



Mitigating the damage of a global pandemic on the international buyer-supplier relationship: Evidence from Chinese suppliers

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ABSTRACT

The coronavirus disease 2019 (COVID-19) pandemic severely damaged the global supply chain, resulting in markdowns across the global economy. A growing body of research has explored the influence of this global pandemic on firm strategy and performance. However, despite the substantial impact of the pandemic on the global supply chain, no empirical studies have examined its impact on buyer–supplier relationships. Building on the literature on transaction cost economics (TCE) and interfirm governance, this study examines the effects of COVID-19 pandemic severity on interfirm conflict and opportunism in international exchange relationships, as well as the role of contractual and relational governance in shaping these effects. Based on data from a two-period survey of manufacturing firms in China and their foreign buyers with archival data, our findings reveal that pandemic severity increases interfirm conflict and buyers' opportunism in international exchanges. Moreover, contractual governance aggravates the detrimental effect of pandemic severity on buyers' opportunism, while relational governance weakens the detrimental effect of pandemic severity on interfirm conflict. When contractual and relational governance are implemented jointly, they can weaken the detrimental effect of pandemic severity on buyers' opportunism.

1. Introduction

Recently, a growing body of research has explored the influence of the coronavirus disease 2019 (COVID-19) pandemic on firm strategy and performance (Bartik et al., 2020; Ge et al., 2022; Hoang et al., 2022; Kim et al., 2021; Roffia and Mola, 2022; Uddin et al., 2021). Compared with other global crises, the firm-level influence of the global pandemic was truly unprecedented, complex, and wide ranging (Ivanov, 2020; Mena et al., 2022; Paul et al., 2023). The global pandemic differed from other crises and disasters in multiple aspects (Zattoni & Pugliese, 2021). A global crisis, such as the Great Depression and the 2008 Financial Crisis, usually involves economic contractions with less significant direct effects on human health. Natural disasters, such as the Indian Ocean Tsunami and Hurricane Harvey, have the potential to affect lives and economies but tend to be localized and typically involve consequences that are relatively shorter term and more transient (Das et al., 2021; Zattoni & Pugliese, 2021). In contrast, the COVID-19 pandemic

was global in scale, and its effect was felt over extended periods (Foss, 2020; Verbeke and Yuan, 2021), resulting in macro consequences such as uncertainty, scarcity, turbulence, and economic contraction while engendering tension between life safety and economic development (Das et al., 2021; Müller et al., 2022; Shen and Sun, 2021).

The COVID-19 pandemic severely damaged the global supply chain, resulting in markdowns across the global economy (Levy, 2021). The International Monetary Fund (IMF) lowered its expectation of global economic growth, which was 5.9% in 2021, to 4.4% in 2022. Economic contractions were also accompanied by rising inflation. In April 2020, the U.S. unemployment rate jumped to 14.7 percent, which was the highest level since the Great Depression, as many businesses shut down or severely curtailed their operations to limit the spread of the deadly coronavirus. Therefore, the global pandemic not only threatened firm survival and growth but also triggered supply chain disruption (Crick and Crick, 2020; Muzio and Doh, 2021).

A review of the extant literature reveals two significant research

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gaps. First, scholars have explored the substantial impact of the COVID-19 pandemic on the global supply chain (Butt, 2021a; Peng and Kathuria, 2021); however, the literature falls short in examining COVID-19's impact on buyer–supplier relationships, which is an important omission, as firms rely on their relationships with their partners to achieve their operational objectives, continued growth, and long-term survival (Anderson et al., 1994; Dwyer et al., 1987; Morgan and Hunt, 1994). The disruption of interfirm relationships can have significant long-term negative consequences, such as cooperation breakdown and weakened firm performance (Kang and Jindal, 2015; Ivanov, 2021). Particularly during the global pandemic, which increased the degrees of uncertainty, scarcity and turbulence (Das et al., 2021), these negative consequences may trigger a ripple effect, exacerbating the ongoing disruption of the supply chain and pushing firms to the verge of bankruptcy¹ (Butt, 2021a; Ivanov, 2021). Therefore, the exploration of the impact of the global COVID-19 pandemic on international buyer–supplier relationships is warranted (Gurbuz et al., 2023; Kano and Hoon Oh, 2020), given that global pandemics have occurred throughout history (i. e., Black Plague, Russian Flu, Spanish flu, COVID-19 pandemic) and may occur again in the future (Das et al., 2021).

Second, while previous research has examined contractual governance and relational governance as important mechanisms of buyer–supplier relationship management (Verbeke, 2020; Sheng et al., 2018; Cao and Lumineau, 2015), little is known about whether their effects persist in the context of a global pandemic, which is characterized by isolation, economic downturn, and uncertainty (Das et al., 2021). In other words, there is a lack of theoretical or empirical evidence on how contractual and relational governance influence the impact of the global pandemic on international buyer–supplier relationships. Furthermore, although the meta-analysis by Cao and Lumineau (2015) largely addresses the debate regarding the complementarity or substitutability of the two governance mechanisms (primarily complementarity), there is still a lack of clarity on whether and how they complement or substitute each other in mitigating the negative impact of the global pandemic. Contractual and relational governance are not static; they continue to evolve in different contexts and relationships (Lumineau et al., 2023). Thus, there is a need to investigate how these governance mechanisms operate in this unique context, both individually and jointly.

To address these research gaps, we build on the literature on transaction cost economics (TCE) and interfirm governance to examine the impact of COVID-19 pandemic severity on international buyer–supplier relationships. Our study centers on two pivotal variables, namely, conflict and opportunism, in the evaluation of these relationships (Bai et al., 2016; Jap and Anderson, 2003; Lado et al., 2008; Palmatier et al., 2006). This approach considers the substantial differences in the origins and consequences (Etgar, 1979; Dwyer et al., 1987; Kang and Jindal, 2015). Our conceptual framework (see Fig. 1) depicts the interplay between COVID-19 pandemic severity and governance strategy. In particular, we elucidate the effects of COVID-19 pandemic severity on buyer–supplier conflict and buyer opportunism and examine the contingent influence of contractual and relational governance on these effects. Furthermore, firms often employ these two governance mechanisms simultaneously, as they are both effective ways in which to manage buyer–supplier relationships. Understanding how buyers and suppliers interact in the

¹ A good case through which to illustrate this negative consequence is the partnership between Apple and Foxconn, the world's largest contract electronics manufacturer and Apple's largest iPhone supplier. Due to lockdown policies and supply chain disruptions, these companies experienced a severe downturn in their buyer–supplier relationship during the COVID-19 pandemic, which not only worsened the shortage of product supply but also resulted in a substantial reduction in their degree of cooperation. Apple had also searched for new contractors and extended its supply chain to new factories. As a result, their partnership has yet to be fully restored up to the present day (Mearian, 2022).

global pandemic context also contributes to both theory and practice. Therefore, in additional analysis, we also explore the question of whether contractual and relational governance have a joint moderating effect on the relationship between COVID-19 pandemic severity and buyer–supplier conflict/buyer opportunism in international buyer–supplier exchanges.

The theoretical contributions of this research are as follows. First, based on empirical evidence, we reveal that the COVID-19 pandemic, an unprecedented “black swan” crisis, had significant impacts on buyer–supplier conflict and buyer opportunism. These results provide more nuanced findings on the management of international buyer–supplier relationships during global crises. Second, we identify the differential moderating role of contractual and relational governance in the relationship between global pandemic severity and conflict and opportunism, indicating the need to consider “when” contractual and relational governance contribute to better buyer–supplier relationships during a global pandemic. Third, given that the roles of contractual and relational governance vary across contexts, we examine their joint moderating effect in the novel context of a global pandemic, enriching the complement–substitute debate in the governance literature (Cao and Lumineau, 2015; Lumineau et al., 2023).

We use a sample of manufacturing firms in China and their foreign buyers as our research setting. Since the pandemic began to spread globally in 2020, countries had experienced its severity to different degrees and had taken various measures to deal with it, providing us with a rich setting in which to examine the impact of pandemic severity. Finally, we combine primary survey data and secondary archival data to test our conceptual model.

2. Theory and hypotheses

2.1. TCE view of opportunism and conflict

Building on TCE, marketing scholars have found that interfirm relationships often experience conflict (Brown and Day, 1981; Cheng and Sheu, 2012) and opportunism (Mesquita and Brush, 2008), the two prominent dark sides of interorganizational relationships (Oliveira and Lumineau, 2019). Interfirm conflict refers to disagreement and tension between a buyer and a supplier, resulting from each party striving to achieve its own goals (Samaha, Palmatier, & Dant, 2011). In an international exchange relationship, the buyer and supplier often have divergent interests in relation to their objectives, expectations, behaviors, resource allocation, etc., which are sources of conflict in international exchanges (Etgar, 1979; Wei et al., 2022). Interfirm conflict arises when one firm perceives another firm to be engaging in behaviors that interfere with the former's ability to achieve its desired goals (Etgar, 1979; Rosenberg and Stern, 1971; Rosenbloom, 2007). Interfirm conflict often reflects the range and intensity of the incompatibilities and disagreements that arise among firms. These disagreements stem from various sources, such as diverging channel goals (Rosenbloom, 2012; Sims et al., 1977; Stern and Gorman, 1969), differing perceptions of reality (Rosenbloom, 2012; Stern and Gorman, 1969) or expectations (Rosenberg and Stern, 1971), conflicting resource allocation arrangements (Etgar, 1979; Rosenbloom, 2012), and communication problems (Mohr and Nevin, 1990; Rosenbloom, 2007; Sims et al., 1977).

The main sources of interfirm conflict can be classified as attitudinal sources and structural sources (Etgar, 1979). Attitudinal sources are usually associated with disagreements regarding channel roles (Brown and Day, 1981; Lusch, 1976; Zhuang et al., 2010), environmental expectations (Sharma and Parida, 2018; Weaven et al., 2014), perceptions (Eshghi and Ray, 2019; Webb, 2002), and channel communications (Sharma and Parida, 2018; Zhuang et al., 2010). Structural sources are often related to the pursuit of divergent goals by buyers and suppliers (Eshghi and Ray, 2019; Webb and Didow, 1997), their drive for autonomy and control (Tsay and Agrawal, 2004; Webb, 2002), and their struggle for scarce resources (Eshghi and Ray, 2019; Webb, 2002).

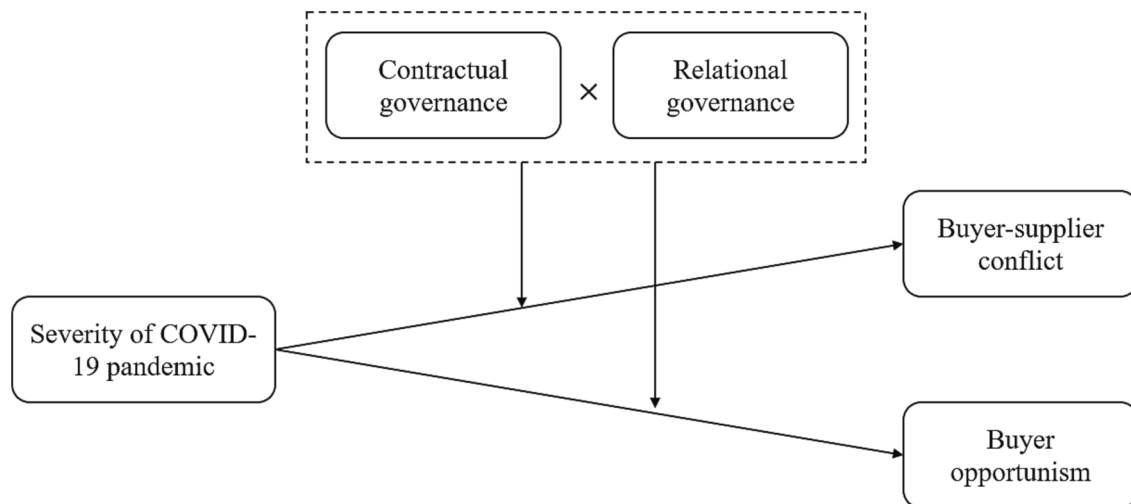


Fig. 1. Conceptual Model.

Power, dependence, and the choice of governance mechanism are also determinants of conflict in buyer–supplier exchanges (Johnsen and Lacoste, 2016; Pfajfar et al., 2019; Sharma and Parida, 2018).

According to TCE, opportunism is defined as ‘self-interest seeking with guile’ and brings about risks for partners (Williamson, 1985). TCE posits that due to the existence of bounded rationality and incomplete contracts, uncertainty determines the occurrence of opportunism (Shi et al., 2022; Williamson, 1985). Opportunism refers to a lack of candor or honesty in transactions, including seeking self-interests with guile and making calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse others (Williamson, 1985). Opportunistic marketing channel members can sacrifice the profit of others, act on others’ disadvantage, or resort to deceit, deception or lying in pursuit of their own profits (Williamson, 2005; Sheng et al., 2018). Transaction parties may be opportunistic when they perceive that the marginal benefit of opportunism exceeds its marginal costs (Nagin et al., 2002). According to TCE, exchange hazards, including asset specificity and uncertainty, drive opportunism between transaction parties (Williamson, 1985). Uncertainty in an international setting further increases the likelihood of opportunism (Luo, 2007), as it reduces firms’ planning capabilities and increases the unpredictability of transaction parties’ behaviors (Liu et al., 2009; Luo, 2007; Poppo and Zenger, 2002). Exchange uncertainty also hinders the monitoring, assessment, and control of transaction partners, increasing the risk of opportunism in buyer–supplier relationships (Hawkins et al., 2013).

In essence, opportunism often involves transaction parties’ deceptive behaviors, through which one party benefits at the expense of the other party (Wathne and Heide, 2000). Moreover, opportunism can manifest in several forms, such as exaggerating one’s difficulties, shirking, distorting or disguising the truth, and lying (Kang and Jindal, 2015). In contrast, the essence of interfirm conflict is that both parties inevitably have different interests regarding their goals, behaviors, and resource allocation processes (Etgar, 1979). Interfirm conflict puts a strain on exchange relationships because the two parties find it difficult to make mutually agreeable decisions. Conflict in marketing channels indicates incongruity and tension between buyers and suppliers (Dwyer et al., 1987). If unresolved or uncontrolled, channel conflict gradually leads to dysfunctional exchange relationships (Kang and Jindal, 2015). Given these differences in the origins and consequences of conflict and opportunism, it is also worthwhile to explore the impact of COVID-19 pandemic severity on conflict and opportunism in international buyer–supplier relationships.

2.2. COVID-19 pandemic, conflict, and opportunism

We posit that COVID-19 pandemic severity increased interfirm conflict. First, the COVID-19 virus was highly transmissible and posed considerable health risks (Chowdhury et al., 2021). To constrain the virus, governments enforced strict measures, such as lockdowns and quarantines, based on the relative severity of the COVID-19 pandemic (Liu et al., 2020). International exchange partners might have thus differed in their perceptions of the national policies related to the pandemic (Sharma and Parida, 2018). These differences in perception between channel members could be a primary source of conflict between buyers and suppliers (Etgar, 1979).

Second, the COVID-19 pandemic caused significant economic contractions (Das et al., 2021), resulting in resource scarcity and constraints in international buyer–supplier exchanges (Paul et al., 2021; Shahed et al., 2021). Competition for scarce resources between suppliers and buyers could have intensified when the demand for resources in an international channel exceeded the available supply of resources (Weaven et al., 2014), which might have led to hoarding behavior among the two parties (Hobbs, 2020), leading to resource allocation conflict (Brown and Day, 1981; Deutsch, 1973). In addition, economic contractions and resource scarcity could have contributed to increased costs and impeded performance (Das et al., 2021), which would have made it difficult for suppliers to function at fixed prices (or even fixed rates), resulting in increased supply chain disruptions and conflicts. Thus, pandemic severity in a foreign buyer’s country could have increased the tension and conflict between international buyers and suppliers.

Third, the COVID-19 pandemic engendered uncertainty in terms of economic activities (Ahorsu et al., 2022; Das et al., 2021). During the COVID-19 pandemic, uncertainty arose in many domains, including the extent and timing of economic recovery, pathogen containment, and information reliability and credibility (Das et al., 2021). On the one hand, high degrees of uncertainty often generate differing expectations among channel members regarding potential risks, probabilities of economic recovery, and payoffs of specific channel strategies (Rosenbloom, 2012; Stern and Gorman, 1969). On the other hand, high degrees of uncertainty lead to goal incompatibility between buyers and suppliers regarding operating activities, business philosophy, and the risk-profit tradeoff (Rosenbloom, 2012; Sims et al., 1977). Since disagreements concerning goals and expectations are attitudinal sources of interfirm conflict between channel members (Etgar, 1979), we propose the following:

Hypothesis 1. *A higher degree of severity of the COVID-19 pandemic in a buyer’s home country is associated with higher-level buyer–supplier conflict.*

Similarly, the severity of the COVID-19 pandemic might have increased buyer opportunism in international exchanges. First, the COVID-19 pandemic caused economic contractions that might have led to financial scarcity and profit shrinkage in marketing channels (Das et al., 2021; Moktadir et al., 2023). Under such circumstances, it was difficult for the buyer to maintain subjective expectations of high growth and returns for the future (Kamat and Kanekar, 1990). When future expectations are promising and individual gains can be increased by enlarging the scale of their common interests, channel members are usually less likely to engage in opportunistic behaviors (Hawkins et al., 2013). However, the increased cost and impeded performance caused by the global pandemic lowered return expectations. In this situation, buyers might have chosen to engage in opportunistic behaviors for their own interest (Lo, 2000; Nagin et al., 2002).

Second, the COVID-19 pandemic exacerbated environmental turbulence and uncertainty (Paul et al., 2021; Verbeke, 2020), which increased the prevalence of opportunistic practices in international exchanges (Wang et al., 2013). According to TCE, environmental turbulence and uncertainty increase the degree of unpredictability of suppliers' actions; for instance, adhering to the expected prices or delivery dates becomes very difficult (Butt, 2021a), which constrains buyers' planning capabilities. Such uncertainty may also invalidate a previously specified contract because some of its provisions might have changed (Huo et al., 2018). In addition, uncertainty and turbulence hinder mutual monitoring and assessment and the buyer's control, increasing the degree of risk of opportunistic practices (Mysen et al., 2011). Therefore, we propose the following:

Hypothesis 2. *A higher degree of severity of the COVID-19 pandemic in a buyer's home country is associated with high-level buyer opportunism.*

2.3. Moderating effects of contractual and relational governance

Firms face two main challenges in a crisis: resource constraints and higher risks in exchanges (Zafari et al., 2020). Contractual and relational governance are two major interfirm mechanisms through which to safeguard exchanges and circumvent the negative consequences of a crisis (Poppo and Zenger, 2002; Williamson, 1985). These two types of governance can coexist and coordinate interfirm exchanges in a crisis (see Cao and Lumineau, 2015 for a review).

2.3.1. Moderating role of contractual governance

According to TCE, contracts can work as control mechanisms for buyer-supplier relationship governance (Williamson, 1991). Contractual governance is defined as the usage of explicit written contracts to coordinate interfirm exchange relationships (Jap and Anderson, 2003; Poppo and Zenger, 2002). Formal contractual clauses specify each party's rights and responsibilities and designate the formal procedures and rules for dealing with contingencies (Li et al., 2010; Liu et al., 2009; Sheng et al., 2018). Due to the differences in risk levels and lockdown and restriction policies of the COVID-19 pandemic across different countries (Chowdhury et al., 2021; Guan et al., 2020), it was difficult for firms in different countries to agree on the determination of force majeure in formal contracts and to enact provisions to deal with contingencies. We therefore predict that contractual governance exacerbated the detrimental effects of COVID-19 pandemic severity on conflict between a supplier and foreign buyer.

First, the severity of the COVID-19 pandemic varied across countries. Parties in international exchanges might have thus also faced different kinds of lockdowns and quarantines, as countries took different measures to deal with the pandemic (Karmaker et al., 2021). In this case, there was a need for flexibility and discretion in the transactions between international exchange parties (Butt, 2021b; Das et al., 2021). However, as contractual provisions and procedures reduce the degrees of flexibility and autonomy in contract implementation (Yang et al., 2017), contractual governance could have exacerbated the impact of

COVID-19 pandemic severity on interfirm conflict.

Second, contract negotiating and drafting involves significant expenses (Wuyts and Geyskens, 2005), which may divert efforts and resources that could have otherwise been deployed in improving channel performance (Krishnan et al., 2016). The economic and resource contraction caused by the COVID-19 pandemic (Das et al., 2021) intensified the competition for scarce resources among channel members, subsequently increasing conflict between exchange parties. As crafting detailed contract provisions can be expensive and time consuming and exhaust considerable channel resources (Villena et al., 2021; Wuyts and Geyskens, 2005), contractual governance may have aggravated resource allocation conflict during the COVID-19 pandemic.

Third, contract enforcement may restrain the cooperative interactions between buyers and suppliers and undermine relational norms (Malhotra and Murnighan, 2002), nurturing suspicion and distrust between exchange parties (Wuyts and Geyskens, 2005). The COVID-19 pandemic increased the degree of uncertainty and turbulence level in the exchange environment, which made adaptation a primary challenge for exchange parties (Rindfleisch & Heide, 1997). However, the rigidity of contracts constrains transaction parties' capability to adapt to both their environment and each other's interests and goals. In this situation, contracts could have aggravated the impact of COVID-19 pandemic severity on interfirm conflict in international exchange relationships. Accordingly, we predict the following:

Hypothesis 3. *Contractual governance exacerbates the detrimental effect of COVID-19 pandemic severity on conflict in international buyer-supplier exchanges.*

Similarly, we posit that contractual governance exacerbates the detrimental effect of COVID-19 pandemic severity on buyer opportunism in international exchanges. First, as mentioned above, the economic contractions caused by the COVID-19 pandemic led to lower expectations of future channel performance (Karmaker et al., 2021; Rahman et al., 2022), which might have encouraged opportunistic behaviors among buyers. When more details and specifics on outcomes are prescribed in their contracts, these contracts make buyers more sensitive to the performance and expected benefits of collaboration (Madhok and Tallman, 1998; Villena et al., 2021). When buyers cannot deliver the outputs specified in their contracts due to uncontrollable external factors, opportunistic shirking or the evasion of obligations occurs (Wathne and Heide, 2000). As a result, contractual governance could have aggravated the detrimental impact of COVID-19 pandemic severity.

Second, the COVID-19 pandemic exerted a significant impact on uncertainty and turbulence in the global business environment, hindering the mutual monitoring and assessment of exchange parties, which resulted in opportunism in international buyer-supplier exchanges. Detailed and complex contracts make it challenging to monitor and evaluate exchange partners' behaviors and outputs based on contractual provisions (Zhou and Xu, 2012). Moreover, the rigidity of contracts is more pronounced when they contain more details, weakening their coordinating and enforcing effects (Yang et al., 2017). Thus, detailed contracts could have aggravated the difficulties in mutual monitoring and assessment among exchange parties, exacerbating the relationship between COVID-19 pandemic severity and buyer opportunism in the international marketing channel. Therefore, we propose the following:

Hypothesis 4. *Contractual governance aggravates the detrimental effect of COVID-19 pandemic severity on buyer opportunism in international exchanges.*

2.3.2. Moderating role of relational governance

As an informal governance mechanism, relational governance refers to the utilization of shared norms and values to restrict partner opportunism and guide desirable behaviors between buyers and suppliers (Wathne and Heide, 2000; Zhou and Xu, 2012). Relational norms, such

as trust, commitment, solidarity, information sharing, and flexibility (Morgan and Hunt, 1994; Sheng et al., 2018), enable exchange parties to build shared values and congruent goals in their exchange relationship (Jap and Ganesan, 2000). Hence, we argue that relational governance was an inhibitor of the effect of COVID-19 pandemic severity on interfirm conflict in international buyer–supplier exchanges.

First, as mentioned above, countries enforced different measures, such as lockdowns and quarantine, to prevent the spread of the COVID-19 pandemic (Liu et al., 2020). Therefore, buyers and suppliers might have different perceptions of national policies related to the pandemic (Sharma and Parida, 2018), which could have increased their conflicts in international buyer–supplier exchanges. In contrast, relational norms of trust, commitment, information sharing, flexibility, and solidarity can inspire mutual understanding in buyer–supplier cooperation (Poppo and Zenger, 2002; Morgan and Hunt, 1994) and restrict interfirm conflict (Brown et al., 2000; Liu et al., 2009). Therefore, the conflicts emanating from partners' differing perceptions of national policies caused by the COVID-19 pandemic could have been mitigated.

Second, the COVID-19 pandemic caused economic and resource contractions (Das et al., 2021), intensifying the competition for scarce resources among channel members and thus increasing conflict in international buyer–supplier exchanges. The relational norm of reciprocity follows an even distribution of benefits for both partners in the long run (Kaufmann and Stern, 1988), which is presumably salient for both preventing conflicts and maintaining the relationship between exchange parties (Valta, 2013). Therefore, the resource allocation conflict caused by the COVID-19 pandemic could have been mitigated.

Third, high levels of uncertainty in many domains caused by the COVID-19 pandemic engendered disagreements regarding goals and expectations, increasing the prevalence of doubts and anxiety about the future value of channel cooperation. In turn, this might have increased conflicts in international buyer–supplier exchanges. The relational norm of solidarity boosts commitment to joint action through mutual adjustment, thereby increasing the positive expectations of future exchange performance (Poppo and Zenger, 2002). The norm of information sharing allows both parties to exchange private information, including their short- and long-term plans and goals, with one another, which helps generate a shared vision for future collaboration (Liu et al., 2009). As a result, relational governance could have weakened the relationship between COVID-19 pandemic severity and conflict in the international marketing channel. Accordingly, we suggest the following:

Hypothesis 5. *Relational governance weakens the detrimental effect of COVID-19 pandemic severity on conflict in international buyer–supplier exchanges.*

Moreover, we contend that relational governance played an effective role in restraining the detrimental effect of COVID-19 pandemic severity on buyer opportunism in international exchanges. First, the flexibility of relational governance could have weakened the detrimental effects caused by the pandemic. Government measures, such as quarantine and lockdowns, could have led to opportunistic shirking and evasion among companies that were unable to fulfill their contractual agreements (Verbeke and Yuan, 2021); however, relational governance provided a buffer for companies that had operational interruptions caused by the pandemic (Hassan et al., 2020; Verbeke, 2020), weakening the impact of COVID-19 pandemic severity on buyer opportunism.

Second, the relational norm of a shared vision enhanced the clarity of the expectations of cooperation among exchange parties, which in turn weakened the detrimental effects of uncertainty that emanated from the COVID-19 pandemic. Uncertainty via the COVID-19 pandemic triggered social anxiety and panic, which reduced stable expectations of future cooperation between exchange parties and left room for opportunism (Das et al., 2021). Relational governance could have constrained anxiety and panic and therefore nurtured stable cooperation expectations (Yu et al., 2021), weakening the detrimental effect of COVID-19 pandemic severity on buyer opportunism. Thus, we posit the following:

Hypothesis 6. *Relational governance weakens the detrimental effect of COVID-19 pandemic on buyer opportunism in international exchanges.*

3. Methods

3.1. Sample and data collection

We test our hypotheses with international buyer–supplier exchanges that consist of manufacturing firms in China and their foreign buyers. The unit of analysis in this study is buyer–supplier relationships. China provides a rich setting to test the conceptual model of our study, considering its relevance in terms of both the COVID-19 pandemic and the global supply chain. First, China experienced the initial outbreak of the COVID-19 pandemic and was one of the most significantly impacted nations globally (Butt, 2021a). Second, according to the World Trade Organization (WTO), China maintains the world's highest amount of exports and second-highest amount of imports. Chinese suppliers are quintessential representatives and integral components of the international supply chain. Finally, China's status as the world's second-largest economy (based on gross domestic product (GDP)) underscores the necessity for extensive research on international buyer–supplier exchanges within this market.

We combined the data from a two-phase consecutive survey and archival data on the COVID-19 pandemic. The two-period survey was conducted in January 2020 (T1) and July 2021 (T2). Following previous studies, we developed our survey instrument with a double back-translation approach (Hoskisson et al., 2000; Gao et al., 2022). We developed an English version of the questionnaire, translated it into Chinese, and then conducted back-translation with two independent translators to ensure the conceptual equivalence of the survey items.

We extracted a random sample of 3,500 manufacturing firms from the Export Business Directory published by the Ministry of Commerce of China and sent invitations via email to these firms on a rolling basis over 15 days. A total of 1,082 senior managers in these firms accepted the survey invitations. Specifically, we relied on a senior manager (chief executive officer (CEO), general manager, vice general manager, or marketing executive) at each firm who was closely involved in exporting operations or familiar with its export business and could provide an assessment of the firm's business relationship with one of its foreign buyers. Thus, we surveyed only senior managers who were directly involved in international marketing channel operations. In the first round of the survey, we obtained 425 complete and usable questionnaires (response rate = 12.1 %).

One year later, we invited the same 425 respondents to participate in our follow-up survey. A total of 334 respondents completed the second survey. However, only 208 respondents reported information on the continuing relationship between their firms and their buyer firms that were identified in the first survey. After excluding eleven questionnaires that did not match our secondary data, we retained a sample of 197 supplier firms. Our final sample thus contained 197 Chinese manufacturing firms and their two-period survey data in T1 and T2 ($N = 394$ observations). The sample covered seven industries: textiles (25.38 %), electronics (15.74 %), mechanics (13.71 %), food and beverage (13.20 %), chemical (7.61 %), medicine (6.60 %), and others (17.77 %).

We compared the firms in the final sample with those firms that dropped out in the second wave regarding major characteristics, including the number of employees ($t = 0.820$, $p = 0.413$), firm age ($t = 1.226$, $p = 0.221$), international experience ($t = 0.872$, $p = 0.384$), and ownership nature ($t = -0.755$, $p = 0.451$). These results showed that nonresponse bias is not a serious concern in our study (Wang et al., 2022).

We obtained COVID-19 pandemic country-level data from an authoritative database provided by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University (JHU). We matched our firm data with the country-level pandemic data based on the country in which each buyer firm was located. The buyer firms in the final sample

were located in 38 countries, including the United States (13.71 %), Japan (9.64 %), Russia (7.61 %), Vietnam (6.60 %), Singapore (6.60 %), Pakistan (6.09 %), Germany (4.57 %), South Korea (4.57 %), Iran (4.06 %), France (4.06 %), and others (32.49 %).

3.2. Measures

Except for the information on the COVID-19 pandemic obtained from the secondary dataset, the firm-level variables were collected from the two-period survey questionnaires, as shown in Table 1. All measurement items of the latent variables are based on 7-point Likert scales.

3.2.1. Dependent variables

Interfirm conflict. The degree of conflict between Chinese supplier firms and foreign buyers was measured by a three-item scale adapted from Jap and Ganesan (2000), which assesses the disruptive conflicts between channel partners in terms of their relationships, goals and assignments.

Opportunism. We adapted a four-item scale from Liu et al. (2009) to assess the extent to which a foreign buyer engaged in opportunistic behaviors such as altering facts, exaggerating its needs, hiding important information, and breaking promises.

3.2.2. Independent variable

Severity of the COVID-19 pandemic. The most intuitive indicators to measure the severity of the epidemic are the COVID-19 infection rate and COVID-19 death rate in each country, which are also the most widely studied indicators in current COVID-19 epidemic research (Maier and Brockmann, 2020; Flaxman et al., 2020). The COVID-19 infection and death rates showed the extent to which the pandemic was spreading in the country, and high COVID-19 infection and death rates often led to enormous economic, health, and medical costs (Bartsch et al., 2020; Das et al., 2021). Therefore, we first measured the severity of the COVID-19 pandemic by the number of cumulative COVID-19 infections per 100 people in the host country of the foreign buyer firm by the time of each

Table 1
Variables, Measures, and Data Sources.

Variable	Measure	Source
Opportunism	A four-item scale adapted from Liu et al. (2009).	Survey data (2020, 2021)
Conflict	A four-item scale adapted from Jap and Ganesan (2000).	Survey data (2020, 2021)
Contractual governance	A four-item scale adapted from Wuyts and Geyskens (2005).	Survey data (2020, 2021)
Relational governance	A four-item scale adapted from Liu et al. (2009).	Survey data (2020, 2021)
Severity of COVID-19 pandemic	T1: 0; T2: The number of COVID-19 infections per 100 people in the host country by June 2021 (main model)	CSSE at JHU
Severity of COVID-19 pandemic_r	T1: 0; T2: The number of COVID-19 deaths per 10,000 people in the host country by June 2021 (robustness check)	CSSE at JHU
Firm size	The logarithm of the number of firm employees	Survey data (2020, 2021)
International experience	The number of years in which international operations have been implemented	Survey data (2020, 2021)
Buyer dependence	Three items adapted from Shou et al (2016)	Survey data (2020, 2021)
Transaction frequency	The number of transactions between the supplier and buyer within a year	Survey data (2020, 2021)
COVID-19 government response index	T1: 0; T2: Average government response index of COVID-19 from the Oxford Tracker from the earliest data available until June 2021	The Oxford COVID-19 Government Response Tracker

survey. Specifically, the severity of the COVID-19 pandemic was set to 0 in T1 because we completed the first survey in mid-January 2020, when there were no COVID-19 infections in any country other than China. In the robustness test, we also used the number of cumulative COVID-19 deaths per 10,000 people to measure the severity of the COVID-19 pandemic in foreign countries. The numbers of COVID-19 infections and deaths were obtained from the database provided by the CSSE at Johns Hopkins University (JHU).

3.2.3. Moderator variables

Contractual governance. We adapted a four-item scale from Wuyts and Geyskens (2005) to assess the extent to which suppliers and buyers drafted detailed and complete formal contracts specifying the roles, responsibilities, key performance indicators, and procedures in terms of the emergency response of each partner.

Relational governance. We adapted a four-item scale from Liu et al. (2009) to assess the extent to which buyers and suppliers openly exchanged useful information, widely shared ideas or initiatives, resolved their conflicts and problems through joint consultations and discussions, and participated in joint decision-making.

3.2.4. Control variables

We controlled for several firm- and country-level variables to exclude potential confounding effects (Jia et al., 2022; Zhang et al., 2023). First, we controlled for four firm-level characteristics of the supplier firm, including firm size (Sheng et al., 2018), international experience (Yang et al., 2012), transaction frequency (Jap and Ganesan, 2000), and buyer dependence (Shou et al., 2016). Firm size was measured by the logarithm of the number of firm employees (Sheng et al., 2018). International experience was captured by the number of years that the supplier firm had been implementing international operations (Yang et al., 2012). Transaction frequency indicated the number of transactions between the supplier and buyer within a year (Jap and Ganesan, 2000). Buyer dependence was measured by three items to capture the dependence of the supplier on the buyer in the host country (Shou et al., 2016).

Furthermore, the severity of the COVID-19 pandemic and buyer-supplier relationships were strongly affected by government prevention policies. Therefore, policy-related controls were included. We then controlled for the average government response index provided by the Oxford COVID-19 Government Response Tracker, which is a combination index recording the containment, economic, and health policies that governments took to tackle the COVID-19 pandemic. Table 2 presents the descriptive statistics and correlations.

3.3. Reliability and validity

We used confirmatory factor analysis (CFA) to estimate the reliability and validity of all multi-item constructs. The overall goodness-of-fit indices showed satisfactory model fit ($\chi^2/df = 1.742$, comparative fit index (CFI) = 0.970, Tucker-Lewis index (TLI) = 0.964, root mean square error of approximation (RMSEA) = 0.043, and standardized root mean square residual (SRMR) = 0.036). Convergent validity was confirmed by the factor loading value of 0.7 or higher for all constructs (Sheng et al., 2018; Han et al., 2023). Additionally, we assessed convergent validity by examining the average variance extracted (AVE), factor loadings, and composite reliability (CR). Table 3 lists the survey items, reliability, and validity of the latent variables. Table 3 shows that all the AVE values were well above the 0.5 recommended threshold and that all the CR values exceeded the 0.70 benchmark.

To test the discriminant validity of our constructs (conflict, opportunism, contractual governance, relational governance, and buyer dependence), we compared the five-factor model with other alternative factor models. As expected, the five-factor model yielded acceptable fit to the data: $\chi^2 = 247.398$, $df = 142$, CFI = 0.970, TLI = 0.964, RMSEA = 0.043, SRMR = 0.036. In contrast, eleven alternative models, including a single-factor model and ten four-factor models, demonstrated poor fit.

Table 2
Descriptive Statistics and Correlations.

	1	2	3	4	5	6	7	8	9	10
1 Conflict	1									
2 Opportunism	0.275***	1								
3 Severity of COVID-19 pandemic	-0.009	-0.01	1							
4 Contractual governance	0.296***	-0.267***	0.109**	1						
5 Relational governance	-0.091*	-0.290***	0.034	0.064	1					
6 Firm size(ln)	-0.018	-0.102**	0.021	0.061	0.094*	1				
7 International experience	-0.144***	-0.208***	0.079	0.040	0.133***	0.319***	1			
8 Buyer dependence	0.033	-0.082	0.049	0.079	0.170***	-0.096*	-0.041	1		
9 Transaction frequency	-0.012	-0.218***	0.053	0.103**	0.306***	0.158***	0.330***	0.050	1	
10 Government response index	-0.069	-0.088*	0.579***	0.163***	0.053	0.040	0.100**	-0.006	0.012	1
Mean	2.29	2.895	1.698	5.695	5.891	6.178	8.683	4.923	3.937	28
SD	0.933	0.982	3.087	0.947	0.699	1.412	5.004	0.919	0.637	28.32
Min.	1	1	0	3.5	2	1.609	1	1.67	2	0
Max.	5.667	6.75	10.37	7	7	10.82	27	7	5	69.67

Note: * p < 0.1, ** p < 0.05, *** p < 0.01, and N = 394.

Table 3
Latent Variable Measures, Reliability, and Validity.

Variable	Factor Loading	AVE	CR
Conflict (Cronbach's α = 0.847)			
Our relationship with this partner can be described as "tensional"	0.829	0.652	0.849
There is a major disagreement between us and our partner	0.826		
We often are in conflict with this partner in terms of how to conduct business	0.765		
Opportunism (Cronbach's α = 0.886)			
This buyer sometimes lies about certain things to protect its interests	0.760	0.662	0.886
This buyer often fails to deliver on promises, as described in the contract, for its own interests	0.779		
This buyer sometimes breaches informal agreements between our partners to maximize its own benefits	0.862		
This buyer often exploits "holes" in our contract to enhance its own interests	0.848		
Contractual governance (Cronbach's α = 0.848)			
Regarding the transactions with this partner, our contract clearly stipulates the roles of both parties	0.816	0.590	0.852
When dealing with this partner, our contract clearly stipulates the responsibilities of both parties	0.793		
In any transaction with this partner, our contract clearly stipulates how both parties should perform	0.754		
In dealing with this partner, our contract clearly stipulates how to deal with unexpected events	0.705		
Relational governance (Cronbach's α = 0.817)			
In this relationship, both parties expect that any information that may help the other party will be provided to that party	0.651	0.530	0.818
In this relationship, ideas or initiatives of both sides are widely shared and welcomed via open communication	0.767		
In this relationship, problems or conflicts are expected by both parties to be solved through joint consultations and discussions	0.768		
In this relationship, both parties play a healthy role in the other party's decisions via mutual understanding and socialization	0.721		
Buyer dependence (Cronbach's α = 0.783)			
We depend on this buyer in the host country	0.761	0.548	0.784
It would be difficult to replace this buyer in the host country	0.728		
It would be costly to lose this buyer in the host country	0.732		
It would be costly to lose this buyer in the host country	0.761		
Model fit index: $\chi^2/df = 1.742$, CFI = 0.970, TLI = 0.964, RMSEA = 0.043, and SRMR = 0.036.			

Thus, the discriminant validity of the five latent constructs was confirmed (as shown in Table 4). Moreover, the AVE for each construct exceeded the squared correlation between construct pairs, demonstrating discriminant validity between latent factors. Thus, these results further proved that our constructs had good discriminant validity.

3.4. Common method bias

We separated the information sources for the key variables (Podsakoff et al., 2012) to reduce the degree of common method bias. Information on the severity of the COVID-19 pandemic was obtained from secondary data, while that on other latent variables was collected from

Table 4
Results for Confirmatory Factor Analyses of the Core Constructs.

Factor models	χ^2	df	RMSEA	CFI	TLI	SRMR
Five-factor model: CG, RG, CF, OP, DE	247.398	142	0.043	0.970	0.964	0.036
Four-factor model ¹ : CG + RG, CF, OP, DE	745.786	146	0.129	0.829	0.800	0.112
Four-factor model ² : CG + CF, RG, OP, DE	1,107.332	146	0.129	0.726	0.679	0.118
Four-factor model ³ : CG + OP, RG, CF, DE	725.481	146	0.100	0.835	0.806	0.081
Four-factor model ⁴ : CG + DE, OP, RG, CF	586.543	146	0.088	0.874	0.853	0.077
Four-factor model ⁵ : RG + CF, CG, OP, DE	1,151.507	146	0.132	0.713	0.664	0.126
Four-factor model ⁶ : RG + OP, CG, CF, DE	710.086	146	0.099	0.839	0.812	0.087
Four-factor model ⁷ : RG + DE, OP, CG, CF	565.476	146	0.085	0.880	0.860	0.072
Four-factor model ⁸ : CF + OP, CG, RG, DE	1,210.404	146	0.136	0.696	0.644	0.156
Four-factor model ⁹ : CF + DE, OP, CG, RG	1,161.710	146	0.133	0.710	0.661	0.125
Four-factor model ¹⁰ : OP + DE, CF, CG, RG	1,202.597	146	0.126	0.699	0.647	0.151
Single-factor model: CG + RG + CF + OP + DE	2,401.630	152	0.194	0.358	0.278	0.172

Note. CF = conflict; OP = opportunism, CG = contractual governance, RG = relational governance, and DE = buyer dependence.

the senior managers of Chinese exporter firms. Thus, common method bias was limited. Nevertheless, we took several steps to mitigate potential common method bias. First, we assured respondents that there were no good or bad answers, and we protected their confidentiality by using an anonymous survey process, thereby increasing their degree of willingness to answer all questions candidly (MacKenzie and Podsakoff, 2012). Second, we scattered the reflective items around the questionnaire, and thus, respondents could not identify items describing the same factor (Obadia and Robson, 2021).

Statistically, we first ran Harman’s one-factor test with CFA (Podsakoff et al., 2003; Williams and McGonagle, 2016; Jia et al., 2020). The rationale for the use of this test was that if common method bias was a serious threat, then a single latent factor would account for all manifested variables (Iverson & Maguire, 2000), leading to a better fit of the one-factor model. Our results showed that the goodness of fit of the one-factor model ($\chi^2 = 2401.630$, $df = 152$, $RMSEA = 0.194$, $CFI = 0.358$, $TLI = 0.278$, and $SRMR = 0.172$) was significantly worse than that of the original measurement model ($\chi^2 = 247.398$, $df = 142$, $RMSEA = 0.043$, $CFI = 0.970$, $TLI = 0.964$, and $SRMR = 0.036$); thus, common method bias was unlikely to be a serious problem. Second, to further eliminate the possibility of common method bias, we adopted the unmeasured latent method construct (ULMC) (Podsakoff et al., 2003; Williams and McGonagle, 2016). The CFA model M1 was constructed, after which a common method factor was added to build model M2. The comparison of the fit indices of the two models revealed that there was no significant improvement in the model after adding the common method factor ($\Delta\chi^2/df = 0.091$, $\Delta RMSEA = 0.002$, $\Delta SRMR = 0.008$, $\Delta CFI = 0.007$, and $\Delta TLI = 0.004$), indicating that there was no significant common method bias (Williams and McGonagle, 2016).

3.5. Analysis

Following previous studies, we used the fixed effects (FE) model to analyze the two-period panel data (Allison, 1994):

$$Y_{it} = \alpha_0 + \beta_1 \text{Severity of COVID} - 19 \text{ pandemic}_{it} + \beta_2 \text{Contractual governance}_{it} + \beta_3 \text{Relational governance}_{it} + \beta_4 \text{Severity of COVID} - 19 \text{ pandemic}_{it} \times \text{Contractual governance}_{it} + \beta_5 \text{Severity of COVID} - 19 \text{ pandemic}_{it} \times \text{Relational governance}_{it} + \text{Controls}_{it} + \text{Firm dummy} + \text{Time dummy} + \varepsilon_{it}, t = 1, 2.$$

where i denotes the firm and t indices the year (T1 = 2020 and T2 = 2021). Y_{it} refers to the outcome variable (conflict, opportunism). ε_{it} is the error term. We adopted a two-way FE model to control for firm and time FE, which allowed us to explore the relationship between the severity of the COVID-19 pandemic and changes in conflict or opportunism for the same company. The primary advantage of the FE model was that it controlled for all firm-specific factors that were constant over time, thus addressing the potential bias due to omitted time-invariant variables. To ensure that the FE model was appropriate for our analysis, we compared the standardized regression coefficients of the FE model with those of the random effects model in a Hausman test (Hausman, 1978). The results suggested that the FE model was more appropriate than the random effects model ($p < 0.01$).

4. Results

4.1. Hypothesis testing

Table 5 presents the results of the regressions with robust standard

Table 5
Results of the Main Effects and Moderating Effects.

	M1 DV = Conflict	M2 DV = Opportunism	M3 DV = Conflict	M4 DV = Opportunism	M5 DV = Conflict	M6 DV = Opportunism
Direct effect						
Severity of the COVID-19 pandemic (COVID-19)	0.044*** (0.001)	0.054*** (0.005)	0.045*** (0.001)	0.045** (0.011)	0.043*** (0.001)	0.043** (0.030)
Contractual governance (CG)	-0.061 (0.250)	-0.234** (0.017)	-0.060 (0.261)	-0.210** (0.036)	-0.066 (0.225)	-0.230*** (0.008)
Relational governance (RG)	-0.008 (0.899)	-0.056 (0.642)	-0.035 (0.605)	-0.082 (0.514)	-0.032 (0.662)	-0.090 (0.486)
Interaction effect						
COVID-19 × CG			0.006 (0.612)	0.045*** (0.001)	0.010 (0.449)	0.064*** (0.000)
COVID-19 × RG			-0.036** (0.015)	-0.033 (0.288)	-0.036** (0.018)	-0.031 (0.305)
CG × RG					-0.053 (0.425)	-0.160 (0.237)
COVID-19 × CG × RG					-0.019 (0.400)	-0.100** (0.047)
Control variables						
Firm size	0.025 (0.660)	-0.000 (0.997)	0.032 (0.569)	0.019 (0.836)	0.022 (0.700)	-0.015 (0.878)
International experience	-0.191 (0.353)	-0.203 (0.467)	-0.195 (0.332)	-0.217 (0.437)	-0.208 (0.285)	-0.235 (0.379)
Buyer dependence	-0.083** (0.036)	-0.058 (0.390)	-0.080** (0.041)	-0.060 (0.386)	-0.074* (0.062)	-0.049 (0.478)
Transaction frequency	0.009 (0.889)	-0.079 (0.496)	0.000 (0.995)	-0.083 (0.466)	0.008 (0.903)	-0.054 (0.609)
Government response index	-0.006 (0.416)	-0.029** (0.023)	-0.005 (0.454)	-0.027** (0.035)	-0.006 (0.426)	-0.030** (0.022)
Cons	4.401*** (0.004)	6.701** (0.012)	4.544*** (0.003)	6.719** (0.012)	4.630*** (0.002)	7.027*** (0.005)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.911	0.745	0.914	0.754	0.914	0.763
F	993.206	443.468	67,706.700	422.263	489.170	472.489

Note: p values in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01, and N = 394.

errors. All the interaction terms were calculated using mean-centered linear terms to alleviate multicollinearity. As shown in Table 5, Models 1 and 2 test H1 and H2, respectively, which predict that the severity of the COVID-19 pandemic had detrimental impacts on interfirm conflict and opportunism in international buyer–supplier exchanges. The results of Model 1 show that the coefficient of COVID-19 pandemic severity was significantly positive ($b = 0.044$, and $p < 0.01$), supporting H1. Model 2 indicates that the coefficient of COVID-19 pandemic severity was also positive ($b = 0.054$, $p < 0.01$), supporting H2. We also calculated the standard regression coefficients of the severity of the COVID-19 pandemic on the regression of conflict and opportunism. The results revealed that an increase of one standard deviation in the number of epidemic infections led to a 0.144-standard-deviation increase in interfirm conflict and a 0.168-standard-deviation increase in opportunism. These results suggested that an increase in the severity of the COVID-19 pandemic led to a significant increase in both conflict and opportunism.

Models 3 and 4 test the moderating effects of contractual and relational governance. H3 and H4 predict that contractual governance aggravated the detrimental effects of COVID-19 pandemic severity on interfirm conflict and opportunism, respectively. The coefficient of the interaction between COVID-19 pandemic severity and contractual governance was not significant (Table 5, Model 3, $b = 0.006$, $p > 0.1$). Thus, H3 was not supported. A plausible explanation may have been that a detailed contract also provided a coordination function, which could cope with the devastation caused by the COVID-19 pandemic by preserving quality, production costs, customer service, and inventory availability in the supply chain (Mahdiraji et al., 2022). Moreover, during the COVID-19 pandemic, many firms strived to enforce contracts across the global supply chain, and national governments issued guidelines on managing COVID-related contract disputes (Denison, 2021). Therefore, the limitations of contractual governance were constrained, cancelling out the negative effects of COVID-19 pandemic severity on buyer–supplier conflict. The coefficient of the interaction between COVID-19 pandemic severity and contractual governance was significantly positive (Table 5, Model 4, $b = 0.045$, $p < 0.01$), thus supporting H4. Fig. 2 graphically depicts that the positive effect of COVID-19 pandemic severity on buyer opportunism was stronger at higher levels (+1SD) of contractual governance.

H5 and H6 predict that relational governance weakened the detrimental effects of COVID-19 pandemic severity on interfirm conflict and opportunism in international buyer–supplier exchanges, respectively. The results of Model 3 in Table 5 show that the moderating effect of relational governance on interfirm conflict was significantly negative ($b = -0.036$, $p < 0.05$), supporting H5. Fig. 3 also shows that the positive effect of COVID-19 pandemic severity on interfirm conflict was weaker at higher levels (+1SD) of relational governance.

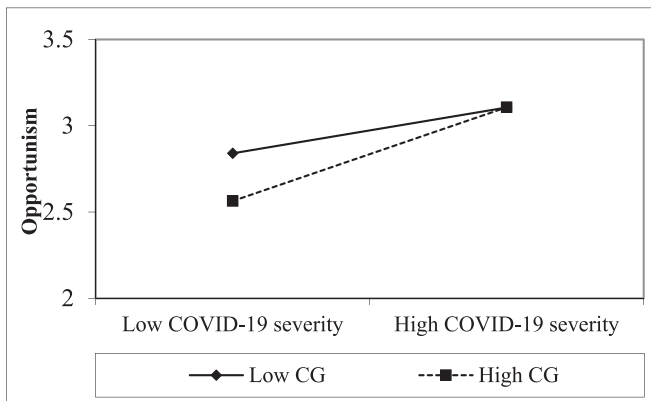


Fig. 2. Interaction Effect of COVID-19 Severity and Contractual Governance (CG).

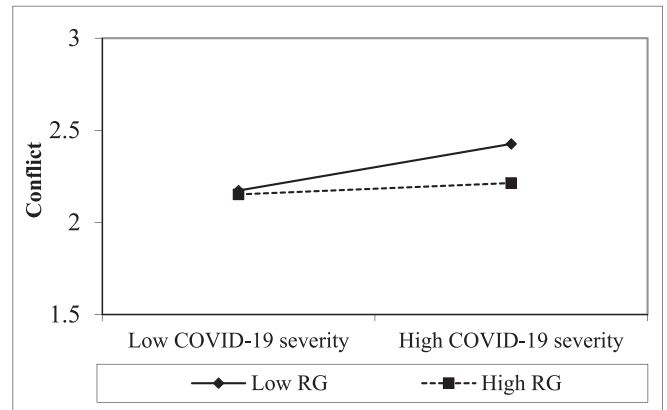


Fig. 3. Interaction Effect of COVID-19 Severity and Relational Governance (RG).

However, Model 4 in Table 5 shows that the interaction effect between COVID-19 severity and relational governance was not significant ($b = -0.033$, $p > 0.1$). Accordingly, H6 was not supported. That is, relational governance failed to weaken the detrimental effect of COVID-19 pandemic severity on opportunism in international buyer–supplier exchanges. A plausible explanation for this is that the effectiveness of relational governance may have been compromised by its ambiguous nature (Cannon et al., 2000; Cao and Lumineau, 2015), as the COVID-19 pandemic engendered high levels of uncertainty in the business environment. In addition, the COVID-19 pandemic may have caused power and dependence asymmetry in international marketing channels, limiting the effectiveness of relational governance in deterring opportunism (Sheng et al., 2006).

4.2. Additional analysis

As mentioned above, to fully understand how contractual governance and relational governance operated in the global pandemic context, we conducted additional analyses of their impacts on interfirm relationships. First, as shown in Table 5, Models 1 and 3, relational governance had no significant direct effect on conflict, while it mitigated the impact of COVID-19 pandemic severity on conflict. This result indicated that in an environment with a low level of pandemic severity, relational governance may not have been effective in mitigating interfirm conflict. However, in an environment with a high level of pandemic severity, relational governance could have been effective in reducing conflict. This finding reflects the idea that while maintaining relationships may not hold much value in a low-uncertainty environment, during emergency situations such as a severe pandemic, relational governance can play a crucial role in supply chain relationship governance.

Second, as shown in Table 5, Models 2 and 4, contractual governance directly reduced the degree of opportunism but increased the extent to which the COVID-19 pandemic fostered conflict. This result indicates that contractual governance could have been particularly effective in reducing opportunism when pandemic severity was at a low level. However, as pandemic severity escalated, the role of contractual governance in constraining opportunism diminished (see Fig. 2). This finding indicates that contractual governance can be valuable in a low-uncertainty environment for reducing the degree of opportunism among partners. However, in a high-uncertainty environment, such as an unpredictable serious pandemic, the effectiveness of contractual governance may diminish or disappear.

Third, we included the contractual governance × relational governance interaction term and the 3-way interaction of severity of COVID-19 pandemic × contractual governance × relational governance to investigate the joint moderating effect of contractual and relational

governance, investigating their complementarity/substitutability function in the context of the global pandemic. Model 5 in Table 5 displays the regression of conflict and the coefficient of the 3-way interaction was not significant ($b = -0.019, p > 0.1$), indicating that contractual and relational governance did not jointly moderate the detrimental effect of COVID-19 pandemic severity on conflict in international buyer–supplier exchanges. This result implies that the effectiveness of relational governance in reducing conflicts during cases of high levels of pandemic severity was not affected by contractual governance. Moreover, the results in Model 6 show that the coefficient of the 3-way interaction was significantly negative in the regression of opportunism ($b = -0.100, p < 0.05$), confirming the joint moderating effect of contractual and relational governance on the detrimental effect of COVID-19 pandemic severity on buyer opportunism. Specifically, as shown by the steepest line in Fig. 4, this detrimental effect was strongest when a high level of contractual governance was coupled with a low level of relational governance.

Furthermore, this finding reveals that high levels of relational governance could have helped mitigate the ineffectiveness of contractual governance when pandemic severity was at a high level. As shown in Fig. 4, when relational governance was at a low level, the line representing high-level contractual governance crossed the line representing low-level contractual governance when pandemic severity was high, which further corroborated our arguments that contractual governance was ineffective in reducing opportunism in countries where pandemic severity was at a high level. In contrast, when relational governance was at a high level, the line representing high-level contractual governance was always below the line representing low-level contractual governance, indicating that contractual governance was always effective in reducing opportunism, regardless of whether the pandemic severity was at a high or low level. This finding highlighted the importance of developing strong interfirm relationships in complementing contractual governance, especially during times of extreme crisis when the limitations of contractual governance may become increasingly apparent.

4.3. Robustness check

We conducted several additional tests to check the robustness of our results. First, to eliminate the possible bias caused by the single independent variable, we reran our FE models with the number of COVID-19 deaths per 10,000 people in each country as the measure of the severity of the COVID-19 pandemic. The results in Table 6 are consistent with the previous findings.

Second, to avoid bias caused by multicollinearity, we reran the

regressions without controlling for *government response index*, which is highly correlated with the severity of the COVID-19 pandemic ($\text{corr.} = 0.579$, and $p < 0.01$; Table 4). Table 7 presents the results, which are consistent with the previous results.

Our data included measurements at two levels: the dependent variable at the firm level and the independent variable at the country level. Moreover, the interactions were cross-level interactions. As a robustness check, we conducted multilevel model (hierarchical linear modeling (HLM)) estimation with cross-level interactions (Aguinis et al., 2013). To check for the significance of second-level variance, we first calculated the intraclass correlation coefficient (ICC). Using the null model for conflict and opportunism, we found that 36.3 % of the variance in *Conflict* and 6.4 % of the variance in *Opportunism* existed across countries. We report the HLM estimation in Table 8, which is consistent with the FE model.

Finally, although we used FE models to address the potential bias due to omitted time-invariant variables, endogeneity problems could still exist in our model. For example, the characteristics of the buyer were not included in our model. Furthermore, if the severity of the COVID-19 pandemic was influenced by unobservable factors correlated with conflict or opportunism, then the coefficients may have been biased (Phillips et al., 2015). We used a control function (CF) approach to address this concern, as this approach has been widely adapted to handle complicated models with nonlinear endogenous variables (e.g., interactions of endogenous and exogenous variables) (Wooldridge, 2015). We first regressed the severity of the COVID-19 pandemic against all the explanatory variables and two additional instruments (Model 25 in Table 9), and the residual from this regression was added as an additional independent variable to estimate conflict and opportunism (Model 26–31 in Table 9). We used the COVID-19 vaccination rate (T1:0; T2: COVID-19 vaccination rate in each country by June 2021) and the average strictness of policies on the use of facial coverings outside the home (T1:0; T2: Average H6_Facial Coverings index from the Oxford Tracker from the earliest data available until June 2021) as instruments. The coefficients of the IVs were significant, meeting the IV criteria (Gielens et al., 2021). The results of Models 26–31 also supported the robustness of our results.

5. Discussion

5.1. Theoretical contributions

Scholars have called for more research attention to be paid to the impacts of the COVID-19 pandemic on firm strategy or performance

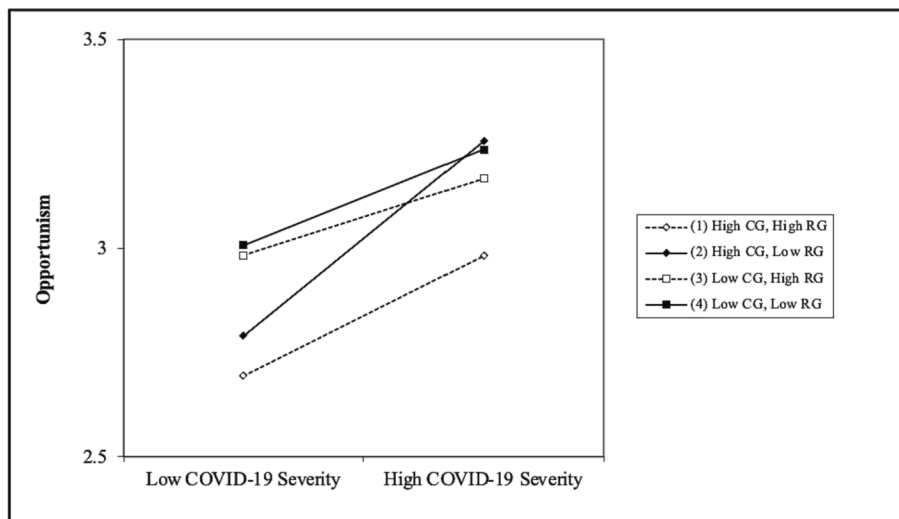


Fig. 4. Joint Moderating Effect of CG and RG.

Table 6
Results for Robustness Check with Alternative Measure of Pandemic Severity.

	M7 DV = Conflict	M8 DV = Opportunism	M9 DV = Conflict	M10 DV = Opportunism	M11 DV = Conflict	M12 DV = Opportunism
Direct effect						
Severity of the COVID-19 pandemic (COVID-19)	0.020 ^{***} (0.003)	0.023 ^{***} (0.009)	0.021 ^{***} (0.002)	0.021 ^{**} (0.018)	0.021 ^{***} (0.003)	0.014 (0.169)
Contractual governance (CG)	-0.057 (0.268)	-0.231 ^{**} (0.019)	-0.058 (0.261)	-0.208 ^{**} (0.042)	-0.061 (0.242)	-0.219 ^{**} (0.010)
Relational governance (RG)	-0.015 (0.819)	-0.065 (0.591)	-0.039 (0.558)	-0.081 (0.531)	-0.029 (0.687)	-0.102 (0.414)
Interaction effect						
COVID-19 × CG			-0.000 (0.944)	0.019 ^{**} (0.034)	-0.000 (0.988)	0.038 ^{***} (0.006)
COVID-19 × RG			-0.018 ^{**} (0.011)	-0.014 (0.427)	-0.018 ^{**} (0.011)	-0.018 (0.243)
CG × RG					-0.045 (0.489)	-0.185 (0.154)
COVID-19 × CG × RG					-0.000 (0.997)	-0.059 ^{**} (0.043)
Control variables						
Firm size	0.019 (0.744)	-0.010 (0.914)	0.026 (0.647)	0.019 (0.840)	0.019 (0.739)	-0.009 (0.928)
International experience	-0.188 (0.354)	-0.203 (0.475)	-0.185 (0.354)	-0.231 (0.421)	-0.203 (0.296)	-0.279 (0.302)
Buyer dependence	-0.071 [*] (0.068)	-0.044 (0.520)	-0.065 [*] (0.088)	-0.045 (0.520)	-0.059 (0.133)	-0.035 (0.609)
Transaction frequency	0.003 (0.967)	-0.084 (0.473)	-0.010 (0.869)	-0.091 (0.419)	-0.007 (0.913)	-0.046 (0.665)
Government response index	-0.004 (0.626)	-0.026 ^{**} (0.036)	-0.004 (0.654)	-0.023 [*] (0.064)	-0.003 (0.687)	-0.026 ^{**} (0.044)
Cons	4.406 ^{***} (0.004)	6.739 ^{**} (0.012)	4.496 ^{***} (0.003)	6.726 ^{**} (0.014)	4.547 ^{***} (0.003)	7.134 ^{***} (0.005)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.911	0.743	0.913	0.750	0.914	0.763
F	512.697	443.576	1,738.917	298.642	1,783.260	496.246

Note: p values in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01, and N = 394.

Table 7
Results for Robustness Check without Government Response Index.

	M13 DV = Conflict	M14 DV = Opportunism	M15 DV = Conflict	M16 DV = Opportunism	M17 DV = Conflict	M18 DV = Opportunism
Direct effect						
Severity of the COVID-19 pandemic (COVID-19)	0.041 ^{***} (0.001)	0.040 ^{**} (0.033)	0.042 ^{***} (0.000)	0.033 [*] (0.064)	0.041 ^{***} (0.001)	0.029 (0.140)
Contractual governance (CG)	-0.064 (0.216)	-0.253 ^{***} (0.009)	-0.063 (0.231)	-0.226 ^{**} (0.022)	-0.069 (0.198)	-0.247 ^{***} (0.004)
Relational governance (RG)	-0.012 (0.846)	-0.077 (0.527)	-0.039 (0.560)	-0.102 (0.415)	-0.035 (0.630)	-0.106 (0.418)
Interaction effect						
COVID-19 × CG			0.006 (0.583)	0.047 ^{***} (0.001)	0.010 (0.442)	0.065 ^{***} (0.000)
COVID-19 × RG			-0.036 ^{**} (0.014)	-0.034 (0.267)	-0.037 ^{**} (0.017)	-0.033 (0.274)
CG × RG					-0.055 (0.414)	-0.167 (0.220)
COVID-19 × CG × RG					-0.017 (0.441)	-0.090 [*] (0.072)
Control variables						
Firm size	0.024 (0.677)	-0.008 (0.932)	0.031 (0.582)	0.013 (0.892)	0.020 (0.718)	-0.022 (0.820)
International experience	-0.218 (0.317)	-0.338 (0.314)	-0.221 (0.298)	-0.344 (0.292)	-0.236 (0.252)	-0.381 (0.229)
Buyer dependence	-0.081 ^{**} (0.040)	-0.046 (0.502)	-0.078 ^{**} (0.044)	-0.048 (0.487)	-0.071 [*] (0.069)	-0.034 (0.626)
Transaction frequency	0.013 (0.841)	-0.060 (0.611)	0.004 (0.949)	-0.065 (0.571)	0.011 (0.858)	-0.035 (0.741)
Cons	4.608 ^{***} (0.004)	7.723 ^{**} (0.011)	4.736 ^{***} (0.003)	7.673 ^{**} (0.011)	4.831 ^{***} (0.002)	8.067 ^{***} (0.006)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
R-square	0.911	0.739	0.913	0.748	0.914	0.756
F	729.868	948.920	10,671.900	8,554.327	344.348	137.196

Note: p values in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01, and N = 394.

Table 8
Results of the HLM.

	M19	M20	M21	M22	M23	M24
	DV = Conflict	DV = Opportunism	DV = Conflict	DV = Opportunism	DV = Conflict	DV = Opportunism
Direct effect						
Severity of the COVID-19 pandemic (COVID-19)	0.044*** (0.000)	0.054*** (0.002)	0.045*** (0.000)	0.054*** (0.009)	0.043*** (0.000)	0.050*** (0.006)
Contractual governance (CG)	-0.061* (0.075)	-0.232*** (0.000)	-0.060* (0.076)	-0.200*** (0.001)	-0.066* (0.053)	-0.222*** (0.000)
Relational governance (RG)	-0.008 (0.846)	-0.038 (0.613)	-0.035 (0.405)	-0.040 (0.598)	-0.032 (0.462)	-0.066 (0.387)
Cross-level interaction						
COVID-19 × CG			0.006 (0.428)	0.052*** (0.000)	0.010 (0.220)	0.067*** (0.000)
COVID-19 × RG			-0.036*** (0.001)	-0.032 (0.105)	-0.036*** (0.001)	-0.030 (0.125)
CG × RG					-0.053 (0.177)	-0.139** (0.046)
COVID-19 × CG × RG					-0.019 (0.198)	-0.097*** (0.000)
Control variables						
Firm size	0.025 (0.452)	0.004 (0.945)	0.032 (0.341)	0.031 (0.601)	0.022 (0.525)	-0.004 (0.945)
International experience	-0.191* (0.058)	-0.199 (0.267)	-0.195** (0.049)	-0.211 (0.234)	-0.208** (0.038)	-0.226 (0.197)
Buyer dependence	-0.083*** (0.003)	-0.068 (0.182)	-0.080*** (0.004)	-0.077 (0.124)	-0.074*** (0.009)	-0.064 (0.204)
Transaction frequency	0.009 (0.850)	-0.078 (0.349)	0.000 (0.993)	-0.089 (0.278)	0.008 (0.868)	-0.059 (0.464)
Government response index	-0.006 (0.260)	-0.027*** (0.005)	-0.005 (0.289)	-0.024** (0.021)	-0.006 (0.260)	-0.029*** (0.004)
Cons	4.401*** (0.000)	6.580*** (0.000)	4.544*** (0.000)	6.402*** (0.000)	4.630*** (0.000)	6.810*** (0.000)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Model deviance	108.049	564.209	97.479	548.676	94.912	535.140

Note: p values in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01, N = 394, and Deviance = -2 × log-likelihood of the full maximum-likelihood estimate.

because this pandemic differs from other global crises and disaster events (Chowdhury et al., 2021; Das et al., 2021; Paul et al., 2021). Although it substantially disrupted the global supply chain, few studies have explored the impact of this global pandemic on interfirm relationships (Peng and Kathuria, 2021; Verbeke and Yuan, 2021). In this study, we aim to understand how the COVID-19 pandemic drove interfirm conflict and opportunism in international buyer–supplier exchanges. Relying on two-phase survey data and a secondary dataset, our findings demonstrate that COVID-19 pandemic severity increased the degrees of interfirm conflict and opportunism in international buyer–supplier exchanges. Moreover, these effects are shown to be moderated by contractual and relational governance. The implementation of contractual governance aggravated the detrimental effect of COVID-19 pandemic severity on buyer opportunism, while relational governance weakened the detrimental effect of COVID-19 pandemic severity on conflict. Furthermore, contractual and relational governance jointly weakened the detrimental effect of COVID-19 pandemic severity on buyer opportunism.

Our contribution is threefold. First, compared to other global crises, the rapid spatial spread of the COVID-19 pandemic, together with its unpredictable scaling and ripple effects, resulted in one of the greatest economic disruptions in recent decades (Chowdhury et al., 2021). The COVID-19 pandemic, often described as a “black swan” event, theoretically embodied increased levels of uncertainty, scarcity, and turbulence. Building on the TCE framework, our study reveals the impacts of COVID-19 pandemic severity on interfirm conflict and buyer opportunism in international buyer–supplier exchanges (Brown and Day, 1981; Cheng and Sheu, 2012; Mesquita and Brush, 2008). Our study is thus among the first to clearly demonstrate the need for theory building and empirical analysis concerning international buyer–supplier relationships during the COVID-19 pandemic. Echoing the advocacy of Butt (2021a), Ivanov (2021), and Verbeke and Yuan (2021) for a more

empirical assessment of the direct impact of the COVID-19 pandemic on interfirm relationships, our study also clarifies how and why the global pandemic may have impacted conflict and opportunism in international buyer–supplier exchanges and provides both theoretical and empirical implications for international buyer–supplier relationship management during such a global pandemic crisis.

Second, this study extends the literature on international buyer–supplier relationship management by examining the alignment between governance choices and the severity of the COVID-19 pandemic in host countries. While the more general governance literature has discussed the direct effect of contractual and relational governance and debated whether they complement or substitute one another in international exchange relationships (Handley and Angst, 2015; Yang et al., 2012; Zhou and Poppo, 2010), little is known about how a firm should align its governance mechanisms amid a massive crisis such as COVID-19 (Muzio and Doh, 2021). Our findings on the moderating effects of contractual and relational governance therefore confirm the idea that relational governance can be an effective mechanism in mitigating the impact of global pandemic severity, corroborating prior research on the role of relational governance in during dramatic environmental changes and pandemic crises (Das et al., 2021; Mitreġa and Choi, 2021). However, our findings diverge from the extensive body of research on relational exchange (Jap and Ganesan, 2000), as we observed that relational governance, within the specific context of the global pandemic, did not yield a significant direct enhancement in the buyer–supplier relationship. This unexpected result can likely be attributed to the unique context of the global pandemic, where relational governance appeared to function primarily as a means of damage control within a high-uncertainty environment (high-level pandemic severity), rather than its typical role in fostering interorganizational performance. Therefore, our study underscores the necessity for further research on the upper boundaries of relational benefits in extreme conditions. In addition, the

Table 9
Results of Control Function Model.

	M25 DV=COVID-19	M26 DV = Conflict	M27 DV = Opportunism	M28 DV = Conflict	M29 DV = Opportunism	M30 DV = Conflict	M31 DV = Opportunism
Direct effect							
Severity of the COVID-19 pandemic (COVID-19)		0.028*	0.066**	0.027*	0.055**	0.026	0.059**
		(0.098)	(0.026)	(0.098)	(0.047)	(0.120)	(0.046)
Contractual governance (CG)	0.153 (0.504)	-0.062 (0.239)	-0.233** (0.018)	-0.061 (0.249)	-0.209** (0.037)	-0.067 (0.216)	-0.229*** (0.008)
Relational governance (RG)	-0.054 (0.843)	-0.014 (0.832)	-0.052 (0.672)	-0.043 (0.539)	-0.078 (0.544)	-0.036 (0.618)	-0.086 (0.506)
Cross-level interaction							
COVID-19 × CG				0.006 (0.584)	0.045*** (0.001)	0.010 (0.468)	0.064*** (0.000)
COVID-19 × RG				-0.038** (0.010)	-0.032 (0.309)	-0.038** (0.013)	-0.030 (0.338)
CG × RG						-0.057 (0.374)	-0.157 (0.232)
COVID-19 × CG × RG						-0.015 (0.511)	-0.104** (0.048)
Control variables							
Firm size	-0.241 (0.304)	0.017 (0.774)	0.007 (0.945)	0.023 (0.689)	0.024 (0.793)	0.012 (0.829)	-0.006 (0.951)
International experience	-0.358 (0.750)	-0.042 (0.853)	-0.320 (0.290)	-0.031 (0.888)	-0.311 (0.304)	-0.049 (0.823)	-0.383 (0.194)
Buyer dependence	0.093 (0.562)	-0.080** (0.046)	-0.061 (0.374)	-0.076* (0.054)	-0.062 (0.375)	-0.070* (0.084)	-0.054 (0.444)
Transaction frequency	0.353 (0.248)	0.014 (0.824)	-0.083 (0.483)	0.005 (0.928)	-0.086 (0.459)	0.012 (0.840)	-0.058 (0.585)
Government response index	-0.149*** (0.001)	-0.003 (0.694)	-0.031** (0.030)	-0.002 (0.773)	-0.029** (0.045)	-0.002 (0.758)	-0.033** (0.029)
COVID-19 vaccination rate	0.064*** (0.000)						
Facial coverings index	1.488*** (0.000)						
Residual of Model 25		0.031 (0.170)	-0.024 (0.551)	0.034 (0.129)	-0.019 (0.636)	0.033 (0.150)	-0.031 (0.445)
Cons	-0.557 (0.939)	3.287* (0.061)	7.580*** (0.006)	3.322* (0.058)	7.421*** (0.007)	3.420* (0.051)	8.154*** (0.003)
Firm FE		Yes	Yes	Yes	Yes	Yes	Yes
Time FE		Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.839	0.912	0.745	0.915	0.754	0.915	0.764
F	128.861	586.465	284.039	1,498.815	593.968	721.491	326.050

Note: p values in parentheses, * p < 0.1, ** p < 0.05, *** p < 0.01, and N = 394.

Chinese context may also contribute to this finding, given the prominent impacts of Confucian culture in China, which advocates mutual obligation, harmony, and long-term orientation (Wang et al., 2021). Therefore, Chinese suppliers may prioritize conflict avoidance, even when maintaining a lower level of relational governance with foreign buyers, potentially diminishing the direct impact of relational governance on the management of international buyer–supplier relationships.

Furthermore, our findings reveal that contractual governance aggravates the detrimental effects of COVID-19 pandemic severity on buyer opportunism, confirming the potential “dark side” of contractual governance (Malhotra and Murnighan, 2002; Wuyts and Geyskens, 2005). However, this work does not simply imply that contractual governance is necessarily detrimental in the context of a global pandemic, as we find that contractual governance has a significant direct negative effect on buyer opportunism, confirming its contribution to the management of buyer–supplier relationships in a low-uncertainty environment (low-level pandemic severity). The global pandemic was an unprecedented crisis, and the risk ratings, prevention and lockdown policies for this crisis varied greatly across different countries (Das et al., 2021). Even though force majeure clauses could exist in contracts, it was difficult for transaction parties to agree on the determination of force majeure in contracts due to the enormous differences in the levels of pandemic severity across countries. This situation could have made such contracts virtually unenforceable and limited the effectiveness of contractual governance in a high-uncertainty environment (high-level

pandemic severity). Consequently, our study extends and supplements prior findings regarding international buyer–supplier relationship management during global crises such as the COVID-19 pandemic (Das et al., 2021).

Third, we examine the joint moderating effect of contractual and relational governance in mitigating the impact of COVID-19 pandemic severity, which contributes to the complement-substitute debate in interorganizational governance (Zhang et al., 2020; Cao and Lumineau, 2015). Although some scholars argue that the functional mechanisms of contractual and relational governance are contradictory and substitute for one another (Huber et al., 2013; Zhang et al., 2020), most prior studies recognize their complementarities and the additional benefits of their joint use (Poppo and Zenger, 2002; Handley and Angst, 2015). We extend this stream of research by revealing how they complement each other in the global pandemic context. Specifically, when relational governance is at a high level, contractual governance is always effective in reducing buyer opportunism, even when the levels of pandemic severity are high. However, the effectiveness of contractual governance disappears when a low level of relational governance is coupled with high-level pandemic severity. This finding confirms the limitations of contractual governance—its rigidity and lack of flexibility and autonomy (Yang et al., 2017)—which can reduce its effectiveness in situations of high-level pandemic severity that are fraught with unpredictability and uncertainty. However, we highlight that relational governance can improve the agility of contract management, enabling it to adapt faster

to a changing environment. This finding is consistent with previous literature emphasizing the necessity to fully exploit the role of flexibility, information sharing, and other relational governance mechanisms during a global pandemic (Chowdhury et al., 2021; Sarker et al., 2021; Ahmed et al., 2022).

5.2. Managerial implications

Although the COVID-19 pandemic has been largely conquered, the specter of global pandemics remains persistent. Over the past 65 years, there have been four “major” pandemics that have disrupted the world, and it is anticipated that more may occur in the future (Das et al., 2021). Thus, our study provides important insights and implications for multinational corporations in managing international exchanges during a global pandemic crisis. Interfirm conflict and opportunism pose substantial challenges in international buyer–supplier exchanges, impeding partners from realizing mutual gains (Hogevold et al., 2020; Oliveira and Lumineau, 2019). Therefore, drawing from our findings that severe pandemics can significantly negatively affect interfirm relationships, it is crucial for international supply chain managers to exercise special caution regarding foreign partners’ opportunistic behaviors and potential conflict during global crises.

Second, we underscore the role of contractual and relational governance in constraining conflict and opportunism during a global pandemic. Specifically, when conflict arises between companies due to a global pandemic, firms should adopt relational governance, e.g., trust, commitment, shared vision, information sharing, or solidarity (Morgan and Hunt, 1994, Sheng et al., 2018), to pursue mutual interests and eliminate interfirm conflict. In addition, interfirm relationship building should be carried out in advance and proactively, rather than relying on improvisation when a crisis emerges. Particularly in this era of rapid digital technology advancement, leveraging digital technology and information systems can be a potent means of enhancing the resilience and relational flexibility of interfirm relationships. Furthermore, our findings show that in addition to relational governance, contractual governance is instrumental in curbing opportunism. However, when severe global pandemics trigger opportunism in international buyer–supplier exchanges, the effectiveness of contractual governance alone diminishes. Hence, it is imperative for firms to foster strong interfirm relationships to complement the agility and effectiveness of contractual governance.

Third, we recommend that managers cultivate enduring, long-term relationships with their critical partners rather than opting for short-lived relationships. Moreover, managers should structure their contracts in a manner that fosters stronger relationships among stakeholders by fostering a shared vision of behavior and facilitating the open expression and sharing of values. For instance, during the partner selection phase, managers should focus on assessing partners’ values while simultaneously dedicating sufficient attention to formulating clear rights and responsibilities during contract negotiations. This step is of paramount importance in enhancing cooperation between the buyer and the supplier, as well as in facilitating joint responses to a global crisis, thereby boosting overall performance.

Finally, in addition to depending on traditional contracts for partner management, managers should recognize the pivotal role that digital technologies will play in contract enforcement. On the one hand, we suggest that managers leverage algorithms and artificial intelligence to bolster the coordination and adaptability of contractual governance. This approach is crucial for the uncertainties inherent in the global landscape and the potential recurrence of the global pandemic to be effectively addressed. On the other hand, managers should make full use of digital technologies and information management systems to enhance agility, which will enable them to configure contractual and relational governance properly, leveraging their synergistic potential based on the dynamics of the external environment.

5.3. Limitations and directions for future research

Our study has several limitations that future research can address. First, we examine only the moderating effects of two governance mechanisms, contractual and relational governance, in the COVID-19 pandemic and international buyer–supplier relationships. Future research could positively respond to the call of scholars to explore the effects of supply chain resilience management, flexible supply chain management, and artificial-intelligence-based supply chain management on the relationship between COVID-19 pandemic severity and international buyer–supplier relationship performance (Ahmed et al., 2023; Moktadir et al., 2023; Sarker et al., 2021). Second, we focus only on dysfunctional conflict and ignore functional conflict in buyer–supplier relationships. Future research could consider how a global pandemic affects functional conflict. Third, we collect data only from the supplier side of a channel dyad. Future research might gather data from both buyers and suppliers. This bilateral approach could provide more information on the nature of international buyer–supplier exchanges. Fourth, we measure the focal governance mechanisms and relationship outcomes with survey-based perceptual scales in a single country, which involves a limited sample size. In the future, the use of multicountry objective data would enable a comparative study and improve the viability and generalizability of our findings. Fifth, this study investigates the impact of the degree of COVID-19 pandemic severity on international buyer–supplier exchanges. However, it is also important to capture the impact of other global crises (Muzio and Doh, 2021), such as the Russia-Ukraine war, global recession, and food crises, on the international supply chain. Sixth, we sample only supplier firms in China. However, countries differ in terms of their values with respect to conflict and opportunism. Thus, we call for future research to generalize our findings to other countries actively participating in the international supply chain (i.e., the United States, Australia, the United Kingdom, and Japan). Finally, we use an FE model to analyze the panel data collected over two periods, which likely leads to a strong correlation within each panel. Future studies can thus collect multiphase survey data and further enhance the robustness of the findings.

CRedit authorship contribution statement

Tao Wang: Supervision, Resources, Project administration, Funding acquisition, Conceptualization. **Xiaoyang Deng:** Software, Methodology, Formal analysis, Data curation. **Shibin Sheng:** Writing – review & editing, Supervision. **Yu Jia:** Writing – original draft, Supervision, Funding acquisition, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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