dividend policies in different types of firms and contexts.

The GFC introduced uncertainty and liquidity constraints, leading some firms to reduce or suspend dividends in an attempt to preserve cash, while others maintained or increased dividends to signal financial stability. Despite the companies' need to reassess their dividend policies, Floyd et al. (2015) document that share repurchases declined significantly while dividends remained relatively stable and firms with a strong dividend history were more reluctant to cut payouts, reinforcing dividends as a signalling mechanism to shareholders. Lee et al. (2013) discover that financially stable firms were more likely to maintain or increase dividend payouts before as well as after the crisis. Following a similar trend, Cziraki et al. (2024) defend that, despite the financial crisis originating in the banking sector, many financial institutions initially maintained dividend payouts through 2008, even as share prices declined due to concerns over negative market signalling. However, by 2009, increasing regulatory scrutiny pressured banks to adjust their payout policies as increased capital requirements forced reductions in dividends to stabilize the financial system. Their findings further indicate that banks receiving government support under the Troubled Asset Relief Program (TARP) were significantly more likely to cut dividends post-2009, as regulators imposed stricter capital preservation measures. According to the United States (U.S.) Department of Treasury, the TARP program was "created to implement programs to stabilize the financial system during the financial crisis of 2008", providing aid to several industries including financial and non-financial companies.

Another view is presented by Hauser (2013), who argues that companies became more reluctant to pay dividends even after adjusting for their financial health, even more for those which had high pre-crisis leverage as these were the first to cut down on dividend payments. Hauser (2013) further identifies that companies with high institutional ownership were likely to continue paying dividends since such investors favoured stable income streams. Duchin et al. (2010) reach the same conclusion that firms with low internal financial resources, such as low cash holdings, experienced significant declines in investment because this effect was more severe to financially constrained firms and also to those industries that depended on a large extent on external finance. Using a sample of 1050 U.S., European, and Asian non-financial companies, Campello et al. (2010) show that companies with poorer access to capital markets were more affected by the liquidity shock and had to cut or suspend dividends.

The above literature showcases the importance of the pre-crisis stability of firms and concerns regarding negative market signalling when addressing dividend policies in times of major uncertainty. The following hypothesis is formulated based on the curiosity of understanding

how remoteness could be a factor during the GFC in terms of dividend policies and might have weakened when compared to the extended sample as other factors weigh more in the "equation".

H2: During the global financial crisis, the influence of geographic remoteness on dividend payouts weakens.

2.3. The COVID-19 Pandemic Impact on Corporate Dividend Policies

The COVID-19 pandemic brought a completely different scenario from the global financial crisis. The pandemic resulted in government-imposed lockdowns leading to several supply chain disruptions and shifts in consumer demand, initially affecting firms' operational side the most, while the global financial crisis was primarily a liquidity-driven collapse of financial institutions. Following a similar purpose to the previous subsection focused on the GFC, I expand here literature findings regarding the pandemic, despite its recency.

Firms across several industries reacted to the crisis by reducing or suspending dividends to conserve cash (Krieger et al., 2021). However, some firms in the G-12 countries decreased dividends while others with strong cash reserves and low leverage maintained payouts to reassure investors (Ali, 2022), aligning with the research by Fahlenbrach et al. (2021) who argue that firms with higher cash holdings were better positioned to endure the financial shocks caused by the pandemic and that firms with high financial flexibility experienced a stock price drop that was 26% lower than those with low financial flexibility. Internationally, by utilizing information from more than 6,700 firms in 61 economies, including the U.S., Ding et al. (2021) discovered that firms with stronger financial conditions were also more resilient to the pandemic-induced revenue shocks while also markets perceiving the companies with more cash, less debt, and more profitability as more resilient during the crisis. This likely helped sustain financial flexibility, including dividend payments.

Mazur et al. (2023) find that most firms in the S&P 1500 either maintained or increased dividends with only 6% reducing them, a rate comparable to non-crisis periods, while 31% increased them. They also notice that firms significantly impacted by the pandemic maintained higher dividend payouts relative to net earnings than unaffected firms while share repurchases were reduced to preserve liquidity before cutting dividends, showing a pattern consistent with prior research focused on the financial crisis suggesting that dividends serve as a stronger commitment mechanism to shareholders when compared to repurchases (Floyd et al., 2015).

In March 2020, the United States Congress approved the Coronavirus Aid, Relief, and Economic Security (CARES) Act with the purpose of providing liquidity support to struggling businesses affected by the pandemic. According to the U.S. Senate Committee on Banking, Housing and Urban Affairs, depending on the type of CARES program they integrate, there would be restrictions of not paying common stock dividends or making repurchases "until 12 months after the loan is no longer outstanding". This certainly caused an impact on corporate payout policies in the short medium term for companies that benefited from this measure. Other payout limitations were also imposed on firms benefiting from government programs during the GFC as part of the TARP, where, for example, banks receiving federal funds were required to restrict dividends to preserve capital (Cziraki et al., 2024).

All these findings attempt to provide clarity on how firms' dividend policies were affected by the unexpected pandemic. Again, firms' financial health before the pandemic dictates how they react as healthy firms have the ability to maintain or increase their payout policies as a signal to the market. Impacted firms also try to signal stability through dividends but still reduce their overall payouts. Following these interesting conclusions, I hypothesize the hypothesis below in an attempt to capture an offset to the standard relation between firm location and corporate payout policies.

H3: During the COVID-19 pandemic, the effect of geographic location on dividend policies diminishes.

3. Data and Methodology

3.1. Sample selection and data collection

This study builds upon the methodological framework established by John et al. (2011) as they explore the relation between geographic location and corporate payout policies. Despite the challenges in the replication process, which are further explained in the limitations section, I adapt and expand the methodology to replicate important results and extend the analysis across a broader timeframe. The data and methodology are not separate at all in this study as throughout this process, new small steps and databases were computed and extracted, respectively, with this being the reasoning behind a more unified structure in this section. Different subsections will be explained in detail in terms of data and methodology as the section progresses.

I start the sample construction by including the full CRSP/Compustat Merged - Fundamentals Annual database, while only excluding firms in financial and regulated utilities industries (Standard Industrial Classification (SIC) codes 6000–6999 and 4900–4999), firms incorporated outside the US, and firms considered small with assets below $20 million as these possibly don't follow stable dividend policies.

The John et al. (2011) study covers a sample period from 1992 to 2006, while this study extends the sample period, covering the period between 1992 and 2023, to review the corporate dividend policy and firm location relationship over an extended period and its response to major economic events like the GFC and the COVID-19 pandemic.

The GFC is characterized by increased financial constraints and severe liquidity problems is a period defined in this study as between 2007 and 2009 as it is generally believed that, in common sense, its first effects or signs started in 2007, impacting the world the most in 2008, then being followed by its official end in 2009, though its effects still lasted for some additional years due to its magnitude. There isn't a common agreement between multiple sources on the exact month of the crisis beginning and the exact month of the crisis ending as the Reserve Bank of Australia defines it between mid-2007 and early 2009, and the American Federal Reserve History defines it between December 2007 and June 2009. As for the pandemic, according to the World Health Organization (WHO) official website, the WHO declared the COVID-19 outbreak a Public Health Emergency of International Concern (PHEIC) on 30th

January 2020, which later described as a pandemic on 11th March 2020. On 5th May 2023, the WHO Emergency Committee on COVID-19 declared that the illness didn't fit the definition of a PHEIC anymore. The sample period for the pandemic is then assumed to be the years between 2020 and 2023 which allows an analysis of how remote work, increased costs of monitoring, and other disruptions caused by the pandemic may have impacted corporate governance and payout policies.

Before analysing and computing this study's extended period (1992-2023), I recreated the original sample period to ensure consistency and similar outcomes for the same period (1992-2006). The results obtained for this recreation period are identical to the ones presented in the work by John et al., leading to the methodological framework and data being trusted as the foundation to develop the extended period of this study. Regarding the total number of observations, it was possible to observe that, as I went through data processing, my number was quite larger when compared to the John et al. (2011) paper observations for the same period, probably because their study included only firms that had CEO Ownership and compensation data, which I do not include due to not having access to those databases.

The preliminary dataset, before being cleaned, had 106,165 observations and 11,325 unique firms. This led to a final dataset for the full period after cleaning of 53,437 observations and 6,260 unique firms. All the steps described in this Data and Methodology are done in Python to ensure a more complete dataset integration and computation of complex variables.

3.2. Variables Process

At first, the variables related to firm-level characteristics and payout were computed, following John et al. (2011) methodology, as these were directly available from Compustat/CRSP, and then winsorized at 1% to ensure no major outliers were included. These variables are described in detail in Appendix A.1.

Following this step, the most challenging part of the process was to compute correctly the variables related to geographical measures, as described below, while utilizing varied databases and methodologies following the referred paper's methodology.

A Central Location variable is created to capture the geographical location effect. In the work by John et al. (2011), they follow the methodology of Loughran and Schultz (2005) where firms are defined as being centrally located if their headquarters are located in one of the top ten

Consolidated Metropolitan Statistical Areas (CMSAs) by population according to the 2000 Census, which poses a limitation in the computation of this variable for the extended sample. This limitation comes from the fact that the definition of CMSAs was discontinued on February 18th, 2004, as the 2000 standards imposed that the terms, utilized in the 1980's and 1990's standards, CMSAs and Primary Metropolitan Statistical Area (PMSA) were now "obsolete", as per the Office of Management and Budget (OMB)' Bulletin No. 04-03. OMB then introduced the concept of Combined Statistical Areas (CSAs) and Core-Based Statistical Areas (CBSAs). According to the Obama White House Archives, "Users making comparisons with areas defined under the 1990 standards should note that when the 2000 standards were applied, the result, in some cases, was to create several areas from an existing Metropolitan Statistical Area (MSA). The resulting reconfigured areas may also qualify under the 2000 standards to form a complementary CSA, while retaining their separate designations as Metropolitan or Micropolitan Statistical Areas. In these situations, the CSA may be the approximate geographic equivalent of the previous MSA, and thus may be the more appropriate geographic unit for analytic and program purposes." which is the basis for the fact that I choose to use the top 10 CSAs from the Census 2000 for the replication of the sample period until 2006, to keep consistency and comparability, and then I utilize for the full sample period the top-ten CSAs from the Census 2020, as all of the CSAs in the top-ten would actually be considered a CMSA in the previous standards. The accurate definition of the CSAs is crucial for the validity of this study as other geographic variables are computed based on CSAs as well. The reader can find the definition of the statistical terms referred to in this paragraph, such as CMSA or CSA, in Appendix A.2.

With access to the Comprehensive version of SimpleMaps's United States Cities Database, I was able to accurately have access to the respective CSAs of each city in the US as defined in the database. The utilized CSAs for the extended sample based on Census 2020 are the following: Atlanta-Athens-Clarke County-Sandy Springs, GA-AL, Houston-Pasadena, TX; Philadelphia-Reading-Camden, PA-NJ-DE-MD; Dallas-Fort Worth, TX-OK; Boston-Worcester-Providence, MA-RI-NH; San Jose-San Francisco-Oakland, CA; Chicago-Naperville, IL-IN-WI; Washington-Baltimore-Arlington, DC-MD-VA-WV-PA; Los Angeles-Long Beach, CA; New York-Newark, NY-NJ-CT-PA. Firms headquartered in these areas were given a Central Location value of one, and all others were given zero. This binary variable proxies for the advantages of proximity to shareholders. To compute the Central Location variable, a preliminary step was needed to obtain precise geographic coordinates for the

headquarters of each firm. While the CRSP/Compustat dataset contained firm addresses, it did not report geographic coordinates for those addresses. To do this, I utilize the SimpleMaps US Zip Codes Database to access a complete list of U.S. zip codes with coordinates for each zip code. Then, each firm's zip code was matched to its coordinates. This method assumes that a firm's headquarters corresponds to the approximate geographic centre of its zip code area. Although the method is practical and adequate for subsequent analyses, it is more limited when compared to using the real company coordinates, which I tried to implement by integrating an API for automated retrieval of the coordinates, unsuccessfully. Also, as in the John et al. (2011) paper, I consider a firm's geographic location to be where its headquarters are. While this approach is a widely used proxy for firm location, this also means that the same problem with operational facilities possibly being geographically dispersed and important to governance and dividend decisions will also appear. Despite this, it is believed that most strategic managerial decisions are made at the headquarters level, being the most valuable place for shareholders to access information within a company. This step was important for the construction of the Central Location variable and other geographical measures dependent on the most accurate location coordinates possible.

To capture the geographic effects using other measures, I compute the variable Distance (miles) to capture the remoteness of a firm's location, which is the distance in miles to the closest top-ten CSA based on the 2020 Census for the full sample, leading to the variable Distance, the logged version of Distance (miles). By making use in advance of the coordinates assumed for companies and coordinates previously computed for every city included within the top-ten CSAs, I determine the miles between these different coordinates using the Haversine formula to calculate the great-circle distance, also known as the shortest path on Earth. The equation (1) of the formula, where lat represents latitude, lon represents longitude, and R represents the earth's mean radius of 3958.8 miles, is presented below. The Haversine method provides an accurate approximation of distances and is used for all distance calculations in this study.

(1) $$a = sin^2\left(\frac{\Delta lat}{2}\right) + \cos(lat_1)\,.\,\cos(lat_2)\,.\,sin^2\left(\frac{\Delta lon}{2}\right)$$

$$c = 2.atan2(\sqrt{a}, \sqrt{1-a})$$

$$d = R.c$$

It would be expected that firms further away from major metropolitan areas, where most financial activities and shareholders are concentrated, should sustain higher monitoring costs.

This is something that the Distance variable proxies for the greater difficulties in overseeing these firms and their information asymmetries, constituting an important variable in the analysis. Overall, the Distance variable should be more impacted by the assumption of companies' coordinates based on zip codes than the Central Location variable due to being mile-sensitive.

To expand on the Distance variable measurements I compute two alternative distance metrics in accordance with John et al. (2011) again. The first is the Distance to a top-50 city, which has the purpose of capturing the proximity to shareholders in relevant cities and is defined as the log of one plus the distance in miles to the closest of the 50 largest cities based on the 2020 Census for the full sample. This variable suffers a brief adaptation as most firms don't have a county associated in the Compustat/CRSP database. The second is the Distance to major airport which represents another proxy for the monitoring cost. The variable is defined as the log of distance to the closest large or medium commercial service airport hub, according to the Federal Aviation Administration (FAA). The airports included in this analysis were the ones to have at least 0.25% of total passenger boardings in 2023, according to the FAA's CY 2023 Enplanements report for the full sample. When replicating the original sample period, I utilized the FAA's CY 2004 Enplanements report as utilized by John et al. (2011). Again, I computed the distances between the firms using the computed firm coordinates and the Haversine Formula but this time for the airports' coordinates, which I computed individually to ensure accuracy. The rationale behind this variable is that it proxies for the physical accessibility of a firm's headquarters to investors, suggesting that closer airports can lead to easier access in terms of transport for the shareholders and lower monitoring costs, consequently.

I attempt to capture part of the total size of the potential shareholder base near a firm's location by measuring the density of potential individual investors. The other part would be mutual fund density to capture institutional ownership, but unfortunately, I lack access to the respective database. Data was sourced from the SimpleMaps U.S. Cities Database to compute the Population Density and Population in Millions variables. Due to data limitations, 2020 Census population data is being used for both the replicated sample period until 2006, and the full sample since the equivalent data in the 2000 Census was not available on this database. It was done by first merging the full U.S. Cities Dataset with my main firm dataset and ensuring that matching was properly done on a city and state basis so there wouldn't be errors caused by cities having the same name for different states. Then, Population Density is calculated by rescaling

the population rank of each city in which a firm's headquarters is located to a scale between zero and one.

3.3. Additional variables

I compute other variables as I further develop the study and utilize them in the respective univariate and multivariate models in accordance with John et al. (2011). These are variables that derive from previously calculated continuous variables, offering different perspectives on the main geographic measures. One of the variables is Proximity to Major City, which equals one if the distance from a firm's headquarters to the nearest top-ten CSA is below the sample median and zero otherwise. This measure isolates firms that are relatively closer to major metropolitan areas from those that are relatively more remote. Similarly, Proximity to a major airport equals one if the Distance to a major airport is below the sample median and zero otherwise. Population Density is also divided into two groups, with firms in high-density areas above the sample median being coded as "High" and those in low-density areas below the sample median being coded as "Low."

An important extension of this study is considering event-specific variables that test for the impact of potential major economic breaks on the link between firm location and dividend policy. In order to focus on the GFC and the COVID-19 pandemic, two important dummy variables are introduced. The Financial Crisis Dummy identifies observations of the 2007–2009 period, which allows an analysis of dividend behaviour and governance responses under conditions of severe financial stress. The COVID-19 Pandemic Dummy represents the 2020–2023 period and captures the potential implications of economic and operational disruptions caused by the pandemic. With these event-specific measures integrated across univariate comparisons and regression models, it is possible to examine how relationships between geographic variables and dividend policies behave over time during these uncertain moments.

3.4. Models' Methodology

To compute the tables presented in the results section, I follow a detailed methodology, which I now describe in detail. For the univariate comparisons between different geography measures and dividends represented by Table 3, the tests use one observation per firm obtained by averaging all available sample observations. Welch's two-sample independent t-test (2) is applied to compare the means of two independent groups without assuming equal variance. The

null (alternative) hypothesis is that the difference of means is (is not) zero. This test is appropriate for this case as we are analysing two separate groups, central vs. remote firms, across different geographic measures to check if their means differ in payout-related metrics. The adapted Welch's t-test formula is described below:

$$t = \frac{\bar{X}_{Yes} - \bar{X}_{No}}{\sqrt{\frac{{s^2}_{Yes}}{n_{Yes}} + \frac{{s^2}_{No}}{n_{No}}}} \quad (2)$$

Where:

- $\bar{X}_{Yes}$ = mean value of the payout-related variable for central firms
- $\bar{X}_{No}$ = mean value of the payout-related variable for remote firms
- ${s^2}_{Yes}$ = variance of the payout-related variable for central firms
- ${s^2}_{No}$ = variance of the payout-related variable for remote firms
- n_{Yes} = number of central firms
- n_{No} = number of remote firms

Depending on the variable and respective panel, firms are described as central firms for Central Location (Yes) when Central Location equals one, when for Proximity to major city (Yes) if Distance is below sample median, and when for Proximity to major airport (Yes) if Distance to a major airport is below the sample median. Remote firms are described as the opposite.

As for the multivariate analysis, represented in Tables 4 and 5, Ordinary Least Squares (OLS) regressions of the dependent variable Dividends are utilized to understand the location effect and free cash flow dilemmas after controlling for other determinants of dividends. Several control variables were included that might be correlated with location as well as with dividend policies. Industry fixed effects at the three-digit SIC level are included in all regressions to capture possible industry cluster effects, which can affect the selection of geographic location and dividend behaviour. Additionally, year dummy variables are also included in all regressions to account for time-trend effects. Below, equation (3) represents the regressions utilized in Table 4 depending on the respective model and its variables as explained in more detail in the table description in the Results section.

(3) $Dividends_i$

$$= \beta_0 + \sum_{k=1}^{K} \beta_k GeoMeasure_{ik} + \sum_{t=1}^{T} \delta_t (CrisisDummy_{it} * GeoMeasure_{ik}) + \sum_{m=1}^{M} \gamma_m FirmChar_{im} + \varepsilon_i$$

Where:

- GeoMeasure can represent Central Location, Distance, or Proximity to Major City
- CrisisDummy can represent a Financial Crisis Dummy or a COVID-19 Dummy
- FirmChar represent the following firm-level characteristics: Firm Age, Firm Risk, Firm Size, Tangible Assets, Market-to-book, ROA

The regression models utilized in Table 5 as robustness are described below with equation (4) and are similar to equation (3), with the particularity of not all firm-level characteristics being utilized in each model. In Appendix B.4, the regressions for Panel C and D have slight adjustments by multiplying the variables testing the free cash flow conflicts, such as Market-to-Book, Cash Flow, and Growth Opportunities by the crises dummies and also for the geographic measures.

(4) $Dividends_i$

$$= \beta_0 + \sum_{k=1}^{K} \beta_k GeoMeasure_{ik} + \sum_{t=1}^{T} \delta_t (FCFconflict_{it} * GeoMeasure_{ik}) + \sum_{m=1}^{M} \gamma_m FirmChar_{im} + \varepsilon_i$$

Where:

- GeoMeasure can represent Central Location or Distance
- FCFconflict can represent a Market-to-book, Cash Flow, or Growth Opportunities,
- FirmChar represent the following firm-level characteristics: ROA, Market-to-book, Cash Flow, Growth Opportunities, Tangible Assets, Firm Size, Firm Risk, and Firm Age

4. Results

4.1. Descriptive Statistics

Table 1 provides a descriptive statistics summary update for the variables of interest used in this study, which can be divided into geographic characteristics, firm-level financial metrics, and payout measures. Although comprehensive payout measures statistics are not displayed in the John et al. (2011) paper, I include them for the full dataset to give the reader an additional perspective of the sample. These statistics reveal a wide variation in firm characteristics and form the basis of the relationships to be studied in the subsequent analysis. Comparing Appendix B.1's Panel B and C, which the reader can find in the respective Appendix section, these are focused on the same sample period, it is observable that most variables reach similar results despite the potential limitations for some. With more than ten thousand additional observations, I believe that my replicated data sample until 2006 is a good approximation to the original values with relatively small margins of error for most variables. This alignment provided me with the assurance of advancing to what is presented as Table 1, laying the foundation for Tables 2, 3, 4 and 5 results, which were also tested for the replicated data sample.

Table 1 provides a comprehensive view of the more than fifty thousand observations utilized throughout the rest of this study. The variable Central Location, which identifies firms headquartered in one of the largest metropolitan areas, has a mean of 0.53, indicating that 53% of firms in this sample are centrally located. The mean Distance to a top-ten CSA is 122.58 miles on average and 2.92 in logged miles, so most firms are not too far from major financial centres, but there are still firms as far away as 791.81 miles at maximum. The Distance variable has some difference to the value presented in Appendix B.1's Panel B, quite possibly due to the change from Detroit's CSA, previously included as top-ten CSA according to Census 2000, to Atlanta's CSA, included in the top ten CSA for the Census 2020, establishing a 20 year-difference in Census data. Firms' Distance to a top-50 city averages 19.63 miles and 2.57 logged miles, and the mean Distance to a major airport is 2.72 logged miles or 26.76 standard miles. These proximity measures indicate that a good amount of firms is close to smaller metropolitan areas or transportation hubs. Firm-level financial metrics between the samples remain pretty similar, even though there are 17 additional years of data. Payout measures are analysed in detail in the next subsection.

Table 1- Summary Statistics

Table 1 reports summary statistics for the whole sample period (1992-2023) covered in this study, such as the number of observations, mean, standard deviation, minimum, median, and maximum for all variables. All continuous variables are winsorized at the 1% level.

Variables	Obs.	Mean	Std. Dev.	Min	Med.	Max
Central Location	53437	0.53	0.50	0.00	1.00	1.00
Distance	53437	2.92	2.30	0.00	1.58	6.68
Distance (miles)	53437	122.58	180.15	0.00	3.83	791.81
Distance to a top-50 city	53437	2.57	0.88	0.16	2.56	5.64
Distance to a top-50 city (miles)	53437	19.63	31.04	0.18	11.90	279.42
Distance to a major airport	53437	2.72	0.97	0.11	2.63	5.73
Distance to a major airport (miles)	53437	26.76	44.71	0.11	12.83	305.82
Population density (rank 0–1)	53000	0.76	0.28	0.00	0.89	1.00
Population density (mln)	53000	2.41	4.37	0.00	0.26	18.83
ROA	53437	0.09	0.15	-0.66	0.11	0.40
Cash Flow	53437	0.08	0.15	-0.70	0.10	0.36
Market-to-book	53437	1.84	1.26	0.58	1.45	8.90
Growth Opportunities	53437	0.19	0.58	-0.65	0.07	4.19
Tangible Assets	53437	28.82	24.36	0.52	20.99	91.43
Firm Size	53437	6.30	1.86	3.08	6.19	11.04
Firm Risk	53437	-3.25	0.91	-5.98	-3.23	-1.26
Firm Age	53437	3.40	0.55	0.00	3.43	4.30
D(Dividends > 0)	53437	0.34	0.48	0.00	0.00	1.00
Dividends	53437	0.91	1.85	0.00	0.00	11.00
Dividend Payout Ratio	36847	0.25	0.56	0.00	0.00	4.29
Repurchases	53437	1.62	3.65	0.00	0.02	21.89
Dividends/Payout	33973	0.39	0.42	0.00	0.18	1.00
D (Dividends vs. Repurchases)	33974	0.56	0.50	0.00	1.00	1.00
D (Dividends)	53437	-0.02	1.07	-6.88	0.00	4.39
D (Dividend Increase)	53437	0.18	0.40	0.00	0.00	1.00
D (Dividend Decrease)	53437	0.06	0.25	0.00	0.00	1.00
Leverage	53437	0.27	0.23	0.00	0.24	1.11
Leverage (Long-Term)	53437	0.23	0.22	0.00	0.19	1.01
D (Dividends > 0 and leverage > 0)	53437	0.32	0.47	0.00	0.00	1.00

Table 2 – Central vs Remote Firms Firm-Level Statistics

Table 2 displays summary statistics for the whole sample period (1992-2023) covered in this study and is divided between central firms, firms which have a Central Location variable classification of 1, and remote firms which have a Central Location variable classification of 0. The table displays the number of observations, mean, standard deviation, minimum, median, and maximum for all firm-level variables. All continuous variables are winsorized at the 1% level.

Central Firms				
Variables	**Obs.**	**Mean**	**Std. Dev.**	**Med.**
ROA	28277	0.08	0.16	0.11
Cash Flow	28277	0.07	0.16	0.10
Market-to-book	28277	1.93	1.36	1.50
Growth Opportunities	28277	0.20	0.61	0.08
Tangible Assets	28277	26.50	24.12	18.09
Firm Size	28277	6.32	1.91	6.16
Firm Risk	28277	-3.19	0.93	-3.16
Firm Age	28277	3.37	0.57	3.40

Remote Firms				
Variables	**Obs.**	**Mean**	**Std. Dev.**	**Med.**
ROA	25160	0.10	0.14	0.12
Cash Flow	25160	0.09	0.14	0.11
Market-to-book	25160	1.75	1.13	1.41
Growth Opportunities	25160	0.17	0.54	0.07
Tangible Assets	25160	31.44	24.35	24.52
Firm Size	25160	6.28	1.81	6.22
Firm Risk	25160	-3.31	0.88	-3.30
Firm Age	25160	3.42	0.53	3.43

Table 2 allows the reader to understand how central and remote firms differ in terms of fundamentals and critical aspects for their ability to have robust corporate payout policies and combat possible agency conflicts. ROA, a measure of profitability, and Cash Flow both appear to be higher for remote firms, which can be reasons for higher dividend capacity. Again, the data continues to confirm the same reasoning as Market-to-book and Growth Opportunities, both different proxies for investment opportunities are also lower for remote firms posing an obstacle to firms increasing their corporate payout policies. Remote firms appear to have more tangible assets, possibly due to having more firms focused on goods production than on services, which can be associated with metropolitan areas. When compared to central firms, remote firms are also less risky and older despite being relatively smaller. This discussion is interesting to better understand the remaining study results.

4.2. Geography Measures and Dividends

Table 3 reports the univariate relations between the geographic location variables and dividend measures to capture the proximity to cities or airports, and remoteness of firms concerning their dividend policies. This analysis includes the entire sample period, from 1992 to 2023, and covers two significant economic disruptions: the GFC and the COVID-19 pandemic.

I start this analysis with the interactions of the geographic measure Central Location with payout-related variables. Consistent with previous research, I observe that there is a tendency for remote companies to be more active in compensating their shareholders for the whole sample period. At a 1% significance level, the probability of paying dividends is 6% lower in centrally located firms. When they do, their dividend amounts are 12% lower than those of firms in remote areas. Also, at a 1% significance level, the ratio of dividends to total payouts (dividends + repurchases) is significantly higher for remote firms, indicating a stronger reliance on dividends over buybacks. This supports the agency conflict hypothesis, where remote firms facing higher monitoring costs and lower investor oversight tend to pre-commit dividends as a credible mechanism to reduce free cash flow misallocation. Additionally, Repurchases being one of the few non-significant results is likely related to the weaker perceived precommitment associated with repurchases, making them less effective in addressing agency conflicts. Remote companies also appear to be 3% more leveraged possibly due to higher capital constraints with lower equity financing access in remote locations or even utilizing debt as a complementary mechanism to discipline managers.

When compared to the full sample, the financial crisis period amplifies certain effects. Companies in general were less likely to distribute dividends, although for the companies that did pay dividends, the average dividend amount increased, significantly pushed by the larger difference (20%) between the remotely and centrally located companies, reinforcing the role of dividends as a mechanism to mitigate agency conflicts. Distributing Dividends continued to be more preferred by remote firms with Repurchases increasing with the twist of an 11% higher preference by the central firms during this period, suggesting that firms with better access to capital markets adjusted their payout structures to prioritize flexibility using repurchases over fixed dividend commitments. There is a decline in leverage across all firms with centrally located firms reducing debt more aggressively, which likely reflects the credit tightening and higher borrowing costs during the financial crisis while having easier access to alternative financing sources.

As for the COVID-19 period, remote firms remain 7% more likely to pay dividends, although an important difference in this period is that the amount of dividends paid by remote firms is now 6% lower when compared to the amount central firms distributed, which suggests that remote firms continued to prioritise dividend payments by maintaining them, while central firms most likely increased dividends to signal stability to investors. The Dividends variable doesn't have significance this time, revealing a weakened relationship between firm location and dividends during the pandemic. Another twist, in comparison to the full sample, is the level of Repurchases now becoming significant at 5% and inverting the previously established relationship where the remote firms now have a 22% higher level of repurchases than the centrally located firms, which can be due to the stock market conditions and choosing to be more flexible with their payout scheme during the crisis. At a 5% significance level this time, Leverage sustained across companies increased, contrasting with the financial crisis period.

Table 3 concludes that the full sample maintains the firm location and dividends relationships from the John et al. (2011) paper, confirming that remote firms are still more likely to pay dividends and distribute larger amounts, supporting H1. The results change quite differently depending on the context. The Financial Crisis results show that the relationship between dividends and remoteness was actually amplified during the period, where not only did remote firms continue to pay dividends at a higher rate, but the gap in dividend amounts between remote and central firms also became larger, suggesting that remoteness intensified the reliance on dividends as a governance tool, as I reject H2. On the contrary and based on these results, H3 is validated as the COVID-19 pandemic period reversed this trend, with central firms paying higher dividend amounts than remote firms, although more remote firms continued to pay dividends at a similar level to the full sample. The reader can find the extensive version of this table in Appendix B.2's Panel A with the complete Central Location interactions by including many more payout variables as well as further tests for the Proximity to major city (Panel B) and Proximity to major Airport (Panel C) variables which also follow similar patterns, providing additional robustness to the following analysis.

Table 3 - Univariate comparisons between different geography measures and dividends

This table reports univariate comparisons between different geography measures and dividend-related measures. The tests illustrate the significance of the differences in important dividend and payout measures. The tests use one observation per firm, obtained by averaging all sample observations. Subsample in the form of Central Location is defined as follows: Central location –Yes (No) if Central location equals one (zero). The All column displays the respective payout variable's total value averaged at the firm level for the full sample. The No column displays the payout variable for firms that have Central Location as a 0. The Yes column displays the payout variable for firms that have Central Location as a 1. The Δ column is the difference between the Yes and No column values. Then the Δ/mean(All) column is the respective Δ column value divided by the all column as a measure of understanding the dimension of the difference in the overall sample of that specific payout variable. Two-sample t-tests of means are performed utilizing the Welch's t-test. Payout variables are averaged at the firm level, with 6260 firms in the full sample. The null (alternative) hypothesis is that the difference of means is (is not) zero. Significance is related to the performed t-tests and is defined at 1%, 5%, and 10%, being denoted with ***, **, and *, respectively. In this table, the tests are done with Central Location as the variable interacting with the payout-related variables for the full sample, financial crisis period, and COVID-19 period, respectively. The Full Sample includes 53437 observations, the Financial Crisis period includes 5071 observations, and the COVID-19 period includes 5872 observations.

Central Location	Full Sample						
Variables	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.34	0.37	0.32	-0.06	-16.41%	0.00	***
Dividends	0.91	0.97	0.86	-0.12	-12.86%	0.00	***
Repurchases	1.62	1.62	1.61	-0.01	-0.59%	0.75	
Dividends/Payout	0.39	0.42	0.36	-0.06	-15.98%	0.00	***
Leverage	0.27	0.28	0.25	-0.03	-11.11%	0.00	***
Central Location	Financial Crisis						
Variables	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.33	0.36	0.31	-0.05	-16.08%	0.00	***
Dividends	1.09	1.20	1.00	-0.20	-18.44%	0.00	***
Repurchases	2.21	2.15	2.26	0.11	5.08%	0.37	
Dividends/Payout	0.38	0.41	0.34	-0.07	-17.97%	0.00	***
Leverage	0.24	0.26	0.23	-0.03	-10.73%	0.00	***
Central Location	COVID-19						
Variables	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.36	0.40	0.33	-0.07	-19.25%	0.00	***
Dividends	1.01	0.97	1.04	0.06	6.28%	0.24	
Repurchases	2.04	2.16	1.94	-0.22	-10.54%	0.03	**
Dividends/Payout	0.28	0.30	0.26	-0.04	-14.81%	0.00	***
Leverage	0.34	0.35	0.33	-0.02	-4.31%	0.02	**

4.3. Multivariate Dynamics of Location Effects on Dividends

Table 4 presents an additional analysis on how geographic location affects dividend payout with Dividends as a dependent variable. As expected throughout this study, these results point to the importance of firm location in shaping dividend behaviour during normal times and during periods of economic disruption, such as the GFC and the COVID-19 pandemic. By computing three Ordinary Least Squares (OLS) regressions with important variables, such as Central Location, Distance and Proximity to major city, interacting with financial crisis and COVID-19 dummies and firm-level characteristics, I am able to evaluate the magnitude of the location effect after controlling for other determinants of dividends across three time periods with over 53 thousand observations. In this section, I focus the analysis on the complete Central Location interactions to understand the impact of the location effect after controlling for other determinants of dividends. At the same time, the reader can find the remaining results for the other two variables in Appendix B.3.

The 1st model focuses on the full sample period, which provides a possible benchmark on how the dividends reacted with geographical factors and firm-level characteristics for 31 years. Central Location shows a negative significant impact at a 1% level on dividend distributions (-0.051, significant at 1%), meaning that companies located in the major metropolitan areas (CSAs) are more likely to distribute fewer cash dividends on common stock to the market value of common equity. As for the 2nd model, which adds a dimension to the financial crisis sample period with the dummy variable, the interaction term Central Location * Financial Crisis actually continues to be negative (-0.061) though with no significance (t = -1.25), meaning that the relationship between firm location and dividend behaviour didn't significantly alter during this period. It is possible to defer that despite the significant difference between the dividends level for central and remote firms in Table 3, the actual impact of central location during the financial crisis is not significant when controlling for firm-level characteristics. A possible explanation is that these other firm-level determinants absorbed the variation in payout decisions, making geographic location less of a driving factor. The COVID-19 pandemic-focused 3rd model, where Central location interacts with the covid dummy variable, presents a 1% significant inversion of the results from the 1st model with a coefficient of +0.172 for the interaction Central Location * COVID-19, meaning that during the pandemic the centrally located firms actually started distributing higher levels of dividends, offsetting the traditional relationship between Firm Location and Dividends where centrally located firms historically

paid lower dividends. I observe that all the firm-level characteristics have a significant impact at a 1% level on dividend distributions across the 3 models, which means that positive coefficients for Firm Age suggest that older firms are more likely to pay dividends, for Firm Size displays that larger firms distribute higher dividends, for profitability (ROA) shows that more profitable firms pay higher dividends and Tangible Assets demonstrate that firms with more tangible assets are more likely to distribute dividends as they have stronger collateral for financing. The negative coefficient for Firm Risk shows that higher risk leads to lower dividends as riskier firms prefer cash retention. This evidence of firm-level characteristics' impact on dividends is consistent with the results from Table 2, which demonstrates how central firms are, on average, younger, more risky, less profitable and have lower levels of tangible assets, which here is displayed as being congruent with the fact that central location firms pay lower dividends throughout the full sample.

Appendix B.3's Panel B (Distance) and C (Proximity to major city) also provide similar insights, with Distance being negatively correlated with Central Location and Proximity being positively correlated. Proximity presents a similar inversion of geography coefficients for the COVID-19 period and similar results to Table 4 presented here, providing further robustness. Distance follows a similar trend in terms of rationale, as more distant firms pay higher dividends in the full sample and inverts for the pandemic interaction.

Table 4 results are aligned with the previously analysed results from Table 3, where both demonstrate the perspective of an existing inversion of the role of geography in corporate dividend policies during the COVID-19 pandemic period as central firms distributed more dividends than the remote firms, while the financial crisis maintained similar dividend distributions to the benchmark full sample where both show remote firms paying more dividends to its shareholders which is aligned with the findings from the John et al. (2011) paper. This table reinforces the notion that firm location plays an important role in influencing corporate dividend policy but also highlights that this effect depends on the context itself. In normal periods, remote firms compensate for investor monitoring difficulties by paying higher dividends, validating H1. During the financial crisis, remote firms continued to distribute higher dividends, but this effect was not statistically distinct from normal times once firm-level characteristics were controlled for, rejecting H2. During COVID-19, the geographic payout trend flipped, with central firms significantly increasing their dividend distributions, likely due to the need to signal stability to their shareholders, especially in metropolitan areas where information is more efficient, validating H3. These results suggest that economic crises

influence dividend policy differently depending on the nature of the disruption. While the financial crisis reinforced the traditional dividend–firm location relationship, the COVID-19 pandemic reshaped payout strategies, favouring centrally located firms over remote firms.

Additionally, I compute Table 5 which examines how Central Location interacts with investment opportunity measures, such as Market-to-book, Growth Opportunities, and Cash Flow to influence dividend policy across the full sample. This multivariate analysis is used to robustly expand on the location effect by understanding the extent of free cash flow conflicts in companies while continuing to control for other determinants of dividends. In the full sample, there are mixed signals between the investment opportunities measures as the interaction of Central Location with Market-to-book evidence that, at a 1% significance level, the effect of Location on dividends when interacting with Market-to-Book is negative, meaning that central firms with higher investment opportunities distribute less dividends while the Growth Opportunities interactions display the opposite notion with less significance. The Cash Flow interaction provides the idea that central firms with higher levels of cash do not distribute as many dividends. In this regard, Market-to-book and Cash Flow interactions make sense in terms of central companies with reduced agency conflicts and monitoring costs not having the need to distribute dividends despite having high cash flow and also consistent with the notion of having higher investment opportunities leading to an effect of being less likely to distribute dividends. In Appendix B.4's, the reader can find three additional panels, one for the Distance variable for the full sample while the other panels are also divided into Central Location and Distance but now including GFC and COVID-19.

Table 4 - Geography and Dividends

Table 4 reports Ordinary Least Squares (OLS) regressions of the dependent variable Dividends. All the utilized variables are as described earlier. Three-digit SIC industry and year dummies are included. Robust t-statistics clustered by firm are in parentheses. Significance at 1%, 5%, and 10% is denoted with ***, **, and *, respectively. This table displays the set of multivariate regressions for the full data sample (Model 1), Model 2 represents the same set now controlled with a financial crisis period dummy Model 3 does the same process controlled for the COVID-19 period.

Dependent Variable: Dividends			
Explanatory Variables	**1**	**2**	**3**
Central Location	-0.051 *** (-3.30)	-0.045 *** (-2.80)	-0.070 *** (-4.30)
Central Location*Financial Crisis		-0.061 (-1.25)	
Central Location*COVID-19			0.172 *** (3.74)
Firm Age	0.208 *** (21.88)	0.208 *** (21.87)	0.209 *** (21.98)
Firm Risk	-0.081 *** (-9.24)	-0.081 *** (-9.25)	-0.080 *** (-9.19)
Firm Size	0.179 *** (18.39)	0.179 *** (18.39)	0.179 *** (18.40)
Market-to-book	-0.036 *** (-4.49)	-0.036 *** (-4.50)	-0.036 *** (-4.53)
ROA	0.126 *** (14.71)	0.126 *** (14.72)	0.126 *** (14.72)
Tangible Assets	0.156 *** (13.23)	0.156 *** (13.22)	0.156 *** (13.19)
Constant	1.058 *** (52.82)	1.058 *** (52.83)	1.055 *** (52.69)
R-squared	0.212	0.212	0.212
Observations	53437	53437	53437

Table 5 - Geography and Dividends: Free Cash Flow Conflicts

Table 5 reports Ordinary Least Squares (OLS) regressions of the dependent variable Dividends. All the utilized variables are as described earlier. Three-digit SIC industry and year dummies are included. Robust t-statistics clustered by firm are in parentheses. Significance at 1%, 5%, and 10% is denoted with ***, **, and *, respectively. The Table displays the set of multivariate regressions with the Central Location variable interactions for the full data sample. Model 1 focuses on the relation between Central Location and Market-to-Book effects on dividends. Model 2 focuses on the relation between Central Location and Cash Flow effects on dividends. Model 3 focuses on the relation between Central Location and Growth Opportunities effects on dividends.

Dependent Variable: Dividends			
Explanatory Variables	**1**	**2**	**3**
Central Location	-0.052 *** (-3.34)	-0.054 *** (-3.51)	-0.052 *** (-3.37)
Central Location*Market-to-book	-0.044 *** (-2.94)		
Central Location*Cash Flow		-0.036 ** (-2.42)	
Central Location*Growth Opportunities			0.027 * (1.83)
ROA	0.125 *** (14.60)		0.125 *** (14.62)
Market-to-book	-0.009 (-0.74)		-0.025 *** (-3.09)
Cash Flow		0.138 *** (11.28)	
Growth Opportunities			-0.104 *** (-9.20)
Tangible Assets	0.157 *** (13.25)	0.159 *** (13.43)	0.152 *** (12.88)
Firm Size	0.179 *** (18.44)	0.173 *** (17.67)	0.184 *** (18.89)
Firm Risk	-0.081 *** (-9.30)	-0.086 *** (-9.86)	-0.077 *** (-8.79)
Firm Age	0.208 *** (21.84)	0.212 *** (22.25)	0.195 *** (20.41)
Constant	1.059 *** (52.89)	1.064 *** (53.28)	1.052 *** (52.59)
R^2	0.212	0.212	0.214
Observations	53437	53437	53437

5. Limitations

Expanding on the methodology by John et al. (2011) raised several challenges. It implied computing several complex variables while maintaining the same level of criteria and adapting to the possible changes in terminologies from specific terms utilized 25 years ago as for the information regarding Census 2000, for example, and even the terms from the John et al. (2011) paper, which is close to being 14 years old and was in early stages of being published 16 years ago. In this regard, I include in this section the major limitations of this study, most of which were already briefly discussed in the respective relevant sections.

The limitation that caused more trouble while replicating the paper by John et al. (2011) is related to the lack of access to certain databases. Execucomp and CRSP Mutual Funds are subscription-based and very difficult to substitute when trying to reach similar results while utilizing alternative databases. This is observable in this study's results as I have a relevantly larger number of observations for the period until 2006 due to differences in the criteria of the replicated paper only including firms that had CEO Ownership and compensation data, while I do not apply the same criteria due to not having access to Execucomp. Also, mutual fund information could provide a great perspective on how institutional investors and ownership impact the payout policies of remote and centrally located firms. Related to capturing shareholder bases, there was also the limitation of not having a database with the population figures of the Census 2000, turning out to be a constrained attempt to capture individual investors by assuming similar population patterns to what was 20 years before the Census 2020, being expected that a lot of population transformation or migration would happen in this due time when replicating the top 10 CSAs of 2000 with this 2020 figures.

Limitations with statistical area definitions also demanded special attention as the definition of CMSAs was discontinued on February 18th, 2004, leading to a forced adaptation to new statistical area measures such as CSAs, which are not utilized in the replicated paper. There was also the limitation of the referred paper utilizing counties while the Compustat/CRSP do not have the necessary information regarding counties to be implemented in the same way. Finally, assuming that a firm's headquarters corresponds with the approximate geographic centre of its zip code area and considering a firm's geographic location to be its headquarters, a common limitation of similar studies, are certainly limitations that need to be accounted for with caution.

6. Conclusion

This study provides a valuable contribution to the existing literature on corporate payout policies by examining how firm location influences dividend distributions over an extended period (1992–2023) in the United States. Expanding on the work developed by John et al. (2011), this research incorporates the Global Financial Crisis (GFC) and the COVID-19 pandemic as these recent disruptive crises provide relevant insights regarding the evolution of this relationship under different economic conditions.

The affirmation that remotely located firms continue distributing higher dividends to address agency conflicts is valid as the results hold for the full sample period. Remote firms appear to be still facing the issue of sustaining higher monitoring costs to their shareholders and dealing with information asymmetries from being located outside major financial hubs, leading them to use dividends as a governance mechanism to mitigate agency conflicts.

During the Global Financial Crisis, remote companies not only continued paying higher dividends but even increased them relatively to central firms and the full sample figures, going against the expectation that liquidity constraints would force them to reduce dividend payouts. These companies persisted in prioritizing dividends, supporting the argument that dividends serve as a commitment device even during financial crises. Although firms increased dividends, I discover that the effect is not statistically distinct from normal times once firm-level characteristics were controlled for, as the influence of geographic remoteness on dividend payouts during this crisis remains stable and doesn't weaken.

The COVID-19 pandemic presents quite different results, being a testament to how different contexts can change dividends distribution. In this period, centrally located firms increased their dividend payouts more aggressively than remote firms, marking a reversal of the historical trend. With this pandemic crisis involving several operational constraints across multiple industries, a lot of uncertainty surrounded firms' corporate payout policies. Even after controlling for other firm-level characteristics, the results ensure that not only the effect of geographic location on dividend policies not only diminish but invert completely for this period as being a centrally located firm meant paying higher dividends during this period, challenging the established literature of corporate governance and the relation of firm location and corporate payout strategies.

In brief, firm location still greatly impacts corporate dividend policies, as defended by John et al. (2011) in previous literature, however, it is relevant to have the perspective that this relation can depend not only on firm-specific governance factors but also on macroeconomic circumstances and the essential nature of the respective crises. As stated in the previous Limitations section, there were several challenges that impacted some parts of the methodology and respective results. Further research could focus on addressing these constraints and also expand into testing how the relation between firm location and corporate payout policies behaves under other circumstances.

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Appendices

Appendix A.1 – Table of Variables

Name	Definition	References	Source
Firm-Level Characteristics			
Market-to-Book ratio	"Equals the total assets plus the difference between the market value of common equity and book value of common equity, as a proportion to total assets"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Growth Opportunities	"Annual growth in net sales"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Return on Assets (ROA)	"EBITDA divided by total assets"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Cash flow	"Ratio of operating income before depreciation minus interest expense minus income taxes net of the change in deferred tax and investment tax credits to total assets"	Lang, Stulz, and Walkling (1991) John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Tangible assets	"Proportion of property, plants, and equipment to the firm's total assets"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Firm size	"Logarithm of total assets"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Firm risk	"Logarithm of the standard deviation of ROA for the past ten years"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Firm Age	"Logarithm of one plus the number of years since the first appearance in CRSP"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Payout-Related Variables			
Dividends	"Ratio of annual cash dividends on common stock to the market value of common equity expressed, times 100"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Dividend payout ratio	"Proportion of cash dividends to net income in cases where net income is positive"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Repurchases	"Ratio of share repurchases to the market value of common equity, times 100"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Dividends/payout	"Ratio of cash dividends to the combined total of cash dividends and share repurchases"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
D(Dividends)	"Ratio of change in cash dividends from the prior year's market value of common equity, times 100"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
D (Dividends vs. repurchases)	"Equals one if a firm paid cash dividends on common stock and zero if it relied exclusively on share repurchases"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
D (Dividend increase)	"Equal to one if dividends per share, adjusted for stock splits, increased from the prior year"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
D (Dividend decrease)	"Equal to one if dividends per share decreased"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
D (Dividends > 0)	"Equal to one if a firm issued positive dividends in a given year"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual

Name	Definition	References	Source
Leverage Variables			
Leverage	"Ratio of total debt to total assets"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Leverage (long-term)	"Ratio of long-term debt to total assets"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
D (Dividends > 0 and leverage > 0)	"Equal to one if both dividends and leverage were positive for the year"	John et al. (2011)	CRSP/Compustat Merged - Fundamentals Annual
Geographical Measure Variables			
Central Location	Equals one if the firm is located in a top-ten Consolidated Statistical Area (CSA) based on Census 2020 for the full sample	John et al. (2011) Loughran and Schultz (2005)	SimpleMaps's United States Cities Database; Census.gov
Distance (miles)	Distance in miles to the closest top-ten CSA based on the 2020 Census for the full sample	John et al. (2011)	SimpleMaps's United States Cities Database; Census.gov
Distance	Logarithm of one plus the distance in miles to the closest top-ten CSA based on the 2020 Census for the full sample	John et al. (2011)	SimpleMaps's United States Cities Database; Census.gov
Distance to a top-50 city	Logarithm of one plus the distance in miles to the closest of the 50 largest cities based on the 2020 Census for the full sample	John et al. (2011)	SimpleMaps's United States Cities Database; Census.gov
Distance to a top-50 city (miles)	Distance in miles to the closest of the 50 largest cities based on the 2020 Census for the full sample	John et al. (2011)	SimpleMaps's United States Cities Database; Census.gov
Distance to the nearest airport	Logarithm of one plus the distance to the closest large or medium commercial service airport hub	John et al. (2011)	FAA's CY 2023 Enplanements report; FAA's CY 2004 Enplanements report
Distance to a major airport (miles)	Distance to the closest large or medium commercial service airport hub	John et al. (2011)	FAA's CY 2023 Enplanements report; FAA's CY 2004 Enplanements report
Population density (rank 0–1)	Population rank of the city where the firm is headquartered, rescaled to [0,1]	John et al. (2011)	SimpleMaps's United States Cities Database Census.gov
Population density (mln)	Population in millions for each city	John et al. (2011)	SimpleMaps's United States Cities Database Census.gov
Additional Variables			
Proximity to Major City	"Equals one if the distance from a firm's headquarters to the nearest top-ten CSA is below the sample median and zero otherwise"	John et al. (2011)	SimpleMaps's United States Cities Database Census.gov
Proximity to a major airport	"Equals one if the Distance to a major airport is below the sample median and zero otherwise"	John et al. (2011)	SimpleMaps's United States Cities Database Census.gov
Financial Crisis Dummy	Equals one if the observations are in 2007–2009 period	-	-
COVID-19 Dummy	Equals one if the observations are in 2020–2023 period	-	-

Appendix A.2 – Table of Statistical Area Definitions

Name	Definition	Source
Metropolitan Statistical Area (MSA)	"An MSA consists of one or more counties that contain a city of 50,000 or more inhabitants, or contain a Census Bureau-defined urbanized area (UA) and have a total population of at least 100,000 (75,000 in New England). Counties containing the principal concentration of population—the largest city and surrounding densely settled area—are components of the MSA. Additional counties qualify to be included by meeting a specified level of commuting to the counties containing the population concentration and by meeting certain other requirements of metropolitan character, such as a specified minimum population density or percentage of the population that is urban. MSAs in New England are defined in terms of cities and towns, following rules concerning commuting and population density."	United States Census Bureau
Primary Metropolitan Statistical Area (PMSA)	"Subareas may be defined within an area that meets the requirements to qualify as an MSA and also has a population of one million or more. The definition of these subareas, called PMSAs, requires meeting specified statistical criteria and having the support of local opinion. A PMSA consists of a large urbanized county or a cluster of counties (cities and towns in New England) that demonstrate strong internal economic and social links in addition to close ties with the central core of the larger area. Upon the recognition of PMSAs, the entire area of which they are parts becomes a CMSA. All territory within a CMSA is also within some PMSA."	United States Census Bureau
Consolidated Metropolitan Statistical Area (CMSA)	"CMSA is an area that meets the requirements to qualify as an MSA and also has a population of one million or more becomes a CMSA if component parts of the area are recognized as PMSAs"	United States Census Bureau
Core Based Statistical Area (CBSA)	"Refer collectively to metropolitan statistical areas and micropolitan statistical areas. CBSAs consist of the county or counties (or equivalent entities) associated with at least one core (urban area) of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties."	United States Census Bureau
Combined Statistical Area (CSA)	"Consists of two or more adjacent core based statistical areas (CBSAs) that have an employment interchange measure of 15 or more." "OMB introduced the concept of combined statistical areas, consisting of groupings of adjacent metropolitan and micropolitan statistical areas, and representing larger regions in which the component CBSAs are socially and economically integrated, but to a lesser extent than territory within individual metropolitan or micropolitan statistical areas."	United States Census Bureau

Appendix B.1 - Summary Statistics

The following tables report summary statistics, such as the number of observations, mean, standard deviation, minimum, median, and maximum, for all variables in the sample. All continuous variables are winsorized at the 1% level. Panel A displays statistics for the whole expanded time period covered in this study. Panel B displays statistics for the data sample until 2006, replicating the time period from the paper by John, Knyazeva, and Knyazeva (2011) whose statistics are displayed on Panel C as a benchmark.

Panel A - Full Sample (Jan 1992 - Dec 2023)

Variables	**Obs.**	**Mean**	**Std. Dev.**	**Min**	**Med.**	**Max**
Central Location	53437	0.53	0.50	0.00	1.00	1.00
Distance	53437	2.92	2.30	0.00	1.58	6.68
Distance (miles)	53437	122.58	180.15	0.00	3.83	791.81
Distance to a top-50 city	53437	2.57	0.88	0.16	2.56	5.64
Distance to a top-50 city (miles)	53437	19.63	31.04	0.18	11.90	279.42
Distance to a major airport	53437	2.72	0.97	0.11	2.63	5.73
Distance to a major airport (miles)	53437	26.76	44.71	0.11	12.83	305.82
Population density (rank 0–1)	53000	0.76	0.28	0.00	0.89	1.00
Population density (mln)	53000	2.41	4.37	0.00	0.26	18.83
ROA	53437	0.09	0.15	-0.66	0.11	0.40
Cash Flow	53437	0.08	0.15	-0.70	0.10	0.36
Market-to-book	53437	1.84	1.26	0.58	1.45	8.90
Growth Opportunities	53437	0.19	0.58	-0.65	0.07	4.19
Tangible Assets	53437	28.82	24.36	0.52	20.99	91.43
Firm Size	53437	6.30	1.86	3.08	6.19	11.04
Firm Risk	53437	-3.25	0.91	-5.98	-3.23	-1.26
Firm Age	53437	3.40	0.55	0.00	3.43	4.30
D(Dividends > 0)	53437	0.34	0.48	0.00	0.00	1.00
Dividends	53437	0.91	1.85	0.00	0.00	11.00
Dividend Payout Ratio	36847	0.25	0.56	0.00	0.00	4.29
Repurchases	53437	1.62	3.65	0.00	0.02	21.89
Dividends/Payout	33973	0.39	0.42	0.00	0.18	1.00
D (Dividends vs. Repurchases)	33974	0.56	0.50	0.00	1.00	1.00
D (Dividends)	53437	-0.02	1.07	-6.88	0.00	4.39
D (Dividend Increase)	53437	0.18	0.40	0.00	0.00	1.00
D (Dividend Decrease)	53437	0.06	0.25	0.00	0.00	1.00
Leverage	53437	0.27	0.23	0.00	0.24	1.11
Leverage (Long-Term)	53437	0.23	0.22	0.00	0.19	1.01
D (Dividends > 0 and leverage > 0)	53437	0.32	0.47	0.00	0.00	1.00

Panel B - Replicated until 2006 (Jan 1992 – Dec 2006)

Variables	Obs.	Mean	Std. Dev.	Min	Med.	Max
Central Location	27665	0.50	0.50	0.00	1.00	1.00
Distance	27665	3.13	2.41	0.00	1.74	6.77
Distance (miles)	27665	162.67	232.82	0.00	4.68	866.04
Distance to a top-50 city	27665	2.58	0.83	0.16	2.56	5.64
Distance to a top-50 city (miles)	27665	18.00	21.68	0.18	11.99	281.05
Distance to a major airport	27665	2.69	0.94	0.11	2.59	5.73
Distance to a major airport (miles)	27665	24.66	39.45	0.11	12.29	305.82
Population density (rank 0–1)	27444	0.75	0.29	0.00	0.87	1.00
Population density (mln)	27444	2.36	4.31	0.00	0.24	18.83
ROA	27665	0.10	0.13	-0.53	0.12	0.39
Cash Flow	27665	0.08	0.13	-0.56	0.10	0.35
Market-to-book	27665	1.78	1.17	0.60	1.42	8.57
Growth Opportunities	27665	0.21	0.54	-0.58	0.09	3.56
Tangible Assets	27665	30.14	23.67	0.82	23.40	90.87
Firm Size	27665	5.73	1.67	3.05	5.53	10.33
Firm Risk	27665	-3.31	0.92	-6.17	-3.27	-1.37
Firm Age	27665	2.88	0.59	0.00	2.83	4.04

Panel C - Replicated Paper's Results (John et al. (2011))

Variables	Obs.	Mean	Std. Dev.	Med.
Central Location	16465	0.53	0.50	1.00
Distance	16465	2.50	2.74	0.00
Distance (miles)	16465	139.32	222.43	0.00
Distance to a top-50 city	16465	0.57	1.46	0.00
Distance to a top-50 city (miles)	16465	14.21	85.61	0.00
Distance to a major airport	16465	2.75	0.97	2.49
Distance to a major airport (miles)	16465	27.37	42.62	11.08
Population density (rank 0–1)	16465	0.88	0.17	0.94
Population density (mln)	16465	1.46	1.72	0.90
ROA	16465	0.14	0.11	0.14
Cash Flow	16455	0.10	0.10	0.10
Market-to-book	16465	2.17	1.65	1.67
Growth Opportunities	16452	0.15	0.35	0.09
Tangible Assets	16465	30.15	21.56	24.55
Firm Size	16465	7.06	1.48	6.92
Firm Risk	16465	-3.21	0.74	-3.23
Firm Age	16465	2.78	0.88	2.83

Appendix B.2 - Univariate comparisons between different geography measures and dividends

This table reports univariate comparisons between different geography measures and dividend-related measures. The tests use one observation per firm, obtained by averaging all available sample observations. Subsamples in the form of additional variables are defined as follows: Central location –Yes (No) if Central location equals one (zero); Proximity to major city – Yes (No) if Distance is below (above) sample median; Proximity to a major airport – Yes (No) if Distance to a major airport is below (above) sample median. The All column displays the respective payout variable's total value averaged at the firm level for the full sample. The No column displays the payout variable for firms that have Central Location or Proximity to Major City as a 0. The Yes column displays the payout variable for firms that have Central Location or Proximity to Major City as a 1, for example. The Δ column the difference between the Yes and No column values. Then the Δ/mean(All) column is the respective Δ column value divided by the all column as a measure of understanding the magnitude of the difference in the overall sample of that specific payout variable. Two-sample t-tests of means are performed utilizing the Welch's t-test method. Payout variables are averaged at the firm level, with 6260 firms in the full sample. The null (alternative) hypothesis is that the difference of means is (is not) zero. Significance is related to the performed t-tests and is defined at 1%, 5%, and 10% is denoted with ***, **, and *, respectively. In Panel A, the tests are done with Central Location as the variable interacting with the payout-related variables for the full sample, financial crisis period, and COVID-19 period, respectively. In Panel B, the same structure is done for Proximity to major city and in Panel C, it is done for Proximity to major airport. The Full Sample includes 53437 observations, the Financial Crisis period includes 5071 observations, and the COVID-19 period includes 5872 observations.

Panel A - Central Location Interactions

Central Location	Full Dataset						
Variables	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.34	0.37	0.32	-0.06	-16.41%	0.00	***
Dividends	0.91	0.97	0.86	-0.12	-12.86%	0.00	***
Dividend Payout Ratio	0.25	0.25	0.24	-0.01	-5.73%	0.02	**
Repurchases	1.62	1.62	1.61	-0.01	-0.59%	0.75	
Dividends/Payout	0.39	0.42	0.36	-0.06	-15.98%	0.00	***
D(Dividends vs. Repurchases)	0.56	0.59	0.53	-0.07	-12.00%	0.00	***
D(Dividends)	-0.02	-0.03	-0.02	0.01	-49.04%	0.30	
D(Dividend Increase)	0.18	0.19	0.16	-0.03	-16.79%	0.00	***
D(Dividend Decrease)	0.06	0.07	0.05	-0.02	-24.44%	0.00	***
Leverage	0.27	0.28	0.25	-0.03	-11.11%	0.00	***
Leverage(Long-Term)	0.23	0.24	0.21	-0.03	-11.60%	0.00	***
D(Dividends > 0 and leverage > 0)	0.32	0.35	0.29	-0.05	-16.83%	0.00	***

Central Location	Financial Crisis						
Variables	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.33	0.36	0.31	-0.05	-16.08%	0.00	***
Dividends	1.09	1.20	1.00	-0.20	-18.44%	0.00	***
Dividend Payout Ratio	0.25	0.27	0.23	-0.04	-15.77%	0.07	*
Repurchases	2.21	2.15	2.26	0.11	5.08%	0.37	
Dividends/Payout	0.38	0.41	0.34	-0.07	-17.97%	0.00	***
D(Dividends vs. Repurchases)	0.54	0.58	0.50	-0.09	-16.31%	0.00	***
D(Dividends)	-0.09	-0.11	-0.08	0.03	-35.10%	0.39	
D(Dividend Increase)	0.18	0.20	0.17	-0.03	-15.41%	0.01	***
D(Dividend Decrease)	0.08	0.09	0.06	-0.03	-33.18%	0.00	***
Leverage	0.24	0.26	0.23	-0.03	-10.73%	0.00	***
Leverage(Long-Term)	0.21	0.22	0.20	-0.02	-9.92%	0.00	***
D(Dividends > 0 and leverage > 0)	0.30	0.32	0.28	-0.05	-15.57%	0.00	***
Central Location	COVID-19						
Variables	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.36	0.40	0.33	-0.07	-19.25%	0.00	***
Dividends	1.01	0.97	1.04	0.06	6.28%	0.24	
Dividend Payout Ratio	0.31	0.30	0.32	0.02	4.74%	0.51	
Repurchases	2.04	2.16	1.94	-0.22	-10.54%	0.03	**
Dividends/Payout	0.28	0.30	0.26	-0.04	-14.81%	0.00	***
D(Dividends vs. Repurchases)	0.46	0.50	0.43	-0.07	-15.95%	0.00	***
D(Dividends)	-0.02	-0.03	-0.02	0.01	-54.51%	0.67	
D(Dividend Increase)	0.23	0.25	0.20	-0.05	-21.23%	0.00	***
D(Dividend Decrease)	0.07	0.08	0.05	-0.03	-42.31%	0.00	***
Leverage	0.34	0.35	0.33	-0.02	-4.31%	0.02	**
Leverage(Long-Term)	0.30	0.30	0.29	-0.01	-4.09%	0.04	**
D(Dividends > 0 and leverage > 0)	0.36	0.39	0.32	-0.07	-19.50%	0.00	***

Panel B - Proximity to major city Interactions

Proximity to major city	Full Dataset						
Variables	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.34	0.38	0.31	-0.07	-19.26%	0.00	***
Dividends	0.91	0.98	0.85	-0.13	-14.19%	0.00	***
Dividend Payout Ratio	0.25	0.25	0.24	-0.02	-6.99%	0.00	***
Repurchases	1.62	1.65	1.59	-0.06	-3.44%	0.06	*
Dividends/Payout	0.39	0.42	0.36	-0.07	-16.86%	0.00	***
D(Dividends vs. Repurchases)	0.56	0.59	0.52	-0.07	-13.08%	0.00	***
D(Dividends)	-0.02	-0.03	-0.01	0.01	-64.74%	0.17	
D(Dividend Increase)	0.18	0.20	0.16	-0.04	-20.98%	0.00	***
D(Dividend Decrease)	0.06	0.07	0.05	-0.02	-26.09%	0.00	***
Leverage	0.27	0.28	0.25	-0.03	-11.57%	0.00	***
Leverage(Long-Term)	0.23	0.24	0.21	-0.03	-12.69%	0.00	***
D(Dividends > 0 and leverage > 0)	0.32	0.35	0.29	-0.06	-20.06%	0.00	***
Proximity to major city	Financial Crisis						
Variables	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.33	0.36	0.30	-0.07	-20.21%	0.00	***
Dividends	1.09	1.20	0.98	-0.22	-20.26%	0.00	***
Dividend Payout Ratio	0.25	0.27	0.22	-0.05	-19.39%	0.02	**
Repurchases	2.21	2.21	2.22	0.02	0.71%	0.90	
Dividends/Payout	0.38	0.41	0.34	-0.07	-17.37%	0.00	***
D(Dividends vs. Repurchases)	0.54	0.59	0.49	-0.10	-18.02%	0.00	***
D(Dividends)	-0.09	-0.11	-0.08	0.03	-36.20%	0.37	
D(Dividend Increase)	0.18	0.20	0.16	-0.04	-21.52%	0.00	***
D(Dividend Decrease)	0.08	0.09	0.06	-0.03	-33.81%	0.00	***
Leverage	0.24	0.26	0.23	-0.03	-12.04%	0.00	***
Leverage(Long-Term)	0.21	0.22	0.19	-0.02	-11.77%	0.00	***
D(Dividends > 0 and leverage > 0)	0.30	0.33	0.27	-0.06	-18.48%	0.00	***

Proximity to major city	COVID-19						
Variables	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.36	0.40	0.32	-0.07	-20.33%	0.00	***
Dividends	1.01	0.97	1.04	0.07	7.27%	0.18	
Dividend Payout Ratio	0.31	0.31	0.31	0.01	2.31%	0.75	
Repurchases	2.04	2.15	1.93	-0.22	-10.54%	0.03	**
Dividends/Payout	0.28	0.30	0.26	-0.04	-15.45%	0.00	***
D(Dividends vs. Repurchases)	0.46	0.50	0.42	-0.07	-16.02%	0.00	***
D(Dividends)	-0.02	-0.03	-0.01	0.02	-81.68%	0.52	
D(Dividend Increase)	0.23	0.25	0.20	-0.05	-24.09%	0.00	***
D(Dividend Decrease)	0.07	0.08	0.05	-0.03	-42.78%	0.00	***
Leverage	0.34	0.35	0.33	-0.02	-7.03%	0.00	***
Leverage(Long-Term)	0.30	0.31	0.28	-0.02	-7.67%	0.00	***
D(Dividends > 0 and leverage > 0)	0.36	0.39	0.32	-0.07	-20.72%	0.00	***

Panel C - Proximity to major airport Interactions

Proximity to major airport	Full Dataset						
Variable	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.34	0.36	0.33	-0.03	-9.67%	0.00	***
Dividends	0.91	0.96	0.87	-0.09	-10.07%	0.00	***
Dividend Payout Ratio	0.25	0.25	0.24	-0.01	-3.80%	0.11	
Repurchases	1.62	1.47	1.76	0.29	18.00%	0.00	***
Dividends/Payout	0.39	0.42	0.36	-0.06	-14.61%	0.00	***
D(Dividends vs. Repurchases)	0.56	0.58	0.54	-0.04	-6.86%	0.00	***
D(Dividends)	-0.02	-0.03	-0.01	0.01	-59.70%	0.20	
D(Dividend Increase)	0.18	0.18	0.17	-0.01	-5.85%	0.00	***
D(Dividend Decrease)	0.06	0.06	0.06	-0.01	-11.15%	0.00	***
Leverage	0.27	0.27	0.27	0.00	-0.59%	0.40	
Leverage(Long-Term)	0.23	0.23	0.22	0.00	-1.19%	0.13	
D(Dividends > 0 and leverage > 0)	0.32	0.33	0.30	-0.03	-8.16%	0.00	***

Proximity to major airport	Financial Crisis						
Variable	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.33	0.33	0.32	-0.01	-3.20%	0.41	
Dividends	1.09	1.09	1.08	0.00	-0.35%	0.95	
Dividend Payout Ratio	0.25	0.24	0.25	0.01	5.05%	0.55	
Repurchases	2.21	1.80	2.62	0.82	37.14%	0.00	***
Dividends/Payout	0.38	0.41	0.34	-0.06	-16.58%	0.00	***
D(Dividends vs. Repurchases)	0.54	0.56	0.52	-0.04	-6.97%	0.03	**
D(Dividends)	-0.09	-0.10	-0.08	0.02	-19.54%	0.63	
D(Dividend Increase)	0.18	0.18	0.18	0.00	-0.43%	0.94	
D(Dividend Decrease)	0.08	0.08	0.07	-0.01	-6.29%	0.51	
Leverage	0.24	0.25	0.24	-0.01	-4.64%	0.07	*
Leverage(Long-Term)	0.21	0.21	0.20	-0.01	-3.64%	0.20	
D(Dividends > 0 and leverage > 0)	0.30	0.30	0.29	-0.01	-2.97%	0.48	
Proximity to major airport	COVID-19						
Variable	**All**	**No**	**Yes**	**Δ**	**Δ / mean(all)**	**P-value**	
D(Dividends > 0)	0.36	0.40	0.32	-0.07	-20.66%	0.00	***
Dividends	1.01	1.08	0.95	-0.13	-12.79%	0.02	**
Dividend Payout Ratio	0.31	0.31	0.31	0.00	-0.87%	0.90	
Repurchases	2.04	1.94	2.13	0.18	8.92%	0.06	*
Dividends/Payout	0.28	0.31	0.25	-0.06	-20.69%	0.00	***
D(Dividends vs. Repurchases)	0.46	0.50	0.43	-0.07	-15.89%	0.00	***
D(Dividends)	-0.02	-0.01	-0.04	-0.02	95.60%	0.46	
D(Dividend Increase)	0.23	0.25	0.21	-0.04	-17.99%	0.00	***
D(Dividend Decrease)	0.07	0.07	0.06	-0.01	-16.00%	0.09	*
Leverage	0.34	0.33	0.35	0.02	6.55%	0.00	***
Leverage(Long-Term)	0.30	0.28	0.31	0.02	7.15%	0.00	***
D(Dividends > 0 and leverage > 0)	0.36	0.39	0.32	-0.07	-19.67%	0.00	***

Appendix B.3 - Geography and dividends

The following tables report Ordinary Least Squares (OLS) regressions of the dependent variable Dividends. This multivariate analysis is used to formally evaluate the magnitude of the location effect after controlling for other determinants of dividends. All the utilized variables are as described earlier. Three-digit SIC industry and year dummies are included. Robust t-statistics clustered by firm are in parentheses. Significance at 1%, 5%, and 10% is denoted with ***, **, and *, respectively. This Appendix has 3 panels, Panel A represents the Central Location Interactions, Panel B represents the Proximity to major city Interactions, Panel C represents the Proximity to major airport Interactions. Each Panel displays the set of multivariate regressions for the full data sample (Model 1), Model 2 represents the same set now controlled with a financial crisis period dummy, Model 3 does the same process controlled for the COVID-19 period.

Panel A - Full Dataset Interactions

Variables	**1**	**2**	**3**
Central Location	-0.051 *** (-3.30)	-0.045 *** (-2.80)	-0.070 *** (-4.30)
Central Location * Financial Crisis		-0.061 (-1.25)	
Central Location* COVID-19			0.172 *** (3.74)
Firm Age	0.208 *** (21.88)	0.208 *** (21.87)	0.209 *** (21.98)
Firm Risk	-0.081 *** (-9.24)	-0.081 *** (-9.25)	-0.080 *** (-9.19)
Firm Size	0.179 *** (18.39)	0.179 *** (18.39)	0.179 *** (18.40)
Market-to-book	-0.036 *** (-4.49)	-0.036 *** (-4.50)	-0.036 *** (-4.53)
ROA	0.126 *** (14.71)	0.126 *** (14.72)	0.126 *** (14.72)
Tangible Assets	0.156 *** (13.23)	0.156 *** (13.22)	0.156 *** (13.19)
Constant	1.058 *** (52.82)	1.058 *** (52.83)	1.055 *** (52.69)
R^2	0.212	0.212	0.212
Observations	53437	53437	53437

Panel B - Financial Crisis Interactions

Variables	**1**	**2**	**3**
Distance	0.006 * (1.91)	0.006 * (1.78)	0.009 *** (2.61)
Distance*Financial Crisis		0.002 (0.19)	
Distance*COVID-19			-0.025 ** (-2.51)
Firm Age	0.209 *** (21.89)	0.209 *** (21.89)	0.209 *** (21.94)
Firm Risk	-0.081 *** (-9.30)	-0.081 *** (-9.30)	-0.081 *** (-9.26)
Firm Size	0.178 *** (18.30)	0.178 *** (18.30)	0.178 *** (18.31)
Market-to-book	-0.037 *** (-4.55)	-0.037 *** (-4.55)	-0.037 *** (-4.58)
ROA	0.127 *** (14.80)	0.127 *** (14.80)	0.127 *** (14.81)
Tangible Assets	0.157 *** (13.31)	0.157 *** (13.31)	0.157 *** (13.28)
Constant	1.014 *** (48.16)	1.014 *** (48.16)	1.015 *** (48.20)
R^2	0.212	0.212	0.212
Observations	53437	53437	53437

Panel C - COVID-19 Interactions

Variables	**1**	**2**	**3**
Proximity to major city	-0.057 *** (-3.72)	-0.053 *** (-3.28)	-0.080 *** (-4.94)
Proximity to major city*Financial Crisis		-0.048 (-0.98)	
Proximity to major city*COVID-19			0.207 *** (4.53)
Firm Age	0.208 *** (21.82)	0.208 *** (21.81)	0.209 *** (21.94)
Firm Risk	-0.081 *** (-9.25)	-0.081 *** (-9.26)	-0.080 *** (-9.20)
Firm Size	0.179 *** (18.38)	0.178 *** (18.37)	0.179 *** (18.38)
Market-to-book	-0.036 *** (-4.48)	-0.036 *** (-4.49)	-0.036 *** (-4.53)
ROA	0.126 *** (14.72)	0.126 *** (14.73)	0.127 *** (14.76)
Tangible Assets	0.156 *** (13.22)	0.156 *** (13.22)	0.156 *** (13.17)
Constant	1.058 *** (53.58)	1.058 *** (53.58)	1.056 *** (53.46)
R^2	0.212	0.212	0.212
Observations	53437	53437	53437

Appendix B.4 - Geography and dividends: Free Cash Flow conflicts

This Appendix reports Ordinary Least Squares (OLS) regressions of the dependent variable Dividends. All the utilized variables are as described earlier. Three-digit SIC industry and year dummies are included. Robust t-statistics clustered by firm are in parentheses. Significance at 1%, 5%, and 10% is denoted with ***, **, and *, respectively. Appendix B.4 has 4 panels displaying sets of multivariate regressions. Panel A and B are the sets of regressions with the Central Location or Distance variable interactions for the full data sample. Model 1 focuses on the relation of these variables with Market-to-Book effects on dividends, Model 2 focuses on the relation with Cash Flow, and Model 3 focuses on the relation with Growth Opportunities. Panel C displays the set of regressions with the Central Location variable interactions for the full data sample, controlled with a financial crisis period dummy for Models 1,2, and 3, and controlled for the COVID-19 period for Models 4,5, and 6. Panel D displays the set of regressions with the Distance variable interactions for the full data sample, controlled with a financial crisis period dummy for Models 1,2 and 3 and controlled for the COVID-19 period for Models 4,5 and 6. Panel C and D have 6 models. Models 1 and 4 focus on the relation between Central Location or Distance and Market-to-Book effects on dividends. Models 2 and 5 focus on the relation between Central Location or Distance and Cash Flow effects on dividends. Models 3 and 6 focus on the relation between Central Location or Distance and Growth Opportunities' effects on dividends.

Panel A – Central Location interactions

Dependent Variable: Dividends			
Explanatory Variables	**1**	**2**	**3**
Central Location	-0.052 *** (-3.34)	-0.054 *** (-3.51)	-0.052 *** (-3.37)
Central Location*Market-to-book	-0.044 *** (-2.94)		
Central Location*Cash Flow		-0.036 ** (-2.42)	
Central Location*Growth Opportunities			0.027 * (1.83)
ROA	0.125 *** (14.60)		0.125 *** (14.62)
Market-to-book	-0.009 (-0.74)		-0.025 *** (-3.09)
Cash Flow		0.138 *** (11.28)	
Growth Opportunities			-0.104 *** (-9.20)
Tangible Assets	0.157 *** (13.25)	0.159 *** (13.43)	0.152 *** (12.88)
Firm Size	0.179 *** (18.44)	0.173 *** (17.67)	0.184 *** (18.89)
Firm Risk	-0.081 *** (-9.30)	-0.086 *** (-9.86)	-0.077 *** (-8.79)
Firm Age	0.208 *** (21.84)	0.212 *** (22.25)	0.195 *** (20.41)
Constant	1.059 *** (52.89)	1.064 *** (53.28)	1.052 *** (52.59)
R^2	0.212	0.212	0.214
Observations	53437	53437	53437

Panel B – Distance interactions

Dependent Variable: Dividends			
Explanatory Variables	**1**	**2**	**3**
Distance	0.006 * (1.88)	0.007 ** (2.15)	0.007 ** (2.03)
Distance*Market-to-book	0.011 *** (3.65)		
Distance*Cash Flow		0.006 * (1.95)	
Distance*Growth Opportunities			-0.004 (-1.19)
ROA	0.126 *** (14.66)		0.126 *** (14.71)
Market-to-book	-0.066 *** (-5.80)		-0.025 *** (-3.15)
Cash Flow		0.102 *** (8.60)	
Growth Opportunities			-0.079 *** (-7.15)
Tangible Assets	0.158 *** (13.36)	0.160 *** (13.52)	0.153 *** (12.97)
Firm Size	0.179 *** (18.38)	0.172 *** (17.57)	0.183 *** (18.80)
Firm Risk	-0.082 *** (-9.38)	-0.086 *** (-9.92)	-0.077 *** (-8.86)
Firm Age	0.208 *** (21.84)	0.212 *** (22.26)	0.196 *** (20.43)
Constant	1.016 *** (48.24)	1.018 *** (48.30)	1.007 *** (47.86)
R^2	0.212	0.212	0.214
Observations	53437	53437	53437

Panel C – Central Location interactions with GFC and COVID-19 dummies

Dep. Variable: Dividends						
Explanatory Variables	**1**	**2**	**3**	**4**	**5**	**6**
Central Location	-0.045 *** (-2.78)	-0.049 *** (-3.03)	-0.047 *** (-2.89)	-0.072 *** (-4.42)	-0.072 *** (-4.45)	-0.071 *** (-4.37)
Central Location*GFC	-0.066 (-1.34)	-0.058 (-1.19)	-0.057 (-1.16)			
Central Location*Covid				0.194 *** (4.18)	0.181 *** (3.87)	0.168 *** (3.66)
Central Location*Market-to-book	-0.047 *** (-3.11)			-0.039 ** (-2.51)		
Central Location*Market-to-book*FC	0.032 (0.83)					
Central Location*Market-to-book*Covid				-0.050 ** (-2.05)		
Central Location*Cash Flow		-0.037 ** (-2.46)			-0.040 *** (-2.61)	
Central Location*Cash Flow*GFC		0.016 (0.49)				
Central Location*Cash Flow*Covid					0.054 ** (2.19)	
Central Location*Growth Opportunities			0.026 * (1.76)			0.015 (1.02)
Central Location*Growth Opportunities*GFC			-0.001 (-0.03)			
Central Location*Growth Opportunities*Covid						0.068 *** (2.65)
ROA	0.125 *** (14.58)		0.126 *** (14.63)	0.125 *** (14.55)		0.126 *** (14.65)
Market-to-book	-0.008 (-0.68)		-0.025 *** (-3.10)	-0.007 (-0.55)		-0.025 *** (-3.09)
Cash Flow		0.139 *** (11.28)			0.136 *** (11.08)	
Growth Opportunities			-0.104 *** (-9.17)			-0.104 *** (-9.17)
Tangible Assets	0.157 *** (13.25)	0.158 *** (13.42)	0.152 *** (12.88)	0.156 *** (13.21)	0.159 *** (13.44)	0.152 *** (12.83)
Firm Size	0.179 *** (18.44)	0.173 *** (17.65)	0.184 *** (18.88)	0.180 *** (18.49)	0.173 *** (17.70)	0.184 *** (18.90)
Firm Risk	-0.081 *** (-9.31)	-0.086 *** (-9.87)	-0.077 *** (-8.80)	-0.081 *** (-9.27)	-0.085 *** (-9.84)	-0.077 *** (-8.78)
Firm Age	0.208 *** (21.84)	0.212 *** (22.25)	0.195 *** (20.41)	0.209 *** (21.88)	0.210 ***(21.86)	0.198 *** (20.62)
Constant	1.059 ***(52.90)	1.065 *** (53.28)	1.052 *** (52.60)	1.057 *** (52.78)	1.063 *** (53.17)	1.049 *** (52.45)
R^2	0.212	0.212	0.214	0.213	0.212	0.215
Observations	53437	53437	53437	53437	53437	53437

Panel D – Distance interactions with GFC and COVID-19 dummies

Dep. Variable: Dividends						
Explanatory Variables	**1**	**2**	**3**	**4**	**5**	**6**
Distance	0.006 * (1.67)	0.007 ** (2.02)	0.007 * (1.91)	0.009 *** (2.68)	0.010 *** (2.76)	0.010 *** (2.75)
Distance*GFC	0.008 (0.71)	0.001 (0.10)	0.001 (0.12)			
Distance*Covid				-0.027 *** (-2.70)	-0.024 ** (-2.44)	-0.025 ** (-2.52)
Distance*Market-to-book	0.010 *** (3.31)			0.013 *** (4.13)		
Distance*Market-to-book*GFC	0.016 * (1.87)					
Distance*Market-to-book*Covid				-0.009 (-1.61)		
Distance*Cash Flow		0.005 * (1.67)			0.006 ** (2.01)	
Distance*Cash Flow*GFC		0.008 (1.15)				
Distance*Cash Flow*Covid					-0.006 (-1.20)	
Distance*Growth Opportunities			-0.003 (-1.10)			-0.006 * (-1.94)
Distance*Growth Opportunities*GFC			-0.002 (-0.27)			
Distance*Growth Opportunities*Covid						0.017 *** (3.03)
ROA	0.126 *** (14.61)		0.126 *** (14.71)	0.126 *** (14.63)		0.126 *** (14.75)
Market-to-book	-0.066 *** (-5.80)		-0.025 *** (-3.16)	-0.067 *** (-5.92)		-0.025 *** (-3.14)
Cash Flow		0.102 *** (8.60)			0.104 *** (8.71)	
Growth Opportunities			-0.079 *** (-7.15)			-0.079 ***(-7.17)
Tangible Assets	0.158 *** (13.37)	0.160 *** (13.53)	0.153 *** (12.97)	0.158 *** (13.32)	0.159 *** (13.47)	0.153 *** (12.94)
Firm Size	0.179 *** (18.39)	0.172 *** (17.56)	0.183 *** (18.79)	0.179 *** (18.41)	0.172 *** (17.57)	0.183 *** (18.79)
Firm Risk	-0.082 *** (-9.38)	-0.086 *** (-9.93)	-0.077 *** (-8.86)	-0.082 *** (-9.36)	-0.086 *** (-9.88)	-0.077 *** (-8.86)
Firm Age	0.208 *** (21.85)	0.212 *** (22.28)	0.196 *** (20.43)	0.209 *** (21.88)	0.214 *** (22.30)	0.197 *** (20.58)
Constant	1.016 *** (48.24)	1.018 *** (48.30)	1.007 *** (47.86)	1.017 *** (48.30)	1.019 *** (48.34)	1.007 *** (47.85)
R^2	0.212	0.212	0.214	0.212	0.212	0.214
Observations	53437	53437	53437	53437	53437	53437