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ORIGINAL EMPIRICAL RESEARCH

Weathering the crash: Do customer-company relationships pay off during economic crises?

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Abstract

Do stronger relationships with customers (customer-company relationships [CCR]) help firms better weather economic crises? To answer this question, we examine firm performance during the stock market crashes associated with the two most severe economic crises of the last 15 years—the protracted Great Recession crisis (2008–2009) and the shorter but extreme COVID-19 pandemic crisis (2020). Juxtaposing the predominant expected utility theory perspective with observed deviations in investor behavior during crises, we find that both pre-crash firm-level customer satisfaction and customer loyalty are positively associated with abnormal stock returns and lower idiosyncratic risk during a market crash, while pre-crash firm-level customer complaint rate negatively affects abnormal stock returns and increases idiosyncratic risk. On average, we find that one standard deviation higher CCR is associated with between $0.9 billion and $2.4 billion in market capitalization on an annualized basis. Importantly, we find that these effects are weaker for firms with higher market share during the COVID-19 crash, but not during the Great Recession crash. These results are found to be robust to a variety of alternate model specifications, time periods, sub-samples, accounting for firm strategies during the crises, and endogeneity corrections. When compared to relevant non-crash periods, we also find that such effects are equally strong during the Great Recession crash and even stronger during the COVID-19 pandemic crash. Contributing to both the marketing-finance interface literature and the nascent literature on marketing during economic crises, implications from these findings are provided for researchers, marketing theory, and managers.

Keywords Economic crisis · Stock market crash · Customer-company relationships · Market share

Introduction

Over the last 15 years, the global economy has been rocked by two of the most severe economic crises—defined as an unanticipated significant downturn in the economy (Lee & Makhija, 2009)—of the last 150 years. The first was the Great Recession (2008–2009), the longest and deepest economic recession and the most significant stock market crash[1] since the Great Depression (NBER, 2010). The second and more recent crisis was spawned by the COVID-19 global pandemic (2020) and resulted in the most rapid 30% decline among the major stock market indices in history (Li, 2020). These two economic crises had widely different causes. The Great

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[1] Definitions of a "stock market crash" vary widely, from relatively broad ("a rapid and often unanticipated drop in stock prices" (investopedia.com)), to more precise definitions, such as a 10%, 25%, or 30% (or larger) decline in the market within a single year (e.g., Ziemba et al., 2017). Though we avoid definitively adopting any one of these definitions, the two events examined here qualify as "stock market crashes" under any definition of which we are aware.

Recession was a protracted endogenous crisis that emerged from weaknesses within a particular sector of the global economy (i.e., the financial sector) that depressed consumer spending for close to 30 months. On the other hand, the COVID-19 crisis was an exogenous shock—specifically, a consequence of the emergence of a novel viral pathogen—that lasted for only about 12 months but fundamentally changed the pattern of consumer spending both during and after this period. Yet while the causes of these crises and their effects on consumers were very different, their negative consequences for the broader economy were similar. Both resulted in dramatically increased unemployment, a contraction in economic growth, reduced revenues for most firms, negative company stock market returns, and an eventual spike in firm bankruptcies, among other effects. Moreover, unique causes notwithstanding, both crises revealed the undeniable importance of firm strategies for mitigating the deleterious effects of such rare but monumental events.

For most firms, strategies for managing and surviving an economic downturn are multifaceted but tend to focus on defensive reactions like cost-cutting, hiring freezes and/or reductions in the workforce, trimming of product lines, reductions in marketing and advertising expenditures, and so forth (e.g., Navarro, 2009). However, firms that focus too aggressively on these defensive strategies during a recession are less successful both during a crisis and in post-crisis recovery, as these cuts often result in diminished consumer perceptions of the quality and satisfaction delivered by the firm (Gulati et al., 2010). This observation raises an important question: Given that aggressive defensive strategies often fail to shield firms from the negative effect of economic crises, what alternative proactive strategies can firms take to combat these negative effects? In particular, we ask, do firms' investments in strong, positive relationships with their customers before crises help them better weather such crises when they (unexpectedly) occur? Additionally, as economic crises typically result in substantial changes in customer needs and preferences (Grewal & Tansuhaj, 2001; Gajewski, 1992), we ask, how does the effect of customer-company relationships on firm performance vary as a function of the heterogeneity of the customer base served by firms (i.e., the firm's market share) during crises?

Despite the emergence of a substantial body of research examining the association between customer-company relationships (CCR) and firm stock market performance (see Table A1a, Web Appendix Otto et al., 2020), no study (to our knowledge) has examined the ability of CCR to help firms better weather the negative effects of a stock market crash driven by a major economic crisis on firms' stock market performance. The emerging body of research on economic crises and marketing also provides no guidance on whether stronger customer-company relationships help firms more successfully weather these crises (see Table A1b, Web Appendix A; Dekimpe & Deleersnyder, 2018), as most research focuses on understanding post-crisis effects on firms and not on pre-crisis actions that help firms mitigate the negative impacts of the crises. This is a puzzling and problematic omission, given the presence of two historically severe economic crises and market crashes in just the last 15 years, the increased attention being given to the role of marketing during economic crises, and the important impact of these crises on the marketing function. In the current study, we seek to close this gap in the literature, contributing to and expanding both the existing research on the CCR-stock market performance relationship and fledgling research on company mitigation strategies from the effects of economic crises in marketing in three significant ways.

First, economic crises are unique and somewhat rare, historically occurring about once per decade. However, they are often pivotal moments for firms that pose substantial challenges vis-à-vis both consumer and financial markets (Chakrabarti, 2015); many firms are unable to survive this turmoil and succumb to bankruptcy (Irum & Hudgins, 2021; Pandise, 2020). Prior research has speculated about the potential ability of strong CCR in enabling companies to mitigate the loss of market value and decreasing volatility during economic crises (e.g., Aksoy et al., 2008; Fornell et al., 2006; Fornell et al., 2016), and the traditional theoretical foundation of these studies (i.e., expected utility theory) suggests that companies with strong CCR should enjoy above market performance during such crises. However, this conclusion is untested and uncertain against the backdrop of observed changes in investor sentiment and behavior during crises and market crashes (e.g., Barberis, 2013; De Bondt & Thaler, 1985; Giglio et al., 2020). Our findings show that firms' investments toward stronger CCR not only positively affect firm performance during normal market conditions, as observed in prior literature, but also during economic crises when such relationships are disrupted, i.e., when the ability of firms and customers to maintain these relationships is constrained by external forces.

Second, we examine how firms benefited from pre-crisis CCR during two distinct economic crises emerging from different underlying causes—one endogenous and the other exogenous—and having differential impacts on firms and consumers due to the nature of the shocks. Not only did these crises emerge from disparate underlying causes, but they also presented firms with unique challenges and limitations (i.e., the limited borrowing ability of firms during the endogenous Great Recession crisis vs. the "lockdowns" in response to the exogenous COVID-19 crisis), and thus provide potentially unique implications for firms as they aim to prepare for and respond to such events (Perri & Quadrini, 2018). Importantly, we observe significant differences between the two types of crises, including in the strength of the CCR-stock market performance relationship when

compared to non-crisis periods and in the moderating role of firm market share. As such, this study makes an important contribution to the nascent literature examining the significant role of marketing during economic crises emerging from varied causes (e.g., Edeling et al., 2021; Srinivasan et al., 2011; Steenkamp & Maydeu-Olivares, 2015; see Table A1b, Web Appendix A).

Finally, we further contribute to the marketing literature on both CCR (Table A1a, Web Appendix A) and economic crises (Table A1b, Web Appendix A) by theoretically proposing and testing a moderating effect of firm market share on the CCR-stock market performance relationship. While a larger share of the market vis-à-vis industry competitors is typically deemed desirable and provides firms with many benefits, it is also accompanied by unique challenges that may be of particular relevance during economic crises (e.g., Edeling & Himme, 2018). Specifically, larger market share companies have, by definition, a larger and more heterogeneous customer base. For these firms, when faced with the stress of an economic crisis and the need to pivot their offerings for these unique conditions, doing so may be more difficult precisely because of the presence of a larger and more diverse groups of customers. However, our findings indicate that this may not always be the case. Empirically, and adopting a dynamic market share measure proposed in recent research that better captures the market participation of firms (Bhattacharya et al., 2022), we find that in the context of economic crises heterogeneity in a firm's customer base negatively moderates the CCR-stock performance relationship during the COVID crisis, but not during the Great Recession. We discuss these divergent findings vis-à-vis the differential nature of these crises, and particularly, the availability of resources to adapt to sudden changes in the needs of heterogenous customer bases (e.g., during the COVID crisis) as opposed to conditions when firms are heavily resource constrained (e.g., during the Great Recession).

In summary, controlling for a variety of firm and market covariates and using instrumental variable estimation, companies' pre-crash CCR is found to significantly help companies weather economic crises, mitigating both the loss of market value and the firm-specific risk experienced by firms (some more than others) during such events. Higher pre-crash levels of customer satisfaction and customer loyalty, and lower pre-crash levels of customer complaints, are found to be positively associated with abnormal returns and lower idiosyncratic (i.e., firm-specific) risk during the substantial stock market crashes triggered by both the Great Recession and COVID-19. These effects are observed to be weaker for firms with higher levels of market share during the COVID-19 pandemic market crash, but not during the Great Recession market crash, highlighting the importance of examining this relationship across distinct types of economic crises. Furthermore, despite the presence of significant constraints on customers' and firms' ability to sustain relationships, we find that when compared to non-crash periods the effects of CCR on company stock market performance are equally strong during the Great Recession market crash and stronger during the COVID-19 pandemic market crash. Overall, these results indicate that marketing success as stronger customer-company relationships not only aids firms in terms of stock market performance during normal growth-market conditions but also helps firms weather these two severe, distinct (endogenous and exogenous) types of economic crisis.

Research background

Academic researchers and marketing managers have long recognized the importance of strong relationships between companies and their customers (customer-company relationships [CCR]) for driving consumer behaviors vital to firm financial performance (Oliver, 1980; Hult et al., 2022). Given the importance of stock market performance to publicly traded companies vis-à-vis credit and debt, executive compensation, as a key indicator of overall company health, and so forth (Anderson & Mansi, 2009), this literature has most recently focused on the relationship between CCR and firm stock market performance. These studies have examined various measures of CCR (though predominantly customer satisfaction; see Table A1a, Web Appendix A) and assorted measures of stock market performance—including abnormal returns, idiosyncratic returns, systematic downside and idiosyncratic risk, Tobin's q, shareholder value, stock value gap, short-seller interest, and market value of equity (Fornell et al., 2006, 2016; Lariviere et al., 2016; Luo, 2007; Luo & Bhattacharya, 2006; Luo & Homburg, 2008; Malshe et al., 2020; Tuli & Bharadwaj, 2009). However, despite the recent appearance of two highly impactful economic crises and market crashes, none of these studies have examined how CCR helps firms better weather the negative effects of such events.

The global economy has recently experienced two severe economic crises of historical proportions—the long and deep endogenous Great Recession crisis, and the short, sudden, and severe exogenous COVID-19 pandemic crisis (NBER, 2010; Li, 2020). Each of these crises spawned substantial stock market crashes unparalleled since the early 20th century, with one (the Great Recession) inducing the deepest market crash since the Great Depression, and the other (COVID-19) surpassing even the Great Depression with the speed of its market crash (Li, 2020). Today recessions may be less frequent due to more aggressive fiscal intervention in global economies, but they also appear to be evolving into more intense and problematic events (Harding, 2019), leading companies to seek strategies

for protecting themselves against their negative effects (Navarro, 2009). As such, marketing literature has given increased attention to economic crises as they impact and are impacted by marketing activities (see Table A1b, Web Appendix A) (e.g., Dubé et al., 2018; Steenkamp & Maydeu-Olivares, 2015).

Yet surprisingly—particularly given the overlap between the aforementioned CCR-stock market performance studies and recent economic crises and market crashes—while the potentially positive effects of CCR on firm performance during economic crises have often been mentioned, they have never been explicitly tested. As such, these studies have failed to examine observed deviations in investor behavior during economic crises that suggest potentially differential outcomes relative to ordinary growth market conditions. For example, Fornell et al. (2006) study the customer satisfaction-abnormal returns relationship from 1997 to 2003 and note that stronger satisfaction companies "seemed to have benefited from some degree of insulation" during the early 2000s recession, but do not explicitly examine this period (Fornell et al., 2006, 8). Aksoy et al. (2008) find that companies with stronger and improving satisfaction enjoy significant above-market returns (1996–2006) and note "some weak evidence" of an insulation effect during the same recession (Aksoy et al., 2008, 117). However, they too fail to examine the question more definitively. Fornell, Morgeson, and Hult (2016) identify unique results during the post-Great Recession recovery following that market crash but again do not isolate and test this period. Finally, several other studies (e.g., Luo, 2007; Jacobson & Mizik, 2009) include time controls in their models to account for "event shocks" during the study periods but include relatively broad variables (i.e., quarterly time-fixed effects) ill-suited to isolating these relationships during a market crash event (which rarely adhere to the fiscal calendar).

Usefully, Tuli and Bharadwaj (2009) focus on the ability of CCR (as customer satisfaction) to minimize stock returns risk. Studying the period from 1996 to 2006, the authors conclude that, through an ability to maintain cash flows during down markets, improvements in firm customer satisfaction decrease both downside idiosyncratic risk (volatility) and downside systematic risk ("negative excess returns"). Following the finance literature (Ang et al., 2006), the authors define the latter as the beta of each security in their portfolios calculated from annualized Fama-French three-factor models restricted to trading days when the market returned less than the risk-free rate (Tuli & Bharadwaj, 2009). While indicative of risk in the financial sense, these results do not test the CCR-stock market performance relationship during a significant market crash resulting in substantial aggregate market losses, as they include any single trading day when the market was below the risk-free rate (even if non-negative, or a day of negative market correction during a period of prolonged market growth) as indicative of a "down market."[2] In sum, much like the other studies that mention the effect of CCR on firm performance during economic crises and a resulting market crash, this study may be suggestive of a positive relationship but the methods employed make establishing it impossible.

Theory and hypotheses

The above literature review outlines the extant evidence of superior firm stock market performance through strong customer-company relationships during normal growth-market conditions. It likewise outlines the (limited) evidence that the relationship between CCR and firm stock returns performance endures during severe economic crises and accompanying market crashes. However, this latter effect is not unequivocal. Substantial observed changes in investor sentiment and behavior during these crises make this conclusion uncertain. These uncertainties partially motivate this study and justify the investigation of the effect of strong CCR on firm stock market performance during economic crises and market crash events.

To begin, the literature examining the effect of customer-company relationships on firm stock market performance is founded on a model of asset pricing derived from neoclassical economics' expected utility theory (EUT) (Barberis, 2013; Von Neumann & Morgenstern, 1947). EUT views decision makers (including investors) as rational, risk-averse utility (returns) maximizers capable of complex decision-making under conditions of uncertainty (Von Neumann & Morgenstern, 1947). Investors select assets that they believe will maximize their wealth (returns) with as little firm-specific volatility as possible (risk); in the aggregate, markets reward firms that attract more such investors with superior (i.e., higher abnormal returns) and more stable (i.e., lower firm-specific share price volatility) stock returns performance.

[2] To illustrate the point, we examined the 1996–1999 period included in the Tuli & Bharadwaj study, a period of dramatic stock market growth (the S&P 500 and the DJIA more than doubled over this 4-year period, while the NASDAQ increased nearly 300%). Of the roughly 1,000 trading days (1,010) during this period, nearly half (458) qualify as "negative excess market return" days when returns fell short of the risk-free rate. It is debatable that these individual days of small market declines (or below-risk-free-rate performance) during a period of otherwise incredible cumulative market growth indicate an insulation effect for firms during a "down market." The authors also focus on changes in customer satisfaction rather than levels (though through robustness checks they do confirm their results for levels). One would expect the latter to be the more relevant indicator of CCR during an economic crisis because indicative of longer-term relationships between company and customer rather than recent volatility therein. The former is more appropriate to a study relating dynamic changes in CCR to movement in firms' stock returns (i.e., a CCR "announcement effect") (Fornell et al., 2006, 2016).

In parallel, EUT serves as the foundation for the proposition that investors and capital markets will reward firms with stronger CCR, as these firms have characteristics that ought to generate superior returns at lower risk (Fornell et al., 2006). The advantageous characteristics of strong CCR firms leading investors to this conclusion are myriad, but include: stronger customer satisfaction resulting in customers not only more likely to repurchase from the firm in the future (customer loyalty), but also willing to pay more for goods (i.e., lower price elasticity), to purchase more frequently, and to buy new offerings from the company (Fornell et al., 2006; Homburg et al., 2005; Morgeson et al., 2020); lower customer service and service recovery costs through lower customer complaint rates (Bhattacharya et al., 2021; Morgeson et al., 2020); superior market share (both levels and growth) relative to competitors (Keiningham et al., 2014; Morgan & Rego, 2006; Rego et al., 2013); lower customer acquisition costs (Wiesel et al., 2008); and lower future cost of selling (Lim et al., 2020). The positive effect of these characteristics on observable outcomes monitored by investors, such as cash flow, revenue growth, earnings surprises, and earnings growth, should drive more and more stable capital to strong CCR companies (Fornell et al., 2016; Gruca & Rego, 2005), at least during growth market conditions.

On the other hand, a plethora of studies in behavioral finance has observed that investors and markets often deviate from the axioms of expected utility theory (e.g., Starmer, 2000). In particular, markets and market participants have been shown to change dramatically during times of economic crisis (Barberis, 2013; De Bondt & Thaler, 1985). Large swings in both returns expectations and perceived risks foreseen by investors have been observed as such crises unfold (Giglio et al., 2020; Hoffmann et al., 2013). Moreover, markets have been shown to overreact to "dramatic, unanticipated news" (De Bondt & Thaler, 1985) and exhibit instances of "panic selling" (Haroon & Rizvi, 2020), "noise trading" (De Long et al., 1990), and "fear trading" (Da et al., 2015) during such events. Collectively, these findings suggest a deviation from the behaviors predicted by expected utility theory in the higher-risk environment definitive of the run-up to and during an economic crisis. As such, it is possible that investors do not behave in a manner that supports the CCR-stock market performance relationship observed in growth markets during times of economic crisis. The uncertainty spawned by a crisis and investor perceptions of increased risk may result in indiscriminate panic- and fear-driven selling, with investors seeking refuge in (perceived) less-risky cash positions by selling most or all their assets, regardless of either fundamentals or intangibles like CCR. In this scenario, strong CCR companies may perform similarly (poorly) to weak CCR companies in terms of both returns and risk/volatility during a market crash.

More significantly, and related to the disposition effect—which observes that loss-averse individuals will often sell high-performing assets (to realize paper gains before they vanish) and yet continue to hold poor-performing assets (to avoid realizing paper losses) (Barberis & Xiong, 2009; Shefrin & Statman, 1985)—strong CCR companies might underperform weak CCR firms during a market crash. That is, assuming that strong CCR firms have been held in a portfolio for a sufficient duration to produce long-term excess portfolio returns in the run-up to a crisis, fear of losing these (paper) gains during an unfolding market crash may inspire fearful investors to sell their strong CCR equities, while at the same time holding already-poor-performing and weak CCR companies in the portfolio to avoid realizing losses, resulting in strong CCR firms experiencing both below-market returns and greater firm-specific (idiosyncratic) risk during a market crash relative to weak CCR firms.

Nevertheless, we propose that the positive impact of strong company CCR on firm stock market performance during non-crisis market conditions will continue during economic crises, providing firms with equally strong (or perhaps even stronger) benefits with their customers that will be recognized by risk-averse, returns maximizing investors. From the top-down (firm) perspective, this is because firms that develop stronger relationships with their customers typically do so by offering superior products and services that better meet customer needs at competitive prices. Such superior offerings result from sustained investments in the market- and customer-sensing activities that allow them to better understand both their customers and their competitors. The satisfied and loyal customers resulting from such investments in turn provide richer and deeper insights into their preferences for firms (Tuli & Bharadwaj, 2009). As a result of this virtuous cycle, firms with stronger relationships with their customers should enter unanticipated economic crises with a deeper understanding of customer preferences and a superior ability to anticipate changes in both customer demand patterns and competitor actions. Therefore, such firms are uniquely positioned to adapt to sudden changes in customer needs and marketplace dynamics inflicted by an economic crisis, thereby generating higher abnormal returns and experiencing lower cash flow volatility (compared to firms with weaker relationships with their customers) during a crisis.

In addition, from the bottom-up (customer) perspective, strong CCR before an economic crisis should produce a "reservoir of goodwill" for these companies with their customers as the latter enter an uncertain economic environment threatening their ability to spend (Morgeson et al., 2020). That is, CCR (in this instance, particularly customer satisfaction and customer loyalty) should result in consumers with a stronger "willingness to buy" their favorite goods from their favorite companies even during a crisis that threatens

their income (Fornell et al., 2010; Katona, 1974). In turn, these factors should allow these superior CCR firms to better maintain their cash flow and thus their market performance (Tuli & Bharadwaj, 2009). This same reservoir of goodwill may also provide firms with stronger CCR with segments of customers who feel greater sympathy for the firms' struggles and thus less likely to defect or complain in response to temporary downgrades in product and/or service quality necessitated by these crises (e.g., the many service disruptions caused by the COVID-19 pandemic). Moreover, the operational efficiencies generated by strong CCR and noted above, such as the lower customer service and service recovery costs through lower customer complaint rates, suggest that these firms should better weather the challenging environment wrought by an economic crisis (Bhattacharya et al., 2021; Morgeson et al., 2020). From this perspective, EUT as applied in the context of economic crises would suggest that investors and markets ought to continue the commitment to strong CCR firms even as a crisis and market crash begin to unfold.

Consequently, we propose that the CCR-stock market performance relationship observed during normal growth market conditions will persist during an economic crisis and market crash event, and hypothesize:

H1 Firms with stronger pre-crash relationships with their customers (CCR)—higher customer satisfaction, higher customer loyalty, and lower customer complaint rate—experience superior abnormal stock returns during a market crash.

H2 Firms with stronger pre-crash relationships (CCR) with their customers—higher customer satisfaction, higher customer loyalty, and lower customer complaint rate—experience lower idiosyncratic stock returns risk during a market crash.

The moderating role of market share

Driven by their superior relationships with customers and the resulting reservoir of goodwill they enjoy, firms with stronger CCR are hypothesized to better weather economic crises, as reflected in their superior firm-specific returns (higher) and risk (lower) during both the Great Recession and COVID-19 market crashes. In part, these advantageous outcomes are because stronger CCR firms have a superior ability to anticipate and respond to changes in customer needs and preferences as they enter unanticipated economic crises, allowing them to earn superior returns at lower risk. However, since economic crises typically result in substantial changes in customer needs and preferences (Grewal & Tansuhaj, 2001; Gajewski, 1992), we next ask how the impact of pre-crisis customer-company relationships on firms' performance during crises varies as a function of the heterogeneity of the customer base they serve. Specifically, we propose a moderating role of firm market share in these relationships, a relationship that has not yet been explored but is of relevance during economic crises.

Both a firm's CCR and its market share are important marketing performance indicators for investors (Rego et al., 2013). As noted earlier, one long-recognized benefit for firms with strong CCR is market share advantages relative to competitors—specifically, superior market share maintenance and growth. Independently, a large and/or growing market share can provide firms with innumerable financial performance advantages, such as improved brand recognition and herding effects leading new customers to choose the dominant brand (Ding & Li, 2019). However, there are some observed disadvantages to market share growth and levels for firms as well. Most critically, a large and/or growing market share results in firms needing to provide goods to a larger (relative to competitors or themselves over time) group of customers with more heterogenous wants and needs, a condition that itself can challenge the firm's ability to maintain their strong CCR (Anderson et al., 1994; Rego et al., 2013). This is particularly true in the "customization economy," wherein customers increasingly demand goods personalized to their preferences (Fornell et al., 2020).

The CCR-market share relationship driven by customer heterogeneity, combined with the fact that large economic crises are known to disrupt customers' existing wants and needs (e.g., Dutt & Padmanabhan, 2011; Steenkamp & Maydeu-Olivares, 2015), recommends examination of the potential moderating effect of firm market share on the CCR-stock market performance relationship, and particularly during market crashes. Specifically, we anticipate that the favorable effects of stronger pre-crisis CCR on a firm's stock market performance during a market crash will be weaker for firms that enter an economic crisis with a more heterogeneous customer base—i.e., for firms with larger pre-crisis market share. This is because during an unanticipated economic crisis higher market share firms will face greater challenges in maintaining and/or modifying their offerings for this more heterogeneous customer base (cf., Rego et al., 2013), and particularly so for a heterogenous customer base that has also come to expect personalized goods and services, resulting in pre-crisis CCR being a weaker indicator of firms' performance during the associated market crash. Therefore, we hypothesize that:

H3 The positive effect of stronger pre-crisis CCR on a firm's abnormal stock returns during a market crash will be weaker for firms with larger pre-crisis market share.

H4 The negative effect of stronger pre-crisis CCR on a firm's idiosyncratic stock returns risk during a market crash will be weaker for firms with larger pre-crisis market share.

Methodology

Market crash definitions and sample

We begin by defining the time periods for the stock market crashes resulting from the two economic crises that provide the focus of this study.[3] For both crashes, the beginning and end dates of the primary periods tested are supported by prior literature. (Nevertheless, multiple alternate periods are also tested to establish the robustness of our findings—see below). First, the Great Recession was a protracted economic crisis that emerged from within the global financial system (i.e., an endogenous crisis). Drawing on previous literature (Lins et al., 2013, 2017), we define the market crash within the Great Recession as the period from August 2008 to March 2009. This period included the steepest decline of markets in the U.S. and across the globe during the recession. Through robustness checks, we also consider two narrower alternate periods—the periods from August 2008 to November 2008, and August 2008 to January 2009—and one wider alternate period—the period from August 2008 to May 2009 (Lins et al., 2013).

Similarly, we define the market crash during the COVID-19 pandemic—a more concentrated type of economic crisis that emerged from outside the economy (i.e., an exogenous crisis)—as the period from February 2020 to March 2020. While much shorter than the Great Recession crisis, this two-month period includes the most rapid 30% decline among the major stock market indices in history (Li, 2020). This period also coincides with a particularly steep decline in employment and production indicators across the U.S. economy (NBER, 2021). Further, we draw on recent literature on the economic impacts of the COVID-19 pandemic and consider three alternate time periods through robustness checks: the periods from February 24, 2020 to March 23, 2020, February 24, 2020 to April 30, 2020, and March 2020 (Baker et al., 2020; Huang et al., 2021; Mazur et al., 2021).

Next, we obtained data on customer-company relationships, firm market share, firm stock market performance, relevant firm financial indicators, and other control variables from six independent sources. First, we obtained data for operationalizing customer-company relationships, i.e., customer satisfaction, customer loyalty, and customer complaint rate, from the American Customer Satisfaction Index (ACSI). ACSI data have been utilized extensively in prior research to study the effects of customer satisfaction (e.g., Fornell et al., 1996; Fornell et al., 2016; Hult et al., 2019), customer loyalty (e.g., Morgan & Rego, 2006; Lariviere et al., 2016), and customer complaint rate (e.g., Morgan & Rego, 2006; Morgeson et al., 2020) on a variety of firm performance outcomes, including stock market performance. Second, we obtained sales data from the Wharton Research Data Services (WRDS) to compute firm market share based on the 10-K Text-Based Network Industry Classifications (TNIC) from the Hoberg-Phillips Data Library (Bhattacharya et al., 2022; Hoberg & Phillips, 2010). Third, we obtained data for firms' abnormal stock returns and idiosyncratic risk during the respective market crashes as our key dependent variables from the WRDS Beta Suite. We computed cumulative abnormal stock returns and idiosyncratic risk using the Carhart (1997) four-factor model, an expanded version of the original Fama-French three-factor model (Fama et al., 1993).[4] Next, we include data on income statements and balance sheet items to compute market share and others that serve as important financial control variables in our models, and these were collected from Standard & Poor's Compustat Capital IQ database. Finally, we obtained data to control for brand equity, an intangible asset that has been shown to impact firm financial and stock market performance, including during the COVID-19 market crash (Huang et al., 2021; Sorescu & Sorescu, 2016), from the Interbrand rankings.

Our complete sample is therefore composed of publicly traded firms listed on the major stock exchanges in the United States that are also included in ACSI's annual study during the periods immediately preceding the two economic crises and market crash events. The firms covered by ACSI's annual study are broadly representative of the U.S. economy (Lariviere et al., 2016; Lim et al., 2020). After compiling information on CCR, stock market performance, and firms' financial and related characteristics, our final sample includes 125 firms for the Great Recession market crash of 2008–2009, and 193 firms for the COVID-19 pandemic market crash of 2020, across 35 distinct consumer industries.[5] Next, we

[3] The authors considered examining a third economic crisis – the early 2000s recession and the related "Dot-Com Bubble." But given the relatively brief nature of the recession accompanying this crash, the slow and prolonged market crash that followed (i.e., more than two years between "peak" and "trough" for the S&P 500), the smaller amount of CCR data available during this event, and the similarity of this crisis to the Great Recession (i.e., both endogenous crises arising from within the economy and weaknesses in a particular economic sector), a focus on only the two economic crises examined here was deemed preferable.

[4] Inclusion of the Carhart momentum factor is particularly important in this study and recommends adoption of the expanded four-factor model, as it controls for the possibility that firms' performance during and after the market crash events is merely a reflection of "performance persistence" from prior to the crash events (Carhart, 1997).

[5] The increase in the number of firms in the sample, from 125 in 2008 to 193 in 2020, is due to an expansion of firm coverage by ACSI beginning in 2015. Complete details of the industries and the companies in each industry measured by ACSI for the COVID-19 crisis sample are available on its website (https://www.theacsi.org/acsi-benchmarks/benchmarks-by-industry). While ACSI no longer makes the list of companies included in its annual study for 2019 and before publicly available, we note that the firms in our Great Recession sample are the same as in other recent studies using ACSI data for this time period (e.g., Lim et al., 2020).

discuss the measures adopted to operationalize each of our variables, followed by a discussion of the models that we specify to test our hypotheses for the effects of CCR on abnormal stock returns and idiosyncratic risk during the two market crashes.

Variables and measures

Dependent variables: Abnormal stock returns and idiosyncratic risk For our dependent variables, we follow prior research in the marketing-finance interface (e.g., Osinga et al., 2011; Han et al., 2017; Malshe et al., 2020) and estimate Carhart four-factor models[6] on both abnormal stock returns and idiosyncratic risk, as specified below:

$$(R_{it} - R_{ft}) = \alpha_i + \beta_{1i}(R_{mt} - R_{ft}) + \beta_{2i}(SMB_{mt}) + \beta_{3i}(HML_{mt}) + \beta_{4i}(UMD_{mt}) + \epsilon_{it} \quad (1)$$

where R_{it} is the stock return for firm i for month t, R_{ft} is the risk-free rate for month t, R_{mt} is the market return for month t, SMB_{mt} is the Fama-French size factor for month t, HML_{mt} is the Fama-French value factor for month t, and UMD_{mt} is the Carhart momentum factor for month t. We utilize a 60-month rolling-window approach (Frennea et al., 2019) and estimate Eq. (1) for the period from August 2008 to March 2009 for the Great Recession crash, and the period from February 2020 to March 2020 for the COVID-19 crash for our main models.

Monthly abnormal stock returns (AR_{it}) were calculated by subtracting the expected returns for each firm from its actual returns as follows:

$$AR_{it} = R_{it} - E(R_{it}) \quad (2)$$

where $E(R_{it}) = R_{ft} + \hat{\beta}_{1i}(R_{mt} - R_{ft}) + \hat{\beta}_{2i}(SMB_{mt}) + \hat{\beta}_{3i}(HML_{mt}) + \hat{\beta}_{4i}(UMD_{mt})$ and $\hat{\beta}$ are estimated factor loadings from Eq. (1). These returns were then summed over eight months (August 2008 to March 2009) for the Great Recession crash and over two months (February 2020 to March 2020) for the COVID-19 crash to arrive at the cumulative abnormal returns, which capture the difference between the actual returns and expected returns of these firms after accounting for the Fama-French and the momentum factors.

The idiosyncratic risk was calculated as the standard deviation of the residual (i.e., ϵ_i) from Eq. (1) for each month (Srinivasan & Hanssens, 2009; Tuli & Bharadwaj, 2009; Chakravarty & Grewal, 2011) and then summed to arrive at cumulative idiosyncratic risk for the periods of the two market crashes. Idiosyncratic risk represents the firm-specific risk of a stock during a market crash, which has been shown to account for approximately 80% of a stock's total risk (Goyal & Santa-Clara, 2003). Because it reflects firm-specific stock volatility driven by firm-specific characteristics (i.e., corporate culture, strategy, CCR) rather than economy-wide systemic factors, it has been widely adopted as a measure of risk in the marketing literature (e.g., Han et al., 2017).

Key predictor variables: Customer satisfaction, customer loyalty, customer complaint rate This study focuses on how investors adjust their firm valuations and risk perceptions during largely unpredictable and unanticipated economic crises and market crashes across firms with differing customer-company relationship performance. As such, we obtained the most recent available data on firms' customer satisfaction, customer loyalty, and customer complaint rate from the ACSI for the period immediately preceding the beginning of the two economic crises.[7] ACSI conducts surveys throughout each calendar year, with results for different industries and sectors staggered and released throughout the year across different months and fiscal quarters. For the Great Recession crash, we captured customer satisfaction, customer loyalty, and customer complaint rate for each firm measured by ACSI from July 2007 to June 2008. Similarly, we capture these metrics from January 2019 to December 2019 for the COVID-19 pandemic crash. Collectively, these index scores represent the most recently measured data from ACSI immediately before the beginning of the two market crash events in 2008 and 2020, respectively, allowing us to directly observe how investors evaluate value and risk for firms with differing levels of CCR as they enter these two events.[8]

As measured by ACSI, customer satisfaction is a latent variable index score based on a weighted average of three survey questions that capture multiple facets of cumulative customer satisfaction with a firm's product or services - overall satisfaction, confirmation or disconfirmation

[6] Our results are robust to use of alternative factor models to estimate abnormal stock returns and idiosyncratic risk, i.e., the Fama-French three-factor model and the capital asset pricing model (Tuli & Bharadwaj, 2009; McAlister et al., 2007; Frennea et al., 2019).

[7] The customer loyalty and customer complaints data were made available to the authors for the purposes of this study. The authors would like to thank the founder of ACSI, Professor Claes Fornell, for making this data available.

[8] It should be noted that while ACSI once made its firm-level customer satisfaction data publicly available, neither its customer loyalty nor its customer complaint rate data were ever released publicly, though other related sources of this information do exist and may influence investors (e.g., estimates of customer churn included in company annual or industry reports, or customer complaint data recorded and released by government agencies). While we make no theoretical claims about investor access to or knowledge of this particular CCR information per se and note that these effects are likely to be funneled through observable firm financial outcomes (Fornell et al., 2016), it is nonetheless important to mention this difference.

(positive or negative) of expectations, and comparison to an ideal product or service (Fornell et al., 2006, 2016; Morgeson et al., 2020). The customer loyalty latent variable index score is a weighted average of two survey questions that capture both the customers' stated likelihood of repurchasing from the same firm in the future (loyalty intention) and their likelihood to remain loyal to the firm's products or services at various price points (i.e., price tolerance) (Fornell et al., 1996; Lariviere et al., 2016; Hult et al., 2017). Both the customer satisfaction and customer loyalty latent variable scores range from 0 to 100, with higher values representing positive or stronger CCR. Finally, the customer complaint rate is measured by ACSI as an observed variable recording the proportion of respondents of each firm who indicate that they have complained directly to the company about a product or service experience within a specified time frame (Hult et al., 2019; Morgan & Rego, 2006; Morgeson et al., 2020). Values of the variable range from 0 to 100% points, with higher values representing a higher firm complaint rate and weaker or negative CCR. As noted above (see footnote 2), we examine levels rather than changes in each of these variables, as levels are likely to best reflect durable CCR performance in the run-up to an economic crisis.[9]

Moderator: Market share Calculation of a specific firm's market share requires the identification of other firms that compete in the same market at a specific point in time. The traditional and dominant approach for defining markets has been to adopt one of the government's defined industry classification systems, which have the significant shortcoming of being intertemporally static. For example, the Standard Industrial Classification (SIC) system was introduced in 1939 and only updated after nearly 50 years as the North American Industry Classification System (NAICS) in 1997. However, the structure of market activity changes much more rapidly and dynamically than is captured in these classification systems, thereby creating a disparity between the actual market structure and the structure assumed by such schemes (Dalziel, 2007). The magnitude of this disparity is so pronounced that by some estimates such static classifications fail to account for nearly 70% of the U.S. economy (Dalziel, 2007; Graham, 2007). Given that our objective is to examine the moderating role of firms' market shares in the CCR–firm performance relationships during two market crashes separated by time and substantial shifts in the economy, we adopt a dynamic market share measure that allows us to measure it via the market structure existing immediately before the onset of the two economic crises (Bhattacharya et al., 2022; Hoberg & Phillips, 2010).

In this dynamic approach, market definitions and firms operating within these markets are derived from business descriptions reported by firms in their 10-K reports and filed with the U.S. Securities and Exchange Commission (SEC). Utilizing data from all firms on Compustat, we define markets as comprising a maximum of 50 firms per industry identified based on the similarity/competition scores for each possible pair of firms derived from their business descriptions (Bhattacharya et al., 2022).[10] We then compute market share by dividing sales of the focal firm by those of all firms operating in the dynamically defined market in a given year (2007 and 2019 for the Great Recession and COVID-19 crises, respectively). The utilized market definitions are dynamic and current because they account for changes in firms' offerings and resulting changes in the set of competitive firms.

Control variables Following prior research on firm abnormal returns (e.g., Anderson & Mansi, 2009; Frennea et al., 2019; Malshe et al., 2020) and firm-idiosyncratic risk (e.g., Luo & Bhattacharya, 2009; Rego et al., 2009; Tuli & Bharadwaj, 2009), we capture a variety of factors to control for the financial health of a firm and related characteristics, in addition to an intangible asset (i.e., brand equity) that has also been shown to be associated with firms' returns and risk during normal market growth periods as well as economic crises (Huang et al., 2021). Specifically, we include enterprise value multiple, dividend payout ratio, profit margin, capitalization ratio, market-to-book value, liquidity, intangible asset intensity, capital intensity, R&D intensity, and brand equity as control variables. We measure our control variables as near as possible to but preceding the start of the two market crashes, i.e., during the second quarter (April-June) of 2008 for the Great Recession crash, and during the fourth quarter (October-December) of 2019 for the COVID-19 crash. Table B1 (Web Appendix B) provides the rationale for the inclusion of these control variables along with data sources and supporting literature. Further, Table 1 provides correlations among all variables and their descriptive statistics for both crises. While a few of the correlations exceed 0.40, all the variance inflation factors (VIFs) are below 4, making multicollinearity less of a concern with these variables.

[9] In an additional analysis, we decompose CCR levels into anticipated and unanticipated components and estimate their simultaneous effects on firms' abnormal return and idiosyncratic risks during economic crises. The results from this analysis, reported in Web Appendix S, illustrate the importance of both components and thus reinforce the need to examine CCR levels.

[10] The data on similarity/competition scores was obtained from the "Hoberg-Philips Data Library" accessed through https://hobergphillips.tuck.dartmouth.edu/. We thank an anonymous reviewer for suggesting this dynamic measure of market share.

Model specification

To study the effect of CCR on firm stock market performance during the two market crash events, we estimate regression models of stock market performance during the periods as a function of firms' pre-crisis CCR, its interaction with market share, and the control variables described above. During economic crises, firms in different industries face different challenges. For example, industries such as brick-and-mortar retailers and travel were hit particularly hard by government-mandated "lockdowns" during the COVID-19 pandemic. Conversely, information technology and e-retailers performed well, due to a sharp increase in the relevance and usage of these channels for remote work and online consumption, respectively. As such, investors may value CCR differently across industries due to the nature of the crisis itself. Thus, we include industry-fixed effects to account for the effect of industry-level unobservable factors on our outcomes.[11] Standard errors are clustered at the industry level to address potential non-independence of observations on firms clustered within a given industry (Abadie et al., 2017).[12]

Endogeneity is a common concern in studies of the relationships between customer-based assets and firm performance. Prior research shows that firm investments in customer-facing activities, such as customer service employee training, can affect both CCR and a firm's stock market performance (e.g., Srinivasan & Moorman, 2005; Tuli & Bharadwaj, 2009). As such, our metrics of CCR could be correlated with the error terms in our models, making them potentially endogenous. We account for difficulties of endogeneity emanating from omitted variable bias through our research design and our modeling strategy. First, our research design, which takes advantage of exogenous shocks to CCR, itself allows us to potentially sidestep common endogeneity concerns. That is, managers allocate resources to CCR-building activities in anticipation of favorable financial outcomes like stock market performance (Han et al., 2017). However, in our research design, the largely unanticipated and rapidly emerging nature of these economic crises disrupts this equilibrium, with managers having little chance to predict the economic crisis and adjust strategies that are not specifically controlled for in our model below. At the same time, the absolute levels of these CCR metrics remain largely stable, at least in the short run (cf. Lins et al., 2017). Second, by using the pre-crisis CCR metrics as predictors for firm stock performance during these unanticipated crises, we temporally separate the dependent variables from their predictors, mitigating the (potential) reverse causality problem, a common omitted variable-related identification challenge (e.g., Bhattacharya et al., 2021; Lim et al., 2020). Third, by including a rich set of firm-level covariates and industry-fixed effects, we address both potential firm-specific and industry-specific omitted variable biases, respectively (Wooldridge, 2010; Kang et al., 2016).

Despite the above, it is still possible that unobserved firm-level factors may be correlated with CCR. For example, variables such as firm culture, which is an unobserved strategic asset, can influence how much effort a firm exerts toward improving customer-company relationships and can also have an impact on its stock performance during economic crises. Given this, we adopt a standard two-stage least squares approach with appropriate instrumental variables as part of our identification strategy to address potential remaining endogeneity. Drawing on the extant literature (Germann et al., 2015; Han et al., 2017), we construct three peer-based instruments, i.e., peers' customer satisfaction, peers' customer loyalty, and peers' customer complaint rate, using the industry average value at time t after excluding the focal firm.

Valid instruments should satisfy both the relevance criterion and the exclusion criterion. In terms of relevance (i.e., conceptually correlated with potentially endogenous CCR metrics), research shows that customers have a wide array of relevant experiences (among products and services that fulfill similar customer needs) and exposure to other customers' experiences through word of mouth or online reviews. These experiences provide customers with both empirical evidence and norms through which they develop their expectations of a focal firm (Woodruff et al., 1983). Thus, customers' expectations of a focal firm are, to some extent, relative to their experiences with the focal firm's peers (e.g., Haumann et al., 2014; Keiningham et al., 2015). For example, the more positive experiences customers have or are exposed to concerning peer firms, the higher their expectations will be toward the focal firm, all else being equal. Therefore, drawing on Woodruff et al. (1983) logic that peers' CCR is likely to negatively influence the focal firm's CCR, we use the former as our instruments. In terms of the exclusion criterion of these instruments (i.e., they do not directly impact the dependent variables of interest), it is unlikely for the peers of a firm to cooperate and jointly determine their strategies for driving relationships with their customers in anticipation of the focal firm's strategies, or other potential omitted factors identified previously, such as firm culture (Han et al., 2017). Taken

[11] ASCI and WRDS use different industry classification systems. The two systems correspond well based on our comprehensive manual checking using the NAICS database (accessed through https://www.naics.com/search/). Following recent literature (Fornell et al., 2016; Lim et al., 2020; Morgeson et al., 2020), we use ACSI-defined industries in our models.

[12] Our results hold with standard errors clustered by economic sectors. For this, we adopt the economic sector classification used by the ACSI (Lim et al., 2020). Further, the results also hold with robust standard errors with no clustering.

Table 1 Descriptive statistics and correlations for all variables

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	M	S.D.
(1) Abnormal Returns	1	-0.58	0.23	0.22	-0.24	0.11	0.38	0.02	0.27	0.00	0.21	0.11	0.10	-0.23	0.17	0.10	-0.001	0.02
(2) Idiosyncratic Risk	-0.31	1	-0.09	-0.04	0.12	-0.12	-0.15	-0.06	-0.42	0.10	-0.13	0.02	-0.10	0.22	-0.12	-0.16	0.13	0.06
(3) Customer Satisfaction	0.02	0.02	1	0.86	-0.60	0.25	0.26	0.10	-0.14	0.02	0.21	-0.06	-0.25	-0.15	0.04	0.22	75.98	5.53
(4) Customer Loyalty	0.22	-0.14	0.79	1	-0.71	0.25	0.26	0.07	-0.14	0.03	0.23	0.18	-0.19	-0.07	0.21	0.26	75.06	5.13
(5) Customer Complaints	-0.18	0.11	-0.67	-0.72	1	-0.17	-0.28	-0.05	0.13	0.05	-0.23	-0.18	0.13	-0.02	-0.19	-0.16	12.94	9.82
(6) Market Share	-0.08	-0.07	0.37	0.35	-0.28	1	0.05	-0.08	-0.10	-0.01	0.24	0.20	0.12	-0.22	0.35	0.33	0.25	0.30
(7) Enterprise Value Multiple	0.29	0.12	0.17	0.11	-0.08	0.18	1	0.08	0.11	0.16	0.41	0.25	-0.06	-0.13	0.34	0.37	12.32	6.42
(8) Dividend Payout Ratio	0.05	-0.09	-0.02	-0.01	0.01	-0.12	0.09	1	-0.02	0.07	-0.07	-0.10	0.00	0.07	-0.08	-0.03	0.52	1.35
(9) Profit Margin	0.37	-0.44	0.01	0.07	0.03	0.09	0.36	-0.05	1	0.12	-0.06	0.15	-0.02	-0.33	0.16	0.17	0.16	0.12
(10) Capitalization Ratio	-0.51	0.38	0.22	-0.11	0.16	0.19	-0.13	-0.03	-0.27	1	0.01	-0.10	-0.01	0.12	-0.16	0.16	0.69	0.69
(11) Price-to-Book Value	0.35	0.00	0.23	0.28	-0.29	0.16	0.39	-0.04	0.07	-0.14	1	0.06	0.03	0.01	0.11	0.18	4.33	7.29
(12) Cash Ratio	0.40	0.23	0.04	0.17	-0.05	-0.09	0.40	0.01	0.09	-0.19	0.29	1	-0.07	-0.05	0.74	0.35	0.39	0.71
(13) Intangible Asset Intensity	0.04	-0.17	-0.06	0.05	0.01	0.29	-0.01	-0.09	0.14	-0.20	0.02	0.01	1	-0.36	-0.05	-0.08	0.21	0.22
(14) Capital Intensity	0.18	-0.45	-0.14	0.05	-0.05	-0.15	-0.16	0.14	0.03	-0.25	0.08	-0.11	-0.14	1	-0.19	-0.17	0.38	0.24
(15) R&D Intensity	-0.17	0.21	0.26	0.12	-0.07	0.18	0.27	-0.06	0.08	0.30	0.11	0.43	-0.01	-0.29	1	0.52	0.01	0.04
(16) Brand Equity	0.06	-0.07	0.19	0.13	-0.17	0.31	0.34	-0.03	0.20	-0.12	0.36	0.31	-0.03	-0.06	0.41	1	0.16	0.36
M	0.01	0.55	75.93	73.43	13.62	0.23	10.35	0.73	0.13	1.08	3.70	0.24	0.18	0.46	0.01	0.22	--	--
S.D.	0.09	0.26	6.65	8.27	10.87	0.25	6.11	3.94	0.11	2.86	5.28	0.34	0.20	0.41	0.02	0.41	--	--

The lower and upper halves of the table contain correlation coefficients and descriptive statistics for the Great Recession market crash and the COVID-19 pandemic market crash, respectively
All correlation coefficients larger than |0.17| and |0.14| in the lower and upper halves of the table are statistically significant at 5% or less, respectively

together, the proposed peers' CCR instruments meet both the relevance and the exclusion criteria for valid instruments.

Regarding the diagnostic statistics on the relevance of our instrument variables, the F-values of regressions with each of our three potentially endogenous variables (customer satisfaction, customer loyalty, and customer complaint rate) as dependent variables and only the instruments as independent variables are significantly higher than 10 for both the Great Recession crisis and the COVID-19 crisis. Further, in the first-stage regressions with the instruments and all other variables from Eq. (3), presented in Table C1 (Web Appendix C), we find that all the instruments are statistically significant ($p < 0.01$) and the F-test values for their stepwise inclusion are greater than 10 (Staiger & Stock, 1994). These results rule out the weak instrument problem. Next, our model specification is given by:

$$\begin{aligned} Y_i = {} & \alpha_i + \beta_1 CCR_i + \beta_2 (CCR_i \times Market\ share_i) \\ & + \beta_3 Market\ share_i + \beta_4 EVM_i + \beta_5 DividedPayOut_i \\ & + \beta_6 ProfitMargin_i + \beta_7 CapitalizationRatio_i + \beta_8 PriceBook_i \\ & + \beta_9 CashRatio_i + \beta_{10} IntagibleAssetIntensity_i + \beta_{11} CalpitalIntensity_i \\ & + \beta_{12} RNDIntensity_i + \beta_{13} BrandEquity_i + \epsilon_i \end{aligned} \tag{3}$$

where i denotes firm, the outcome variable Y_i is either abnormal returns or idiosyncratic $risk_i$, and the primary predictor variable of interest CCR_i is either customer satisfaction, customer loyalty, or customer complaint rate.[13] Our parameter of interest (β_1) captures the effects of pre-crash CCR ratings on stock market performance during the market crash and (β_2) captures the effect of the interaction between the CCR metrics and market share (de-meaned before creating the interaction term). Industry fixed effects are denoted by α_i. We separately estimate the impact of the three CCR metric index scores on firm stock market performance during the two market crashes to avoid multicollinearity-related statistical problems.[14] The separate estimation of these three metrics is valuable, providing guidance to firms that focus on different consumer mindset metrics while evaluating their CCR performance (cf., Hult et al., 2017). Also, as discussed previously, these metrics are conceptually different from one another and may have unique relevance during an economic crisis and market crash event (Fornell et al., 1996), as customer satisfaction is a backward-looking measure that captures customers' cumulative experiences with the firm's product or service, customer loyalty is a forward-looking measure that captures customer likelihood to remain with the firm during a future purchase event, and customer complaint rate is a measure that captures customer's recent actual behavior upon experiencing a product or service failure. We next discuss the results from our main models.

Results and discussion

CCR and firm performance

We begin by presenting initial evidence in support of the hypothesized relationships between firms' pre-crash CCR and abnormal returns and idiosyncratic risk during the two market crashes. Figure F1 and F2 (Web Appendix F) present scatterplots, which include lines representing linear fit for the relationships between pre-crisis CCR (customer satisfaction, customer loyalty, customer complaints) and firm performance (abnormal returns and idiosyncratic risk) during the market crashes inflicted by the Great Recession and COVID-19 pandemic economic crises, respectively. Next, Tables 2, 3 and 4 report the estimated results with customer satisfaction, customer loyalty, and customer complaint rate as the focal independent variable, respectively. In line with theory and our hypotheses, we anticipate a positive relationship between customer satisfaction and customer loyalty and abnormal returns, and a negative relationship between the same and idiosyncratic risk; conversely, we anticipate a negative relationship between customer complaints and abnormal returns, and a positive relationship between the same and idiosyncratic risk. In each table, columns 1–4 provide results for the Great Recession market crash for each independent variable, while columns 5–8 present results for the COVID-19 pandemic crash. Columns 1–2 and 5–6 report abnormal returns as the dependent variable, while columns 3–4 and 7–8 report idiosyncratic risk as the dependent variable. Industry fixed effects and IV estimates are included in all models.[15]

[13] In an alternate analysis, we combine the three CCR metric into a CCR index, which we create by taking the mean of the standardized customer satisfaction, customer loyalty, and customer complaints (reverse coded) metrics. The results using the CCR index are similar to the ones using the CCR metrics separately. These results are presented in Table D1 (Web Appendix D). Further, we operationalize CCRs as relative to the industry average. The results from that analysis, presented in Tables E1-E3 in the Web Appendix E, are also similar to those from our main models.

[14] As shown in Table 1 for the Great Recession crash, the correlations between any two CCR index scores are moderately high: the correlation between customer satisfaction and customer loyalty is 0.79, the correlation between customer satisfaction and customer complaint is -0.67, and the correlation between customer loyalty and customer complaint is -0.72. These relatively high correlations, along with the practical relevance of understanding the unique value of each of these separate predictors on our outcomes, justifies our modeling approach.

[15] Tables G1-G2 (Web Appendix G) provide estimates from models with interactions between CCR and industry fixed effects.

Table 2 Customer satisfaction, abnormal returns, and market share

	Great Recession market crash				COVID-19 Pandemic market crash			
	Abnormal returns		Idiosyncratic risk		Abnormal returns		Idiosyncratic risk	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Main effect	Interaction	Main effect	Interaction	Main effect	Interaction	Main effect	Interaction
Customer Satisfaction	0.0056**	0.0055***	-0.0172**	-0.0174**	0.0016***	0.0009+	-0.0032***	-0.0023+
	(0.0022)	(0.0020)	(0.0073)	(0.0076)	(0.0005)	(0.0006)	(0.0008)	(0.0013)
Customer Satisfaction × Market Share	--	-0.0039**	--	-0.0064	--	-0.0015***	--	0.0021***
	--	(0.0018)	--	(0.0073)	--	(0.0003)	--	(0.0008)
Market Share	0.0106+	0.0141**	-0.0384+	-0.0327	0.0050***	0.0054***	-0.0205***	-0.0210***
	(0.0055)	(0.0070)	(0.0216)	(0.0232)	(0.0015)	(0.0014)	(0.0038)	(0.0035)
Enterprise Value Multiple	0.0008	0.0008	0.0159***	0.0159**	0.0014***	0.0014***	-0.0019***	-0.0019***
	(0.0029)	(0.0034)	(0.0059)	(0.0063)	(0.0003)	(0.0003)	(0.0006)	(0.0007)
Dividend Payout Ratio	-0.0001	-0.0001	-0.0042+	-0.0043+	-0.0001	-0.0007	-0.0007	0.0002
	(0.0008)	(0.0009)	(0.0023)	(0.0025)	(0.0008)	(0.0009)	(0.0014)	(0.0016)
Profit Margin	0.1653	0.1066	-0.7660***	-0.8625***	0.0555**	0.0493**	-0.2683***	-0.2593***
	(0.1064)	(0.1452)	(0.2508)	(0.2908)	(0.0234)	(0.0244)	(0.0691)	(0.0742)
Capitalization Ratio	-0.0093***	-0.0072***	0.0045	0.0079	0.0017	0.0041	0.0142	0.0107
	(0.0014)	(0.0019)	(0.0062)	(0.0071)	(0.0050)	(0.0048)	(0.0088)	(0.0092)
Price-to-Book Value	0.0032+	0.0040**	-0.0041	-0.0028	0.0003	0.0004**	-0.0006	-0.0007
	(0.0016)	(0.0018)	(0.0035)	(0.0036)	(0.0002)	(0.0002)	(0.0006)	(0.0005)
Cash Ratio	0.1297***	0.1362***	0.0860	0.0967	0.0012	0.0028	0.0169	0.0145
	(0.0294)	(0.0357)	(0.1199)	(0.1306)	(0.0047)	(0.0060)	(0.0203)	(0.0227)
Intangible Asset Intensity	0.0048	0.0304	-0.2200+	-0.1778	0.0554**	0.0369	-0.1172**	-0.0904
	(0.0599)	(0.0515)	(0.1249)	(0.1286)	(0.0270)	(0.0250)	(0.0596)	(0.0620)
Capital Intensity	0.0161	-0.0205	-0.1203	-0.1805	-0.0027	0.0165	-0.0507	-0.0785
	(0.0246)	(0.0380)	(0.0975)	(0.1140)	(0.0207)	(0.0197)	(0.0462)	(0.0491)
R&D Intensity	-0.5083	-0.5489+	0.0090	-0.0579	0.0602	0.0313	-0.1605	-0.1188
	(0.3368)	(0.2911)	(0.9799)	(0.9981)	(0.0645)	(0.0694)	(0.2780)	(0.3036)
Brand Equity	-0.0368**	-0.0269	-0.0748+	-0.0585	-0.0136***	-0.0140***	-0.0165	-0.0160
	(0.0170)	(0.0195)	(0.0398)	(0.0370)	(0.0043)	(0.0038)	(0.0140)	(0.0114)
Constant	-0.0299	-0.0066	0.5429***	0.5812***	-0.0163	-0.0214	0.2546***	0.2620***
	(0.0490)	(0.0511)	(0.1625)	(0.1762)	(0.0180)	(0.0188)	(0.0454)	(0.0512)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	125	125	125	125	193	193	193	193
R-squared	0.6988	0.6906	0.7352	0.7148	0.5204	0.5779	0.6174	0.6519

Interacting variables are mean-centered. Cluster robust standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, + $p<0.1$ (two-tailed)

Great recession Column (1) of Tables 2, 3 and 4 show that firms with stronger customer-company relationships had higher abnormal stock returns during the Great Recession market crash, controlling for financial and other important firm characteristics, and supporting H1. Based on the IV estimates, customer satisfaction ($\beta = 0.0056$, $p < 0.05$) and customer loyalty ($\beta = 0.0049$, $p < 0.05$) are positively associated with abnormal returns, and customer complaint rate (β=-0.0053, $p < 0.01$) is negatively associated with abnormal returns. The effect of CCR on abnormal returns is economically large: a one-standard-deviation increase in customer satisfaction (6.65) and customer loyalty (8.27), and a one-standard-deviation decrease in customer complaint rate (10.87%), are associated with a 3.73, 4.05, and 5.76 percentage point increases in abnormal returns, respectively. On an annualized basis, this translates to 5.59%, 6.08%, and 8.64% above-market performance, respectively, which translates to $1.57, $1.70, and $2.42 billion in market capitalization (mean market capitalization = $42 billion). The relatively larger effect of negative CCR (i.e., customer complaint

Table 3 Customer loyalty, abnormal returns, and market share

	Great Recession market crash				COVID-19 Pandemic market crash			
	Abnormal returns		Idiosyncratic risk		Abnormal returns		Idiosyncratic risk	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Main effect	Interaction	Main effect	Interaction	Main effect	Interaction	Main effect	Interaction
Customer Loyalty	0.0049**	0.0051***	-0.0137***	-0.0134**	0.0018***	0.0015***	-0.0035***	-0.0030***
	(0.0021)	(0.0018)	(0.0049)	(0.0053)	(0.0006)	(0.0005)	(0.0009)	(0.0011)
Customer Loyalty × Market Share	--	-0.0016	--	-0.0019	--	-0.0013***	--	0.0021***
	--	(0.0014)	--	(0.0042)	--	(0.0003)	--	(0.0007)
Market Share	0.0087+	0.0143**	-0.0317+	-0.0250	0.0050***	0.0056***	-0.0206***	-0.0215***
	(0.0049)	(0.0066)	(0.0177)	(0.0237)	(0.0016)	(0.0017)	(0.0037)	(0.0037)
Enterprise Value Multiple	0.0009	0.0007	0.0158***	0.0157***	0.0015***	0.0014***	-0.0020***	-0.0019***
	(0.0027)	(0.0029)	(0.0057)	(0.0058)	(0.0003)	(0.0003)	(0.0007)	(0.0007)
Dividend Payout Ratio	-0.0002	-0.0003	-0.0039	-0.0039	-0.0002	-0.0006	-0.0006	0.0001
	(0.0007)	(0.0008)	(0.0024)	(0.0025)	(0.0007)	(0.0008)	(0.0013)	(0.0014)
Profit Margin	0.1404	0.1106	-0.7119***	-0.7468***	0.0534**	0.0554**	-0.2636***	-0.2670***
	(0.0944)	(0.1229)	(0.2640)	(0.2845)	(0.0231)	(0.0252)	(0.0669)	(0.0700)
Capitalization Ratio	-0.0088***	-0.0084***	0.0031	0.0036	0.0013	0.0034	0.0149+	0.0115
	(0.0014)	(0.0014)	(0.0062)	(0.0064)	(0.0051)	(0.0052)	(0.0088)	(0.0098)
Price-to-Book Value	0.0037**	0.0039**	-0.0058	-0.0056	0.0003	0.0004**	-0.0005	-0.0007
	(0.0017)	(0.0017)	(0.0038)	(0.0040)	(0.0002)	(0.0002)	(0.0006)	(0.0004)
Cash Ratio	0.1195***	0.1256***	0.1142	0.1213	0.0008	0.0025	0.0176	0.0148
	(0.0280)	(0.0291)	(0.1292)	(0.1344)	(0.0043)	(0.0050)	(0.0196)	(0.0216)
Intangible Asset Intensity	0.0085	0.0225	-0.2243+	-0.2079+	0.0519**	0.0386	-0.1101+	-0.0878
	(0.0613)	(0.0555)	(0.1291)	(0.1180)	(0.0261)	(0.0238)	(0.0573)	(0.0585)
Capital Intensity	-0.0059	-0.0182	-0.0593	-0.0737	-0.0055	0.0121	-0.0450	-0.0744
	(0.0311)	(0.0316)	(0.0845)	(0.0921)	(0.0212)	(0.0180)	(0.0450)	(0.0477)
R&D Intensity	-0.4360	-0.4656	-0.2030	-0.2377	0.0505	0.0627	-0.1416	-0.1621
	(0.3815)	(0.3358)	(1.0573)	(1.0906)	(0.0648)	(0.0603)	(0.2779)	(0.2897)
Brand Equity	-0.0315+	-0.0297+	-0.0886**	-0.0864**	-0.0154***	-0.0144***	-0.0131	-0.0147
	(0.0174)	(0.0178)	(0.0375)	(0.0358)	(0.0047)	(0.0035)	(0.0144)	(0.0127)
Constant	-0.0189	-0.0089	0.5258***	0.5376***	-0.0157	-0.0209	0.2532***	0.2619***
	(0.0568)	(0.0562)	(0.1451)	(0.1579)	(0.0176)	(0.0168)	(0.0432)	(0.0481)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	125	125	125	125	193	193	193	193
R-squared	0.7076	0.7170	0.7631	0.7562	0.5182	0.5541	0.6239	0.6505

Interacting variables are mean-centered. Cluster robust standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, + $p<0.1$ (two-tailed)

rate) during the Great Recession market crash is particularly noteworthy, evidencing an asymmetric effect of positive and negative CCR metrics during market crashes, even though less pronounced when compared to the asymmetric effect observed in non-crisis periods (Malshe et al., 2020). While small sample sizes (both in time and number of firms) caution against drawing too-strong conclusions, stronger CCR as lower customer complaint rate appears to have provided particularly powerful protection of firm market value during the prolonged, endogenous Great Recession crisis.

Similarly, based on the results in column (3) of Tables 2, 3 and 4, firms with stronger CCR experienced lower idiosyncratic risk, after controlling for firm financial and related characteristics, and supporting H2. The results show that customer satisfaction (β=-0.0172, $p<0.05$) and customer loyalty (β=-0.0137, $p<0.01$) are negatively associated with idiosyncratic risk, and customer complaint rate (β = 0.0137, $p<0.05$) is positively associated with idiosyncratic risk. The effect of customer-company relationships on idiosyncratic risk is also large: a one-standard-deviation increase in

Table 4 Customer complaints, abnormal returns, and market share

	Great Recession market crash				COVID-19 Pandemic market crash			
	Abnormal returns		Idiosyncratic risk		Abnormal returns		Idiosyncratic risk	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Main effect	Interaction	Main effect	Interaction	Main effect	Interaction	Main effect	Interaction
Customer Complaints	-0.0053***	-0.0054**	0.0137**	0.0154**	-0.0008**	-0.0006**	0.0018**	0.0015**
	(0.0020)	(0.0023)	(0.0061)	(0.0065)	(0.0003)	(0.0003)	(0.0008)	(0.0007)
Customer Complaints × Market Share	--	-0.0001	--	0.0017	--	0.0008***	--	-0.0013***
	--	(0.0012)	--	(0.0037)	--	(0.0001)	--	(0.0003)
Market Share	0.0081	0.0079	-0.0295	-0.0250	0.0054***	0.0054***	-0.0213***	-0.0213***
	(0.0064)	(0.0071)	(0.0220)	(0.0241)	(0.0017)	(0.0016)	(0.0041)	(0.0039)
Enterprise Value Multiple	-0.0001	-0.0001	0.0183***	0.0185***	0.0014***	0.0012***	-0.0019***	-0.0015**
	(0.0028)	(0.0029)	(0.0058)	(0.0059)	(0.0003)	(0.0003)	(0.0006)	(0.0006)
Dividend Payout Ratio	0.0000	0.0000	-0.0045**	-0.0045**	0.0001	-0.0002	-0.0012	-0.0006
	(0.0009)	(0.0009)	(0.0019)	(0.0020)	(0.0007)	(0.0008)	(0.0014)	(0.0013)
Profit Margin	0.2350**	0.2358**	-0.9748***	-0.9952***	0.0399+	0.0381	-0.2365***	-0.2336***
	(0.1081)	(0.1134)	(0.2325)	(0.2469)	(0.0224)	(0.0232)	(0.0630)	(0.0624)
Capitalization Ratio	-0.0078***	-0.0078***	0.0006	-0.0001	0.0016	0.0029	0.0143	0.0121
	(0.0019)	(0.0020)	(0.0064)	(0.0072)	(0.0054)	(0.0051)	(0.0092)	(0.0089)
Price-to-Book Value	0.0033**	0.0033**	-0.0048	-0.0047	0.0002	0.0003**	-0.0004	-0.0006
	(0.0016)	(0.0016)	(0.0031)	(0.0031)	(0.0002)	(0.0002)	(0.0005)	(0.0004)
Cash Ratio	0.1436***	0.1433***	0.0496	0.0571	0.0021	0.0038	0.0151	0.0123
	(0.0368)	(0.0355)	(0.1027)	(0.1124)	(0.0040)	(0.0037)	(0.0185)	(0.0180)
Intangible Asset Intensity	-0.0169	-0.0169	-0.1526	-0.1538	0.0528**	0.0358+	-0.1120**	-0.0843
	(0.0609)	(0.0610)	(0.1692)	(0.1668)	(0.0255)	(0.0215)	(0.0542)	(0.0524)
Capital Intensity	0.0103	0.0110	-0.1062	-0.1259	-0.0041	0.0068	-0.0485	-0.0664
	(0.0231)	(0.0293)	(0.0960)	(0.1133)	(0.0216)	(0.0187)	(0.0444)	(0.0444)
R&D Intensity	-0.6100**	-0.6079**	0.2547	0.1980	0.0614	0.0728	-0.1625	-0.1812
	(0.2977)	(0.2835)	(1.2330)	(1.2285)	(0.0601)	(0.0551)	(0.2913)	(0.2823)
Brand Equity	-0.0452**	-0.0453**	-0.0515	-0.0485	-0.0100**	-0.0133***	-0.0239+	-0.0186
	(0.0212)	(0.0216)	(0.0468)	(0.0468)	(0.0042)	(0.0031)	(0.0137)	(0.0125)
Constant	0.0297	0.0306	0.4137+	0.3897+	-0.0084	-0.0067	0.2385***	0.2356***
	(0.0486)	(0.0459)	(0.2296)	(0.2145)	(0.0174)	(0.0155)	(0.0429)	(0.0445)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	125	125	125	125	193	193	193	193
R-squared	0.7083	0.7076	0.7289	0.7234	0.5196	0.5788	0.6287	0.6633

Interacting variables are mean-centered. Cluster robust standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, + $p<0.1$ (two-tailed)

customer satisfaction (6.65) and customer loyalty (8.27), and a one-standard-deviation decrease in customer complaint rate (10.87%), are associated with 11.45, 11.34, and 14.90 percentage point decreases in idiosyncratic risk, respectively.

COVID-19 Consistent with the findings from the Great Recession market crash, the results for the COVID-19 pandemic crash also show support for a positive effect of customer-company relationships on abnormal returns and risk. Based on the estimates in column (5) of Tables 2, 3 and 4, customer satisfaction ($\beta=0.0016$, $p<0.01$) and customer loyalty ($\beta=0.0018$, $p<0.01$) are positively associated with abnormal returns, and customer complaint rate (β=-0.0008, $p<0.05$) is negatively associated with abnormal returns. Therefore, H1 is supported during the COVID-19 crash as well. A one-standard-deviation increase in customer satisfaction (5.53) and customer loyalty (5.13), and a one-standard-deviation decrease in customer complaint rate (9.82%), are associated with 0.88, 0.92, and 0.79 percentage point increases in abnormal returns, respectively. On an annualized basis, this translates to 5.31%, 5.54%, and 4.71% above-market performance, respectively, and translates to $1.04,

$1.09, and $0.93 billion in market capitalization (mean market capitalization = $118 billion). These results are highly similar to those observed during the Great Recession event, except for the smaller customer complaint rate effect during the COVID-19 crash (similar caveats about small sample sizes notwithstanding).

Supporting H2, the IV estimates in column (7) of Tables 2, 3 and 4 show that customer satisfaction (β=-0.0032, $p<0.01$) and customer loyalty (β=-0.0035, $p<0.01$) are negatively associated with idiosyncratic risk, and customer complaint rate (β = 0.0018, $p<0.05$) is positively associated with idiosyncratic risk. A one-standard-deviation increase in customer satisfaction (5.53) and customer loyalty (5.13), and a one-standard-deviation decrease in customer complaint rate (9.82%), are associated with 1.77, 1.79 and 1.77 percentage point decreases in risk, respectively.

CCR and market share

For H3 and H4, we proposed that the favorable effect of stronger CCR on stock market performance is weaker for firms with higher market shares during an economic crisis, due largely to the difficulties inherent in pivoting offerings for a larger and more heterogenous customer base under these circumstances. The interaction models in Tables 2, 3 and 4 (columns 2, 4, 6, and 8) test these hypotheses. For the Great Recession crisis, other than the significant interaction term between customer satisfaction and market share (β=-0.0039, $p<0.05$) for the abnormal returns model, the interaction terms are not significant in any of the other models. As such, these results do not provide support for H3 and H4 during the Great Recession crisis.

Next, regarding the COVID-19 crisis, the significant interaction effects of market share with customer satisfaction (β=-0.0015, $p<0.01$), customer loyalty (β=-0.0013, $p<0.01$), and customer complaints[16] (β=-0.0008, $p<0.01$) provide strong support for H3 concerning the moderating role of market share on the relationship between CCR and abnormal returns. Similarly, the significant interactions of market share with customer satisfaction (β = 0.0021, $p<0.01$), customer loyalty (β = 0.0021, $p<0.01$), and customer complaints (β=-0.0013, $p<0.01$) provide strong support for H4 for idiosyncratic risk. Overall, we observe that for higher levels of market share, the effects of each of the three CCR metrics on both stock market performance outcomes (i.e., abnormal returns and idiosyncratic risk) become weaker during the COVID-19 pandemic crisis but not during the Great Recession economic crisis, providing partial support for H3 and H4.

The differences in the observed moderating effects of market share between the Great Recession and the COVID-19 pandemic crises likely reflect a differential ability of firms to allocate resources to meet changing customer needs during these two crises. That is, the Great Recession crisis originated within the financial sector and the resulting shock to credit supplies severely constrained all firms' financial ability to invest in strategies aimed at addressing these changing needs (Gete & Reher, 2018; Mian & Sufi, 2010). As such, the heterogeneity in firms' market share and the ability to adapt their offerings to evolving customer needs did not matter much to investors' decision-calculus. On the other hand, the COVID-19 crisis occurred at a time when the U.S. (and the global) economy was particularly strong, and financial institutions were significantly better equipped to handle the unanticipated crisis (Canfrank, 2020; Osterland, 2020). As such, firms did not experience a credit shock and were not as constrained in their ability to invest in strategies aimed at addressing changing customer needs.[17] Many firms across different industries quickly adapted their business strategies to the "new normal" of COVID-19 (Diedrich et al., 2021). Therefore, the heterogeneity of a firm's customer base became a part of investors' decision calculus while assessing their pre-crisis CCR during the COVID-19 market crash.

Comparison with the effects of CCR outside the crash

In our analysis thus far, we find that despite the significant constraints on customers' and firms' ability to sustain relationships, higher pre-crash CCR mitigates the effects of and provides protection to firms' valuation and reduces firm-specific risk during the market crashes associated with both the Great Recession and COVID-19 pandemic crises.[18]

[16] For ease of interpretation and to make the effects comparable to those of customer satisfaction and customer loyalty, if we reverse-code the complaints variable, making higher values representative of stronger CCR (i.e., stronger CCR as lower complaint rate), the focal coefficients would also be reversed (with the remaining model coefficients unchanged) and reveal a negative main effect of complaints on risk (β=-0.0018, as predicted in H2) and an interaction effect weakening that negative relationship (β = 0.0013, as predicted in H4).

[17] Examining the leverage ratio (total debt divided by total equity) of all firms available on Compustat, an indicator of the degree to which a firm is financially constrained (Malshe & Agarwal, 2015), we indeed find that firms had more than twofold weaker financial flexibility entering the Great Recession crisis (average leverage ratio of 4.15 in the year 2007) relative to the COVID-19 crisis (average leverage ratio of 1.97 in the year 2019).

[18] During the Great Recession crisis, for firms, such constraints were largely a result of shocks to credit supply, and for customers, a result of the financial constraints associated with increased unemployment (cf., Gete & Reher 2018; Mian & Sufi, 2010). During the COVID-19 crisis, for firms, such constraints resulted from unanticipated supply chain and labor market-related challenges, and for customers, they resulted from both financial and physical constraints (cf., Roggeveen & Sethuraman 2020).

Building on this, we next examine how the effects of CCR during crashes compare to those from non-crash periods outside of these market crash events. To pursue this objective, we expand our dataset to include two "non-crash" periods exactly one year before each market crash,[19] and expand our baseline model specification (3) to the model specification below:

$$\begin{aligned} Y_i = {} & \alpha_i + \beta_1 CCR_i + \beta_2 CCR_i \text{xNonCrash}_t + \beta_3 \text{NonCrash}_t \\ & + \beta_4 Marketshare_i + \beta_5 EVM_i + \beta_6 DividedPayOut_i \\ & + \beta_7 ProfitMargin_i + \beta_8 CapitalizationRatio_i + \beta_9 PriceBook_i \\ & + \beta_{10} CashRatio_i + \beta_{11} IntagibleAssetIntensity_i + \beta_{12} CalpitalIntensity_i \\ & + \beta_{13} RNDIntensity_i + \beta_{14} BrandEquity_i + \varepsilon_i \end{aligned} \quad (4)$$

Similar to our baseline model, i denotes firm, the outcome variable Y_i is either abnormal returns or idiosyncratic risk, and the primary predictor variable of interest CCR_i is either customer satisfaction, customer loyalty, or customer complaint rate. NonCrash_t is a dummy variable set to "1" for the non-crash period, i.e., from August 2007 to March 2008 for the Great Recession analysis and from February 2019 to March 2019 for the COVID-19 pandemic analysis. It is set to "0' for the periods during the market crashes, i.e., from August 2008 to March 2009 for the Great Recession analysis and from February 2020 to March 2020 for the COVID-19 pandemic analysis. Similar to our main model specification (3), we use the CCR metrics and control variables as near as possible to (but preceding) the start of the "non-crash periods" and the "during periods" discussed above. In line with our discussion for our main models, we continue to employ three peer-based instruments, i.e., peers' customer satisfaction, peers' customer loyalty, and peers' customer complaint rate, using the industry average value at time t after excluding the focal firm (Germann et al., 2015; Han et al., 2017). In this model specification (4), our parameter of interest is β_2, which captures the difference in the effects of the CCR metrics (de-meaned before creating the interaction terms) on the outcome variables in the non-crash and during-crash periods.

Tables H1, H2, and H3 (Web Appendix H) report the estimated results with customer satisfaction, customer loyalty, and customer complaint rate as the focal independent variable, respectively. In each table, columns (1) and (2) provide results for the Great Recession market crash for each independent variable, while columns (3) and (4) present results for the COVID-19 pandemic crash. Columns (1) and (3) report abnormal returns as the dependent variable, while columns (2) and (4) report idiosyncratic risk as the dependent variable. Industry fixed effects and IV estimates are included in all models. For the Great Recession crisis, we find that the CCR metrics have equally strong effects on abnormal returns and idiosyncratic risk during the associated market crash compared to the period before the crash. This is reflected in non-significant estimates of β_2 in columns (1) and (2) of Tables H1, H2, and H3 (Web Appendix H). By contrast, for the COVID-19 pandemic crisis, we find that the effects of the CCR metrics on abnormal returns and idiosyncratic risk are *stronger* during the associated market crash compared to the period before the crash, as reflected in the largely significant estimates of β_2 in columns (3) and (4). Overall, these results provide further evidence for firms to continue their investments in building and sustaining relationships with their customers for equally strong and possibly even stronger benefits during unanticipated market crashes. We discuss these results for their theoretical and substantive implications in the "Conclusions and implications" section.

Robustness checks Finally, we undertake a variety of additional analyses to assess the robustness of our findings. These include the exclusion of certain industries from our sample, the use of alternate time periods, accounting for the strategies that firms adopt in response to economic crises, and alternate instrumental variables for endogeneity correction. We provide a summary of these robustness checks in Table 5. Complete details of these analyses are presented in the respective Web Appendices.

Conclusions and implications

This study is the first to examine the effect of customer-company relationships on company stock market performance during economic crises and the associated stock market crashes. We juxtapose the traditional theoretical lens (expected utility theory) supporting the CCR-stock performance relationship with observed deviations in investor behavior during economic crises while testing these effects vis-à-vis two different but uniquely severe economic crises – the endogenous Great Recession economic crisis emerging from within the global financial system, and the exogenous COVID-19 crisis emerging from a global pandemic.

The findings suggest that during these two economic crises and stock market crashes, pre-crash customer satisfaction and customer loyalty are positively associated with abnormal returns and negatively associated with idiosyncratic risk, and pre-crash customer complaint rate is negatively associated with abnormal returns and positively

[19] We select the same months one year before the start of each market crash for two reasons. First, comparison of the same months of the year prevents potential seasonality in market movements from confounding our estimates (Givoly & Ovadia, 1983; Heston & Sadka, 2008). Second, it provides a lag of one year between the start of the crash and the "before" periods, eliminating concerns regarding investors' anticipation of the market crashes.

Table 5 Summary of robustness checks

Robustness Check	Objective or Potential Concern	Strategy and Conclusion
Exclusion of the financial sector for the Great Recession market crash [Web Appendix I]	Given that the market crash during the Great Recession originated from within the financial sector, this crash was not exogenous for firms in this sector. Many of these firms also received substantial financial support from the government.	We exclude financial firms from our Great Recession sample and re-estimate our models. Results from this analysis are similar to the results from our main models.
Exclusion of digital industries for the COVID-19 market crash [Web Appendix J]	Industries with a stronger existing digital presence (i.e., e-commerce, m-commerce) benefited from consumers' physical constraints during the COVID-19 pandemic, and this may have influenced the CCR-stock market performance relationship for such firms.	We exclude digital industries (online news and information, portals and search engines, online retail, online financial services, and social media) from our COVID-19 sample and re-estimate our models. Results from this analysis are similar to the results from our main models.
Exclusion of the utility sector for Great Recession and COVID-19 market crashes [Web Appendix K]	Prior studies on CCR and firm performance exclude firms from the utility sector in their analyses. This is because such studies typically focus on competitive markets, where the choice between higher and lower CCR companies ought to impact financial performance, and firms in the utility sector in the U.S. are predominantly regional monopolies.	We exclude utility firms from both the Great Recession (while still excluding financial firms) and the COVID-19 market crashes and re-estimate our models. Results from this analysis are similar to the results from our main models.
Alternate time periods of market crashes for the Great Recession and COVID-19 market crashes [Web Appendix L]	In our main models, we follow prior literature and define the time periods for the Great Recession stock market crash as the period from August 2008 to March 2009 and for the COVID-19 pandemic stock market crash as the period from February 2020 to March 2020. However, some studies define the time periods for these crises differently.	We draw on additional literature and estimate our models using three alternate periods each for the Great Recession market crash and the COVID-19 pandemic market crash. Results from this analysis are similar to the results from our main models.
Accounting for firm response strategies during crises for the Great Recession and COVID-19 market crashes [Web Appendix M]	Thus far, we have focused on identifying pre-crisis preparedness strategies (i.e., CCR) that can help firms better weather the negative effects of the crisis. However, extant research on economic crises shows that firms adopt a variety of response strategies once such crises occur.	We examine whether the effects of pre-crisis CCR on a firm's stock market performance during a crisis hold over and above those of response strategies. Results for the effects of pre-crisis CCR continue to hold in this analysis.
Alternate instrumental variables for the Great Recession and COVID-19 market crashes [Web Appendices N and O]	In the main models, we account for the potential endogeneity emanating from omitted variable bias through peer-based instruments using the industry average values of CCRs at time t (excluding the focal firm). In these alternative analyses, we create peer-based instruments in two different ways to further ensure that the instruments meet the exclusion criterion.	First, we create peer-based instruments using a firm's peers' CCRs from the previous year. Using peers' CCRs from the previous year makes it even less likely for peer firms to predict a focal firm's future strategies and to jointly determine their strategies for improving customer relationships. Second, we create a more granular version of the peer-based instruments using a broader definition of peers (i.e., peers from both primary and secondary industries) for a focal firm. Results from this analysis are similar to the results from our main models.

associated with idiosyncratic risk. We also find evidence of a moderating (attenuating) effect of firm market share on the CCR-stock performance relationship during the COVID-19 crash, although this effect is largely absent during the Great Recession crash. Further, when compared to relevant non-crash periods, we find that these effects are equally strong during the endogenous Great Recession market crash and even stronger during the exogenous COVID-19 pandemic market crash.

Collectively, these findings indicate that while CCR helps firms better weather crises emerging both from within and outside the economy, important differences in these relationships driven by the nature of the crisis require consideration. Finally, our results are robust to a wide array of alternative model specifications, including alternate time periods, the exclusion of particular industries, and a variety of instrumental variables. Thus, overall, our results support the continued relevance of expected utility theory vis-à-vis customer-company relationships during economic crises and stock market crashes.

Implications for research and theory

This study makes three important contributions to research and theory. It is the first to examine the CCR-company stock market performance relationship during economic crises and associated stock market crashes. While often intimated in the literature (e.g., Fornell et al., 2006), the effects of CCR on firm market performance during these unique events had not, before this study, been explicitly tested. As such, this study confirms the consistent value of strong CCR during both normal growth market conditions as well as during less common but highly consequential and unanticipated economic crisis periods. Through this process, this study also contributes theoretically to this literature by testing expected utility theory, which has served as the theoretical foundation of the CCR-company stock market performance relationship, against deviations in investor behavior during major economic crises. Generally, our results confirm the expected utility theory perspective on investor behavior during economic crises and market crash events. Nonetheless, we interpret our findings in favor of the predictions of EUT cautiously, as our sample is comprised of predominantly large market capitalization firms. The stocks of larger firms are predominantly owned by institutional investors (for example, average institutional stockholding is 72% in our Great Recession sample and 71% in our COVID-19 sample) and, because of their professional training and experience, institutional investors tend to be more rational and thus less prone to behavioral biases and deviations from rational behaviors (Roach, 2022; Sakaki et al., 2021).

Second, and perhaps most uniquely, this study adds to the nascent and fast-growing literature on the role of the marketing function in mitigating the negative effects experienced by companies during economic crises (e.g., Dubé et al., 2018; Steenkamp & Maydeu-Olivares, 2015). Importantly, this study does so via examination of two unique kinds of economic crises – i.e., endogenous and emerging from within the economy, and exogenous and emerging from outside the economy. Given the differences between these two economic crises – and not only in their underlying causes but also in the differential effects each had on consumers' willingness and ability to spend and buy as they normally would – the finding that CCR helps firms weather both types of crises is of considerable importance. We also observe that both mitigation strategies (stronger pre-crisis CCR) and response strategies (adopted during crises) are effective in helping firms better weather economic crises, another finding unique to this study.

Moreover, the findings of a moderating (attenuating) effect of firm market share on the CCR-stock performance relationship during the COVID-19 crash but not during the Great Recession crash, and that the effects of CCR are equally strong during the endogenous Great Recession market crash but even stronger during the exogenous COVID-19 pandemic market crash, add important context to these results of relevance to future research and theory. In brief, during the sudden and extreme exogenous COVID-19 market crash, CCR aided firms' market returns and risk even more than during a relevant non-crash period (though as discussed below, this effect was weaker during this crash for larger market share companies). As the literature on the role and value of marketing in mitigating the effects of economic crises continues to advance and a wealth of new research emerges in the months and years ahead – as is all but certain in the wake of the recent and high-impact COVID-19 pandemic – our results suggest that the nature and cause of the economic crisis itself must be considered, both theoretically and empirically.

Finally, and related to the above, we further contribute to the marketing literature on both CCR (Table A1a, Web Appendix A) and economic crises (Table A1b, Web Appendix A) by testing the moderating effect of pre-crisis firm market share on the CCR-stock market performance relationship. While a larger market share is typically viewed as desirable and provides firms with many benefits, our results suggest boundary conditions for these advantages vis-à-vis the effectiveness of pre-crash customer-company relationships in mitigating the negative effects of a market crash, at least during certain types of crises. We propose that because larger market share companies have a larger and more heterogeneous customer base for whom they must transform their offerings during a crisis, doing so may be more difficult, thereby weakening the effect of the CCR-stock performance relationship. For the COVID-19 economic crisis, this attenuating effect is confirmed, likely due to the suddenness and

severity of this particular crisis and the resulting increased difficulties companies with more heterogenous customers experienced in pivoting their offerings. This outcome may also have been driven by a differential ability of firms to allocate resources to meet changing customer needs during these two crises, as the "credit crunch" associated with the Great Recession crisis limited all firms' borrowing abilities while no such constraints existed during the COVID crisis, perhaps resulting in the heterogeneity of a firm's customer base becoming a more salient part of investors' decision calculus while assessing their pre-crisis CCR during the COVID-19 market crash. Overall, these results also suggest that, both empirically and theoretically, future research considering the role of marketing in mitigating the effects of economic crises should consider the effect of firm pre-crisis market share in these relationships as well as the nature of the crisis.

Managerial implications

For executives and managers, this study provides evidence that marketing and marketing information can contribute significantly to our knowledge of which firms better survive the threats posed by economic crises. While managers have long had access to information regarding the value of marketing to stock market performance during normal growth market conditions, this study extends these important insights to their value during rare but critical unanticipated shocks and crisis events. In sum, the findings here suggest that managers should view CCR information not only as a performance indicator predictive of near-term future financial performance (assuming normal business conditions) but also as barometers of success during unpredictable crises, crises that many firms are not able to withstand. From an economic perspective, we find that one standard deviation higher CCR is associated with between $0.9 billion and $2.4 billion in annualized market capitalization for the companies included in our study.

Indeed, the above implication suggests that marketing performance information may need to be communicated differently to key stakeholders. While many companies now include information about marketing metric performance in their annual reports (e.g., see Amazon, 2018), it is generally presented as evidence of positive relationships with customers indicative of future growth potential. Yet according to our findings, firms can now position this information to investors and stakeholders as evidence of firm durability and even survivability during economic shocks, similar to a firm's cash holdings (Aksoy et al., 2022). Though unpopular with investors, cash holdings are oftentimes viewed as evidence that companies can cover operating expenses and endure a crisis that disrupts cash flow; indeed, evidence suggests that firms with larger cash holdings more effectively endured the COVID-19 crisis (Tawiah & O'Connor Keefe, 2020). Based on our findings, CCR should be positioned similarly, as an intangible asset with similar positive consequences that support operations and stock market performance during a crisis.

Yet even more significantly, our results provide some evidence that marketing success as stronger CCR may matter *even more* to firms' stock market performance during a market crash when compared to "normal" market circumstances. Comparing the effect sizes of the CCR-stock market performance relationship from the crisis periods to pre-crisis periods, our results show that during the fast-moving COVID-19 economic crisis, the CCR-stock market performance relationship was stronger and its effects on firm stock market performance even larger. One reason for the stronger effects of CCR during COVID-19 could be that consumers with a strong connection to companies (high CCR) felt more sympathetic to their favorite firms during this crisis, as it was not caused by other economic agents (e.g., the Great Recession) but by an uncontrollable force of nature (i.e., a virus). As such, during the COVID crisis, consumers may have been more willing to support these firms, and investors may have inferred this support and rewarded higher CCR firms with higher stock prices and lower firm-specific volatility. However, our results also suggest that managers at larger market share firms may need to temper their expectations about this effect during the same type of crisis, as we find that market share negatively moderates the relationship during the COVID-19 crash. Overall, while caveats about the limitations of studies such as ours must be noted, these findings raise the possibility that CCR information is not only *equally* relevant but *most critical* during negative economic events.

Limitations and future research

Our study is not without limitations, and two in particular deserve note. First, due to our use of the ACSI data as the source of CCR information, we are limited to relatively small samples of predominantly large market capitalization companies. It would be useful for future research to examine a larger cross-section of companies. Second, it would also be intriguing to examine the effect of CCR on company stock market performance in a market context outside the U.S. (i.e., in developing and emerging markets), as this would contribute to a better understanding of these protection effects in a variety of market types that are often impacted equally negatively or even more severely by economic crises.

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Declarations

Conflict of interest The authors declare that they have no conflict of interest.

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