When China Strikes: Quantifying Australian Companies' Stock Price Responses to China's Trade Restrictions

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Abstract

In early 2020, China, Australia's top export market, unilaterally imposed trade restrictions on Australian barley, beef, coal, cotton, timber, copper, and wine. However, convincing evidence regarding the effects of such trade restrictions on firms is scarce. Leveraging data on daily stock returns from 20 listed Australian and 32 listed Chinese firms that produce the restricted commodities, we provide the first systematic analysis of the firm-level economic impacts of China's trade restrictions on Australian and Chinese firms. We find significant adverse effects on Australian firms' stock returns, leading to almost 20% loss within 10 trading days; however, most firms' stock returns immediately rebounded. In contrast, Chinese firms usually saw significant positive stock returns, leading to almost 30% gains, and the positive abnormal returns continuously increased within 10 trading days. Media coverage and trade dependence substantially impact Australian and Chinese firms' stock returns—industries with stronger trade dependence on China saw greater losses in Australian firms' stock returns. Our results suggest that trade *reallocation* and *deflection* are two effective mitigation mechanisms for Australian exporters facing China's trade restrictions.

Keywords: Stock Markets; Abnormal Returns; Event Study; International Trade; Trade Tension

JEL Codes: Q13, Q17

1. Introduction

Since the 1990s, China and Australia have had a mutually profitable economic partnership under which China became Australia's largest trade partner. In 2020, Australia's exports to China totaled US $102 billion, accounting for one-third of Australia's total goods and services exports (The World Bank, 2020). However, China and Australia's political relationship has deteriorated since 2016, escalated by Australia's ban on Huawei's 5G network and China's anti-dumping investigation against Australian barley (BBC, 2018; Zhou & Laurenceson, 2022). The relationship further worsened in April 2020 after Australia proposed independent international investigations into COVID-19's origins (ABC, 2020; Zhou & Laurenceson, 2022). In May 2020, China began imposing trade restrictions on Australian imports of barley, beef, coal, cotton, timber, copper, and wine, significantly impacting both Australian and Chinese firms.

Prior studies show that firms respond to trade policies in terms of employment (Autor et al., 2013; Pierce et al., 2016), market entry (Crowley et al., 2018), production relocation (Flaaen et al., 2020), technology adoption (Bloom et al., 2016; Crowley, 2006), and the cost of debt (Valta, 2012). Particularly, the US-China trade war in 2018 and 2019 provided a case for scholars to examine the firm-level economic impacts of such exogenous trade shocks from the perspective of hiring decisions (He et al., 2021), subsidy (Adjemian et al., 2021), export diversion (Jiang et al., 2022), new firm entry (Cui & Li, 2021), revenue and profits (Benguria, 2019a, 2019b), innovation investment (Chen et al., 2022), firm exit (Vortherms & Zhang, 2021), R&D expenditures (Benguria et al., 2022), and corporate reallocation (Ding et al., 2022). Recent studies using an event study method document that trade shocks might induce significant effects on financial markets (Egger & Zhu, 2020; Huang et al., 2020; Liu, 2021;

Qin et al., 2022; Wang et al., 2021; Xu et al., 2021). In line with those studies, we evaluate the financial market reactions to the most recent trade tension between China and Australia using the well-established event study method.

China unilaterally imposed trade restrictions on Australian barley, beef, coal, cotton, timber, copper, and wine in 2020 and 2021, providing a case for investigating a country's vulnerability when they rely heavily on a single market and access to that market is suddenly cut. These recent China-Australia trade tensions have received limited attention (Ferguson et al., 2022; Laurenceson, 2021; Wickes et al., 2021; Wittwer & Anderson, 2021; Zhou & Laurenceson, 2022). For example, Ferguson et al. (2022) examines Australian market adjustments to China's trade restrictions. Laurenceson (2021) and Wickes et al. (2021) assess Australia's costs from the China-Australia trade tension using a straightforward "cost guides" method. Still, the existing literature does not formally examine the firm-level economic effect of China-Australia trade tension, leaving this vital question unanswered.

This paper aims to quantify the impacts of China's trade restrictions on 20 Australian and 32 Chinese listed firms from January 2020 to July 2021 by estimating these firms' cumulative abnormal returns (CARs) via an event study method.[1] The event study method is a well-established analytical tool to measure the impacts of a given event on a firm's stock prices (Aitken et al., 1998; Black & Kim, 2012; Fama et al., 1969; O'hara & Shaw, 1990) and has

[1]Apart from the event study method, difference in differences (DID), granger causality, cointegration, impulse response methods, and common correlated effects (CEE) methods are widely documented in the trade literature. However, DID is usually used to investigate the impacts of trade shocks on firms' decisions, such as innovation investment (Chen et al., 2022), corporate reallocation (Ding et al., 2022), and production relocation (Flaaen et al., 2020), in the medium or long term. In granger causality, cointegration, and impulse response methods, we usually need to construct a continuous proxy variable for trade shocks first and then explore the relationship between such a proxy variable and the outcome variable of interest. In addition, CEE is usually used to estimate panel data models with a multi-factor error structure. This paper aims to quantify the impacts of trade shocks on firms' stock prices. The event study method is well-established to achieve this goal, particularly for examining the short-term effects, such as within 10 trading days in this study. Thus, we use an ARDL of the market model with GARCH to solve the homoscedasticity of the OLS residuals in the traditional market model. In addition, four robustness tests all support our event study results, as shown in Section 5.3.

been successfully applied to quantify the impacts of the US-China trade war on firms' stock prices (Egger & Zhu, 2020; Huang et al., 2020; Liu, 2021; Qin et al., 2022; Wang et al., 2021; Xu et al., 2021). In our event study, we use an autoregressive distributed lag specification (ARDL) of the market model (MM) with generalized autoregressive conditional heteroskedasticity (GARCH) to solve the homoscedasticity of the ordinary least squares (OLS) residuals in the MM (Coakley et al., 2008; Lee et al., 2012). We further estimate a pooled OLS model to quantify how media coverage, trade dependences, and firm characteristics explain the magnitude of firms' CARs (Pozo & Schroeder, 2016; Xiong et al., 2021). In addition, we conduct four robustness tests and provide a plausible explanation of China's trade restrictions on Australian commodities based on our empirical results.

Our main results support our four hypotheses and provide insights into the determinants of firms' stock returns. The trade tension generally resulted in significant adverse effects on Australian firms' stock returns, leading to a near 20% loss within 10 trading days.[2] In contrast, Chinese firms, particularly in the copper and wine industries, usually saw significant positive stock returns that continuously increased within 10 trading days, leading to almost 30% gains. Second, firms in the wine, beef, and timber industries, where China imposed two or more restrictions, respond more to the first restriction than subsequent restrictions. Third, our results suggest that media coverage of the China-Australia trade tension exerts significant negative (positive) effects on Australian (Chinese) firms' stock returns. Fourth, we find a significantly negative effect of Australian export dependence on Australian and Chinese firms' stock returns.

[2] Particularly, the restrictions affected Treasury Wine Estates (wine), Australian Agricultural Company (beef), Midway (timber), New Hope Corporation (coal), South32 (coal), Sandfire Resources (copper), much more due to their closer ties to Chinese markets. Wine, beef, timber, coal, and copper exports from Australia to China almost fell to zero within six months of trade restrictions; however, the Australian firms found alternative markets, which limited the adverse effects of trade restrictions in the long term.

In addition, China's import dependence had a significantly positive impact on Australian firms' stock returns. However, we observe a significantly negative effect of China's import dependence on Chinese firms' stock returns.

We contribute to the existing literature in three important ways. First, to our knowledge, we are the first to examine empirically and compare the economic impacts of the China-Australia trade tension on Australian and Chinese listed firms in barley, beef, coal, cotton, timber, copper, and wine industries. Second, we examine whether and how media coverage, trade dependence, and firm characteristics explain Australian and Chinese firms' stock returns. These results provide insight into how the China-Australia trade tension impacts stock markets. Third, based on our empirical results, we provide a plausible explanation of China's trade restrictions on Australian commodities. Fourth, our findings provide insight that *reallocation* and *deflection* are effective coping strategies in cases where trade restrictions suddenly arise.

In summary, there are two main reasons China imposed trade restrictions on Australian commodities. First, Australia's extremely high export exposure to China. According to UN Comtrade, China was the top importer of Australian commodities, accounting for 38.6% of Australia's exports in 2019. Second, China's demand for Australian commodities is highly concentrated in raw materials. Nineteen of the top 20 Australian commodities exported to China in 2019 are generally raw materials. It is not hard for China to find alternative raw materials exporters. The commodities targeted by China in its trade restrictions on Australia tended to have the following characteristics. First, all eight commodities restricted by China are in the top 20 Australian commodities exported to China in 2019. For example, China's imports of timber account for 94.40% of Australian total exports. Second, Australia's shares of

China's restricted commodity imports are low. For instance, China's share of Australian copper ores export is 36.8%, while Australia's share of China's copper ores import is only 4.9%. Third, high importance for Australian total exports. For example, Australian coal exports to China totaled US $10.58 billion in 2019, only followed by iron ores.

The rest of this paper proceeds as follows. Section 2 provides a literature review and hypothesis development. Section 3 presents a background on the China-Australia trade tension. Section 4 describes the methodology and datasets. Section 5 presents the empirical results with four robustness tests and provides a plausible explanation of China's trade restrictions. Section 6 draws the conclusions and policy implications.

2. Theory and Hypothesis

2.1 The market dynamics in international trade theory

Countries initiate trade restrictions (or sanctions) to interrupt ordinary economic exchange between a country and target countries primarily to compel target governments to shift their political positions (Baldwin, 1985). Previous studies document that the firms in the target country suffer the economic consequences associated with the trade restrictions initiated by the other country (Egger & Zhu, 2020; Huang et al., 2020; Liu, 2021; Qin et al., 2022; Wang et al., 2021; Xu et al., 2021). Thus, substantial literature examines the mechanisms through which exporters facing import restrictions in the target state can mitigate the costs associated with losing access to the sender state. Existing literature suggests that the central determinant of adjustment to trade restrictions is the market dynamics of affected products and industries and reveals three mechanisms in the market dynamics: ***reallocation, deflection, and transformation*** (Early, 2015; Ferguson et al., 2022; McLean & Whang, 2010; Peterson, 2014).

Reallocation. Reallocation means exporters sell the restricted commodities elsewhere. The effectiveness of trade restrictions mainly depends on the global demand structure (Gholz & Hughes, 2021). Following the general equilibrium theory of trade (Dixit & Norman, 1980), if the sender is not a demander, alternative markets can readily absorb the restricted target commodities, resulting in a limited loss for the target, and vice versa (Hughes & Long, 2015). Two key determinants for the effectiveness of reallocations are competitiveness and homogeneity (Williamson, 1975; Wittwer & Anderson, 2021). If the restricted commodities are not internationally competitive, target exporters may struggle to find a third market, and, if the restricted commodities are homogenous on international markets, transaction costs associated with shifting trade to new markets is limited. If the commodities are differentiated, exporters undertake huge costs and must negotiate with new importers (Wittwer & Anderson, 2021).

Deflection. Deflection involves indirectly selling restricted commodities to the sender. Sender state firms or individuals may be apolitical and unwilling to comply with the trade restrictions because they may also suffer economic loss (Bapat & Morgan, 2009). In deflection, immediate buyers act as intermediaries and re-export into the sender market through formal channels, such as relabeling, obscuring the origin, and transshipment through third markets or informally via smuggling (Early, 2015). In particular, if it is significantly lucrative for the exporters in the target state and importers in the sender state to maintain the trade volume, they may seek to circumvent restrictions via deflection rather than undertake loss associated with shifting to other markets (Barry & Kleinberg, 2015; Weber & Stepien, 2020). Extant research suggests that trade deflection is more likely when the sender government cannot monitor the trade flow associated with the restricted commodities (Barry & Kleinberg, 2015; Early &

Peterson, 2022; Early & Preble, 2020).

Transformation. Transformation means target state firms or individuals adjust their capital, labor, and other assets and divert to alternative productive purposes. Ferguson et al. (2022) classifies such transformation into two types—producing entirely different commodities without a significant reorganization of production because production inputs are relatively substitutable (Crescenzi, 2005; Hirschman, 1945), and retaining and building upon existing production processes by processing raw materials into a downstream intermediate input or making minor modifications to previous products (Ferguson et al., 2022).

2.2 Hypothesis development

We expect Australian firms saw negative stock returns due to the trade tension (Section 2.1). On the contrary, as restricted commodities can only be sent to China via *deflection*, Chinese firms' sales should have improved. Thus, we expect Chinese firms saw positive stock returns due to the trade tension. As such, we develop the following hypotheses:

H1a. China's trade restrictions negatively affected Australian firms' stock returns, resulting in negative CARs for Australian firms.

H1b. China's trade restrictions positively affected Chinese firms' stock returns, resulting in positive CARs for Chinese firms.

Australian beef, timber, and wine saw more than twice the trade restrictions from China, and investors reacted more to the first restrictions because they provided more unanticipated and surprising information. Thus, we develop the following hypothesis:

H2.The response of firms' stock prices to the first firm-related trade restrictions is larger than subsequent restrictions.

Tetlock (2007) suggests that high values of media pessimism lead to downward pressure on stock price returns. Intuitively, a high volume of non-Chinese media coverage could make Australian investors pessimistic about the trade restrictions, causing them to dump shares of affected Australian firms, which results in lower stock returns for those firms (or negative returns following *H1a*). Thus, we expect non-Chinese media coverage to negatively impact Australian firms' stock returns. In contrast, a high volume of Chinese media coverage of the trade tension may make Chinese investors optimistic about Chinese firms' performances. Thus, investors buy shares of Chinese firms that produce the restricted commodities, leading to large stock returns for those firms (*H1b*). Thus, we develop the following hypotheses:

H3a. Non-Chinese media coverage negatively affected Australian firms' CARs.

H3b. Chinese media coverage positively affected Chinese firms' CARs.

Existing literature suggests that trade dependence substantially impacts the effectiveness of *reallocation* and firms' stock market performance (Ferrari et al., 2022; Hoberg & Moon, 2019). Thus, trade dependence between China and Australia influences the magnitude of firms' stock returns. For Australian firms, if China has considerable import dependence on Australia, Australian investors would expect that China cannot undertake significant losses in Australian imports, and such trade restrictions will be temporary. Thus, Australian investors will have minor concerns about China's trade restrictions, resulting in a large value of stock returns for Australian firms (following *H1a*, Australian firms see negative stock returns). As such, we expect China's import dependence to impact Australian firms' stock returns positively. Contrarily, if Australia's export dependence on China is large, Australian investors will have significant concerns about the trade restrictions and will dump Australian firms' shares,

resulting in a small value of stock returns (following *H1a*, Australian firms see negative stock returns). Therefore, we expect Australian export dependence to impact Australian firms' stock returns negatively. Thus, we develop the following hypotheses:

H4a. China's import dependence on Australia positively affected Australian firms' CARs.

H4b. Australia's export dependence on China negatively affected Australian firms' CARs.

For Chinese firms, if China has considerable import dependence on Australia, Chinese investors would expect domestic firms to see a considerable increase in commodities sales, leading to large stock returns. Thus, we expect China's import dependence to impact Chinese firms' stock returns positively. In contrast, if Australia's export dependence on China is large, Chinese investors' would expect Australia cannot to undertake large export losses and will seek negotiation. As such, China's trade restrictions would not last long. Thus, we expect Australia's export dependence to impact Chinese firms' stock returns negatively. Thus, we develop the following hypotheses:

H4c. China's import dependence on Australia positively affected Chinese firms' CARs.

H4d. Australia's export dependence on China negatively affected Chinese firms' CARs.

3. China-Australia trade tension

Table 1 shows the eight Australian commodities that China began imposing trade restrictions on in May 2020.

<Insert Table 1 here>

Barley. On May 19, 2020, China imposed a five-year anti-dumping duty of 73.6% and a countervailing duty of 6.9% on Australian barley (MOFCOM, 2020a).

Beef. Between May 11, 2020, and December 7, 2020, China suspended beef imports from

JBS Australia, Northern Co-Operative Meat, Kilcoy and Pastoral Company (GACC, 2020b), John Dee Warwick (GACC, 2020a), and Meramist (GACC, 2020c).

Coal. On October 12, 2020, Chinese state-owned energy suppliers and steel mills received verbal notices to stop importing Australian coal (The Guardian, 2020; The Sydney Morning Herald, 2020), as it did not meet environmental protection standards (Ministry of Foreign Affairs of China, 2020).

Cotton. On October 16, 2020, media reports contended that China had verbally discouraged local spinning mills from using Australian cotton (CNBC, 2020).

Timber. Between October 31, 2020, and December 24, 2020, China suspended log imports from Queensland (GACC, 2020g), Victoria (GACC, 2020f), Tasmania, South Australia (GACC, 2020e), New South Wales, and Western Australia (GACC, 2020d).

Rock lobster. On November 1, 2020, media reports emerged that China was delaying processing Australian live rock lobster imports, citing a need to test for trace elements of minerals and metals (Littleproud, 2020).

Copper. On November 2, 2020, media reports cited "multiple trade sources in China" that said China was set to ban t imports of Australian copper ores (South China Morning Post, 2020).

Wine. On November 27, 2020, China's Ministry of Commerce announced that starting November 28, China would levy 107.1%-212.1% "anti-dumping duties" on Australian wine (MOFCOM, 2020b). On March 28, 2021, China officially imposed tariffs and comprehensive sanctions on Australian wine.

4. Methodology and Data

4.1 The event study method

The theoretical basis of the event study method is the efficient market hypothesis, which assumes that stock prices quickly incorporate new information as investors continually re-evaluate the market value of a firm (Fama et al., 1969). We apply the event study method to investigate stock price responses of Australian and Chinese barley, beef, coal, cotton, timber, copper, and wine producers to China's trade restrictions on Australia from January 2020 to July 2021, as discussed in Section 3.

Following Fama et al. (1969) and Black and Kim (2012), we divide the timeline for a specific restriction into two mutually exclusive sub-periods: the estimation window and the event window. The estimation window consists of a period of pre-restriction trading days $t \in (T_0, T_1)$, where T_0 and T_1 represent the start and end times of the estimation window, which we use to estimate the relationship between a firm's stock price movement and the market index in the absence of a restriction. Following Pozo and Schroeder (2016) and Xiong et al. (2021), our estimation window consists of 254 trading days' observations, approximately one trading year, before the specific restriction.[3] For example, the estimation window for China's trade restriction on Australian wine imposed on November 27, 2020, is 245 trading days from November 27, 2019 (T_0) to November 26, 2020 (T_1), a period that does not contain a restriction on wine. For each restriction released on day T_2, the event window period of $t \in (T_2 + 1, T_3)$ starts one day after each restriction event day and consists of the following 10 trading days ($T_3 = T_2 + 11$). The start date of the event window is set one day after the event day, as

[3] Note that if trade restrictions are imposed more than twice on a commodity, the second or subsequent restrictions for firms producing such commodity are the same as the estimation window of the first restriction, which is the case for beef, timber, and wine. Using timber as an example, China imposed four separate trade restrictions. For the first restriction, imposed on October 31, 2020, the estimation window is from October 31, 2019, to October 30, 2020, a one-year period that does not contain any restrictions. The second restriction was imposed on November 11, 2020; however, the estimation window for the second restriction (November 11, 2019, to November 10, 2020) contains the first restriction—a problem that occurs with the third and fourth restrictions. Thus, the estimation windows of the second, third, and fourth timber restrictions are from October 31, 2019, to October 30, 2020, the same as that of the first restriction.

restrictions could be imposed at any time of day. For example, the event window for China's trade restriction on Australian wine released on November 27, 2020, is the 10 trading days from November 30, 2020 ($T_2 + 1$)[4] to December 11, 2020 (T_3).

4.2 Estimating abnormal returns

We assess the economic impacts of an event by estimating abnormal returns (AR) through statistical regressions. We express the AR for firm i on trading day t as:

$$AR_{it} = R_{it} - E(R_{it}|I_t) \quad (1)$$

where $R_{it} = ln(P_{it}/P_{it-1})$ is the actual stock return of firm i on trading day t, and $E(R_{it}|I_t)$ is the expected normal return conditional on information I_t, which enables us to predict the expected return without an event. The MM is a well-established expected return model to estimate $E(R_{it}|I_t)$ (Grewal et al., 2019; MacKinlay, 1997). The MM assumes that stock returns are a function of an overall market index and expects a deviation from this relationship in the presence of an event. In the MM, for firm i on trading day t, returns are given by

$$R_{it} = \alpha_i + \beta_i \times R_{mt} + \epsilon_{it}, \text{for all } t \in [T_0, T_1] \quad (2)$$

where R_{mt} is the index return of the stock market on which the firm is listed on trading day t; α_i and β_i are parameters to estimate; and, ϵ_{it} is the error term, which we assume is independent and normally distributed with zero mean.

Because of the probable serial correlation (Pozo & Schroeder, 2016) and dynamic stock market performance, we use an ARDL of the MM in this study. In the ARDL specification of MM, for firm i on trading day t, returns are given by

[4] Australian and Chinese stock markets were closed November 28 and 29, 2020. Therefore, the first trading day of the event window is November 30, 2020.

$$R_{it} = \alpha_i + \beta_i \times R_{mt} + \gamma_i \times R_{it-1} + \delta_i \times R_{mt-1} + \epsilon_{it}, \text{for all } t \in [T_0, T_1] \quad (3)$$

where R_{mt} and R_{it} are the index return and stock return on trading day t, and α_i, β_i, γ_i, and δ_i are parameters to estimate.

However, Giaccoto and Ali (1982) argues that the MM might mislead and the test statistic may be biased due to a violation of a strict assumption of constant coefficients and homoscedasticity of the OLS residuals in the MM. Thus, Bera et al. (1988) proposes the conditional heteroscedasticity adjusted MM to determine the expected returns. As such, Coakley et al. (2008) and Lee et al. (2012) developed MM with GARCH. Therefore, we adopt the ARDL specification of MM corrected for GARCH (1,1) as our main specification:[5]

$$R_{it} = \alpha_i + \beta_i \times R_{mt} + \gamma_i \times R_{it-1} + \delta_i \times R_{mt-1} + \epsilon_{it}, \text{for all } t \in [T_0, T_1] \quad (4)$$

$$\epsilon_{it} | \phi_{it-1} \sim D(0, h_{it}, d) \quad (5)$$

$$h_{it} = \omega_{i0} + \sum_{k=1}^{p} \alpha_{ik} \epsilon_{it-k}^2 + \sum_{j=1}^{q} b_{it} h_{it-j} \quad (6)$$

where ϕ_{it-1} is a set of all available information on firm i at time $t-1$; h_{it} is the conditional error variance of firm i; D is a Student-*t* distribution with *d* degree of freedom; and, $p = 1$ and $q = 1$.

We estimate the GARCH (1,1) model using the maximum likelihood estimation. Specifically, we use logarithm transformation for the error distribution function for the convenience of estimating the GARCH model (Kaspereit, 2015). After estimating each parameter of the GARCH (1,1) model for each firm i, we estimate predicted errors over the event window (i.e., 10 post-event trading days starting one day after the release date of China's

[5] We use the GARCH (1,1) specification in our study for two reasons. First, GARCH (1,1) is the simplest and most robust of the family of volatility models (Bollerslev, 1986; Corhay and Rad,1996). Second, the results of a Ljung and Box (1978) Q test shows that, at the 5% level, we cannot reject the null hypothesis that the residuals from the ARDL specification of MM with GARCH (1,1) are white noise and uncorrelated with the regressors.

trade restrictions) by iterating the ARDL specification of MM with GARCH as follows:

$$E(R_{it}|I_t) = \hat{\alpha}_i + \hat{\beta}_i \times R_{mt} + \hat{\gamma}_i \times R_{it-1} + \hat{\delta}_i \times R_{mt-1}, \text{for all } t \in [T_2 + 1, T_3] \quad (7)$$

$$\hat{h}_{it} = \hat{\omega}_{i0} + \hat{\alpha}_{i1}\epsilon_{it-1}^2 + \hat{b}_{it}h_{it-1} \quad (8)$$

$$AR_{it} = R_{it} - \left(\hat{\alpha}_i + \hat{\beta}_i \times R_{mt} + \hat{\gamma}_i \times R_{it-1} + \hat{\delta}_i \times R_{mt-1}\right), \text{for all } t \in [T_2 + 1, T_3] \quad (9)$$

where AR_{it} is the abnormal return of firm i for a specific trade restriction estimated by the ARDL specification of MM with GARCH.

To evaluate the economic impacts of the trade restrictions overall, we aggregate estimated ARs over time into CARs. For firm i's stock return, calculated over a time interval $\tau = [\tau_1, \tau_2]$ consisting of one or more trading days, the CAR is:

$$CAR_i(\tau_1, \tau_2) = \sum_{t=\tau_1}^{\tau_2} AR_{it} \quad (10)$$

where $T_2 + 1 \leq \tau_1 \leq \tau_2 \leq T_3$. The magnitude of $CAR_i(\tau_1, \tau_2)$ reflects the economic impact of a specific trade restriction on firm i's stock returns.

We do not examine the average proportional impact of a specific trade restriction on all firms (that is, CAAR), because China imposed trade restrictions on different commodities, thus CAARs have no economic meaning here. Instead, we concentrate on the CAR, which reflects whether a firm's observed stock price movements result from specific trade restrictions.

To examine whether the trade restriction affects a firm's stock returns or the presence of CARs, we focus on the following null and alternative hypotheses:

$$H_0: CAR_i(\tau_1, \tau_2) = 0 \quad (11)$$

$$H_1: CAR_i(\tau_1, \tau_2) \neq 0 \quad (12)$$

The null hypothesis indicates that no CAR is statistically significant; thus, the trade restriction does not significantly impact the firm's stock returns. However, rejecting the null hypothesis

reveals that the trade restriction statistically impacts firms' stock returns and, consequently, a nonzero CAR. To test the null hypothesis (H_0), we use a Patell-*t* statistic proposed by Patell (1976) to test the statistical significance of calculated CARs. If the *t*-statistic is statistically significant at a given level, the trade restriction significantly impacts the firm's stock returns. We implement the above event study using the Stata package *eventstudy2* (Kaspereit, 2015).

If a significantly negative CAR is obtained for Australian firms, we can support *H1a.* For Chinese firms, similarly, a significantly positive CAR will support *H1b.*

4.3 Explaining cumulative abnormal returns

This subsection examines whether and how media coverage, trade dependence, and firm characteristics explain CARs. To achieve this goal, we estimate a pooled OLS model, which pools CAR observations for each restriction on each trading day over the event window to construct panel data. Long-horizon regressions in pooled OLS models capture more information and produce more precise results (Pozo & Schroeder, 2016). Note that pooled CAR used as the dependent variable may contain dynamic information; thus, we estimate a generalized ARDL model here. For each restriction j on commodity m and each firm i on each trading day t after a trade restriction where $t \in [1,10]$, we estimate the following regression model:

$$CAR_{jit} = \alpha + \beta \times CAR_{jit-1} + \gamma_1 \times TV_{it} + \gamma_2 \times TV_{it-1} + \delta_1 \times MC_t + \delta_2 \times MC_{t-1} + \theta \times ID_m + +\mu \times ED_m + \epsilon_{jit} \quad (13)$$

where *CAR* is the rolling sum of *AR* obtained in the event study; TV_{jit} is the trading volume of firm i on trading day t; TV, as measured by the percentage of outstanding shares traded for that day, captures firm size and capacity; MC_t represents the number of non-Chinese

(Chinese) press articles directly related to the China-Australia trade tension on trading day t[6]; and, ID_m and ED_m are China's import dependence on Australia and Australia's export dependence on China for commodity m, respectively.[7]

For media coverage, if the results of Eq. (13) show the significantly negative δ_1 and δ_2 for Australian firms, we can support *H3a*. Similarly, the significantly positive δ_1 and δ_2 for Chinese firms will support *H3b*. As for trade dependence, if the results of Eq. (13) show a significantly positive θ for Australian and Chinese firms, we can support *H4a* and *H4c*. In addition, a significantly negative μ for Australian and Chinese firms will support *H4b* and *H4d*.

Following Xiong et al. (2021), we include day-since-restriction dummy variables to account for day-by-day unobserved shocks common to all restrictions. We use month and year dummy variables to capture general macroeconomic and commodity fluctuations contributing to firms' stock returns.

4.4 Datasets

We use four different data sets—trade restriction data, firm data, media data, and bilateral trade data. We mainly collect trade restriction data from China's Ministry of Commerce and General Administration of Customs websites. For event dates, we use May 18, 2020, for barley; May 11, August 26, and December 7, 2020, for beef; October 12, 2020, for coal; October 16, 2020, for cotton; October 31, November 11, December 3, and December 24, 2020, for timber; November 2, 2020, for copper; and, November 27, 2020, and March 26, 2021, for wine, as

[6] Section 4.4 explains media coverage in detail. We do not construct daily media coverage for each restricted commodity due to limited media articles for specific commodities.

[7] Section 4.4 explains import and export dependences in detail. We construct import and export dependences in commodity-level, rather than firm-level, because many firms' annual reports do not provide revenue figures for exporting goods to China.

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shown in Table 1. China did not announce official bans on Australian coal, cotton, and copper, thus we identify the event day for Australian coal (The Sydney Morning Herald, 2020), cotton (CNBC, 2020), and copper (South China Morning Post, 2020) from the mainstream media.

We use the following four steps to choose listed Australian and Chinese firms producing barley, beef,[8] coal, cotton, timber, copper, and wine. We use Australian listed wine firms as an example.

Step 1: Following the Listcorp Site,[9] we classify all firms listed on the Australian Stock Exchange into 11 categories: Energy (141), Material (815), Industries (164), Consumer Discretionary (136), Consumer Staples (78), Health Care (181), Financials (444), Information Technology (185), Communication Services (68), Utilities (23), and Real Estate (75).

Step 2: We select Consumer Staples (78) for wine firms. Listcorp Site further classifies these 78 listed firms into three subclasses: Food & Staples Retailing (8), Food, Beverage & Tobacco (56), and Household & Personal Products (14).

Step 3: For wine firms, we select Food, Beverage & Tobacco (56). Listcorp Site further classified these 56 listed firms into three subclasses: Beverage (7), Food Products (49), and Tobacco (0).

Step 4: We select Beverage (7) and obtain seven firms: Treasury Wine Estates, Lark Distilling, Australian Vintage, Good Drinks Australia, Top Shelf International Holdings, Broo, and Eneco Refresh. Next, we examine the 2019 annual reports of these seven firms to find which firms produce wine.[10] As only shares with active transactions are suitable for an event

[8] As discussed, China imposed restrictions on beef from five Australian firms: JBS Australia, Northern Co-Operative Meat, Kilcoy, and Pastoral Company, John Dee Warwick, and Meramist. However, those firms are not listed on the Australian stock market.

[9] https://www.listcorp.com/

[10] Because China imposed trade restrictions on Australian firms in 2020, we examine the 2019 annual reports.

study analysis, we further exclude listed firms with inactive transactions from our study. Finally, we choose Treasure Wine Group and Australian Vintage for Australian wine.

Following the above steps, we choose 20 firms listed on the Australian Stock Exchange:[11] one for barley, three for beef, seven for coal, one for cotton, one for timber, six for copper, and two for wine (Table 2). We choose 32 firms listed on China's stock markets: one for beef, twelve for coal, four for cotton, two for timber, ten for copper, and three for wine (Table 3).[12]

<Insert Tables 2-3 here>

We collect daily stock price data and trading volumes from Yahoo Finance. We use the S&P/ASX 200 Index and CSI 300 Index as the market indexes for Australian and Chinese firms,[13,14] respectively, to estimate the event study benchmark model. We use trading volume as a proxy for firm size and capacity and calculate daily trading volume as the percentage of outstanding shares traded that day (Xiong et al., 2021). We collect the number of shares from 2019 annual reports publicly available on the Australian Securities Exchange, Shanghai Stock Exchange, and Shenzhen Stock Exchange websites.

We obtain bilateral trade data from UN Comtrade.[15] For each commodity under restriction, we calculate China's import dependence on Australia as Australia's share of China's 2019 imports. Similarly, we calculate Australia's export dependence on China as China's share of Australia's 2019 exports.

[11] Following the four steps, we identify eight Australian listed seafood firms: Tassal Group, Huon Aquaculture, Seafarms Group, Clean Seas, Murray Cod Australia, Ocean Grown Abalone, Angel Seafood, and New Zealand King Salmon. However, none of them mainly produce rock lobster (the target of the ban), nor is there a Chinese listed firm producing rock lobster. Thus, we do not choose any listed firms for rock lobster.

[12] There is no Chinese listed firm producing barley, thus, we do not choose China's listed firms for barley.

[13] S&P/ASX 200 Index is comprised of the 200 largest Australian Stock Exchange (ASX) listed stocks.

[14] CSI 300 Index is a capitalization-weighted stock market index designed to replicate the performance of the top 300 stocks traded on the Shanghai Stock Exchange and the Shenzhen Stock Exchange.

[15] To identify the commodities in the UN Comtrade (https://comtrade.un.org/), we use HS commodity code 1003 for barley, 0202 for beef, 2701 for coal, 5201 for cotton, 7403 for copper, 4403 for timber, and 2204 for wine.

We use an author-written spider program to collect daily media articles about the China-Australia trade tension from Reuters for non-Chinese articles and Baidu for Chinese articles.[16] Following Piggott and Marsh (2004), we construct the media coverage by linearly aggregating the number of articles issued per day in the event window from Reuters and Baidu, respectively.[17]

5. Results and Discussions

5.1 Event study results for Australian firms

Analysis of abnormal returns. Table 4 reports CAR values and corresponding *t*-statistics for 22 Australian firms over different intervals of the event window. We find that, in general, the trade restrictions negatively affected Australian firms' stock returns immediately after the announcement ($\tau_2 = 1$), suggesting that the stock market reacts immediately to every trade restriction. On average, four to five days after the restriction, some stock returns become positive; however, some stock returns, such as coal and timber, remain negative during the whole event window ($\tau_2 \leq 10$). Focusing on the significance of the CARs, Treasury Wine Estates' stock responses to the trade restriction issued on November 27, 2020, are statistically significant within six trading days after the announcement at the 5% significance level. We observe a similar pattern in Australian Agricultural Company, whose CARs induced by the first trade restriction issued on May 11, 2020, are significantly negative within five trading days and become positive after that. Midway's stock responses to the second trade restriction issued on November 11, 2020, are significantly negative at the 1% significance level during the whole

[16] The Baidu search engine is currently the largest search engine in China. We search and count the Chinese media articles using "中国 澳大利亚 贸易紧张" (China-Australia trade tension in English) as keywords.
[17] Media articles for each commodity are limited, thus we do not construct daily media coverage for each commodity. However, the non-Chinese and Chinese media coverage constructed in this paper generally represent the total media coverage of the trade tension.

event window. We observe similar results with New Hope Corporation and Stanmore Resources' stock responses to the coal trade restriction and Sandfire Resources' stock responses to the copper trade restriction. Our results support hypothesis *H1*a—China's restrictions negatively affected Australian firms' stock returns.

<Insert Table 4 here>

Figures 1-7 show the evolution of calculated CARs of Australian firms for seven commodities from the event study method. Figure 1 plots the estimated CARs of Australian barley firm GrainCorp. We find the barley trade restrictions have a transient and slight negative impact on GrainCorp's stock returns, which dropped 3.69% within two trading days and recovered within four trading days.

<Insert Figures 1-7 here>

Figure 2 plots the estimated CARs of Australian beef firms Australian Agricultural Company, Beston Global Food Company, and Elders. We find that the first restriction issued on May 11, 2020, led to the greatest negative impacts on all three firms, particularly Australian Agricultural Company, and Elders, which reveals that the response of firms' stock returns to the first firm-related event is usually larger than subsequent events. Australian Agricultural Company's responses to the first restriction were significantly larger than the other two firms, which a close trade relation with China can partly explain.[18]

Figure 3 plots the estimated CARs of seven Australian coal firms. This unofficial restriction generally negatively impacted all seven coal firms in the event window. New Hope Corporation, Stanmore Resources, and South32's CARs are generally statistically significant

[18] According to Australian Agricultural Company's 2019 annual report, China accounted for 10% of its annual revenue and was its third-largest consumer (US $25.86 million) in 2019.

at the 5% level. In particular, New Hope Corporation saw the largest negative impacts, with stock returns dropping 15% within five trading days and staying at that level within 10 trading days, which close trade relations between those firms and China can partly explain.[19]

Figure 4 plots the estimated CARs of Australian cotton firm Duxton Broadacre Farms. This unofficial restriction led to a transient and slight negative impact on Duxton's stock returns, which dropped 2% within five trading days and recovered within six trading days. Duxton's 2019 annual report shows the limited relationship with China partly explains the slight negative impact of China's trade restriction on Australian cotton.

Figure 5 plots the estimated CARs of Australian timber firm Midway. All restrictions negatively impacted Midway's stock returns,[20] except the December 24 restriction. The second restriction, issued on November 11, caused the most significant drops (15%) in Midway's CARs, mainly because it suspended log imports from Victoria—Midway predominantly manages plantations in Victoria. Apart from the second restriction, the first restriction led to the largest negative impacts on Midway's stock returns, reiterating that the first event usually provides more unanticipated and surprising information.

Figure 6 shows the estimated CARs of six Australian copper firms. The unofficial restriction generally negatively impacted all six copper firms within three trading days. Sandfire Resources and OZ. Minerals (OZL)'s CARs are generally statistically significant at the 5% level. Sandfire saw the largest negative impacts, with stock returns dropping 10%

[19] According to New Hope's 2019 annual report, China accounted for 9% (US $116.3 million) of its annual revenue and was its third-largest consumer in 2019. In addition, S32's 2019 annual report also shows that China accounted for 6% (US $438 million) of S32's annual revenue and was its sixth-largest consumer in 2019. Stanmore Resources' 2019 annual report did not show annual revenue by geographic location.

[20] According to Midway's 2019 annual report, China is the top market and China's imports accounted for 75% (US $213 million) of Midway's total revenue in 2019.

immediately after restrictions and continuously falling to 15% within 10 trading days, which can be explained by the dominant role of China in Sandfire's exports.[21]

Figure 7 plots the estimated CARs of two Australian wine firms, Treasury Wine Estates and Australian Vintage. Both firms saw a negative CAR immediately after the trade restriction.[22] Treasury Wine Estates saw huge drops (12%) in stock returns within three trading days. Australian Vintage's stock returns dropped 2% on the first trading day and recovered immediately. Compared to Treasury Wine Estates, Australian Vintage's direct exposure to China's market is small, with less than 1% of all sales going to China in 2019. Both firms' responses to the second restriction issued on March 26, 2021, reveal that Treasury Wine Estate suffered more from the trade restriction—stock returns dropped 6% within 10 trading days, while Australian Vintage saw a transient and slight negative CAR within one trading day and recovered immediately.

The estimated CARs of Australian Agricultural Company (beef), Midway (timber), and Treasury Wine Estates (wine) support hypothesis *H2*, that the response of firms' stock prices to the first firm-related trade restrictions is larger than subsequent restrictions.

Explaining abnormal returns. We estimate pooled OLS models to examine the effects of China's trade restrictions on the magnitude of Australian firms' CARs. Since we aggregate CARs over different intervals of the event window, we estimate models using observations from different intervals or horizons to evaluate the sensitivity of predicted effects over time.

[21] Sandfire's 2019 annual report shows that its revenue arises from sales to customers in Asia. In 2019, the majority of its products were sent to China for processing (81%). OZ Minerals' 2019 annual report does not show its annual revenue by customer's geographic location.

[22] A panic sell-off led to Treasury Wine Estate's stock price falling 11% on November 27, 2020, forcing the firm to halt trading. On November 30, Treasury's share price fell more than 10%, and the company stated that it would adjust sales of some wines from China to other markets.

We first estimate the model using observations from intervals $[\tau_1, \tau_2] = [+1, +4]$ and then we use observations from intervals $[\tau_1, \tau_2] = [+1, +7]$ and $[+1, +10]$.

Table 6 presents results from pooled OLS models over different post-event horizons.[23] Adjusted R^2 values are approximately 0.8, indicating the explanatory variable examined in our pooled OLS model explains the majority of CAR variance. The coefficient of CAR_{t-1} is statistically positive at the 1% significance level in all models, which is consistent with the literature that past returns tend to carry the momentum to future returns. We find that firms with larger trading volumes in the stock market tend to enjoy greater stock returns following each trade restriction. The media coverage coefficient is significantly negative in models 1 and 2 at the 0.05 level but not statistically significant in model 3. We also observe a negative lagged effect of media coverage on CARs in models 1 and 2 at the 0.01 level. This supports hypothesis *H3a* that non-Chinese media coverage significantly negatively impacted Australian firms' CARs.

<Insert Table 6 here>

We find consistent results across all three models by focusing on two trade-related explanatory variables. To be clear, we observe a significantly positive effect of import dependence on CARs at the 0.05 level in all models. This supports hypothesis *H4a* that China's import dependence on Australia positively affected Australian firms' CARs. Similarly, we find a significantly negative effect of export dependence on CARs at the 0.05 level in all models. This supports hypothesis *H4b* that Australia's export dependence on China negatively affected Australian firms' CARs.

[23] In all models, regression diagnostics (i.e., analysis of variance inflation factors, correlation matrix) reject the presence of degrading multicollinearity

5.2 Event study results for Chinese firms

Analysis of abnormal returns. Table 5 reports CAR values and corresponding *t*-statistics for 32 Chinese firms over different intervals of the event window[24]. Overall, the trade restrictions positively affected Chinese firms' stock returns immediately after the announcement ($\tau_2 = 1$), suggesting that the stock market reacts immediately to every trade restriction. Different from Australian firms, the majority of Chinese firms always saw positive stock returns throughout the whole event window ($\tau_2 \leq 10$), particularly for coal, timber, and copper. Focusing on the significance of the CARs, Chinese firms producing beef, copper, and wine usually saw significant CARs at the 0.05 level. Western Animal Husbandry's stock responses to the first trade restriction on beef are statistically significant throughout the whole event window, with stock returns rising 3% immediately after the trade restriction and continuously increasing to 21% within 10 trading days. We observe a similar pattern in Changyu Pioneer Wine, whose CARs, induced by the first trade restriction on wine, are significant throughout the whole event window, with stock returns increasing to 23% within 10 trading days. Chinese copper firms saw the largest positive CARs. Some copper firms' stock returns increased to more than 30% within 10 trading days. Our results support hypothesis *H1b*: the restrictions positively affected Chinese firms' stock returns.

<Insert Table 5 here>

Figures 8-13 show the evolution of the calculated CARs of Chinese firms for six

[24] Existing studies investigate the impacts of the US-China trade war on US and Chinese firms' stock prices, and the mean values of cumulative abnormal returns are -2.73% ($\tau_1 = -1, \tau_2 = +10$) (Egger & Zhu, 2020), -0.54% ($\tau_1 = +1, \tau_2 = +3$) (Qin et al., 2022), -4.13% ($\tau_1 = -1, \tau_2 = +1$) (Wang et al., 2021), and -0.05% ($\tau_1 = -1, \tau_2 = +1$) (Xu et al., 2021). Our mean values of estimated CARs are -2.23% ($\tau_1 = +1, \tau_2 = +2$) and -2.28% ($\tau_1 = +1, \tau_2 = +10$) for Australian firms, calculated from Table 4, and 2.75% ($\tau_1 = +1, \tau_2 = +2$) and 5.76% ($\tau_1 = +1, \tau_2 = +10$) for Chinese firms, caculated from Table 5.

commodities from the event study methods. Figure 8 plots the estimated CARs of Chinese beef firm Western Animal Husbandry. All trade restrictions on beef significantly positively impacted its stock returns, which raised 21%, 8%, and 15% across the three restrictions, respectively. The first restriction issued on May 11, 2020, led to the greatest positive and continuous impacts on Western Animal Husbandry. Figure 9 plots the estimated CARs of 12 Chinese coal firms. This unofficial restriction generally positively impacted all 12 firms within five trading days. In particular, we find that the positive impacts immediately after the restriction was limited and continuously increased to the peak four trading days later. Figure 10 plots the estimated CARs of four Chinese cotton firms. This unofficial restriction led to a transient and slightly positive impact on four firms. Figure 11 plots the estimated CARs of two Chinese timber firms. All four restrictions led to limited and positive impacts on Chinese timber firms throughout the whole event window. Figure 12 shows the estimated CARs of 10 Chinese copper firms. This unofficial restriction generally positively impacted all 10 copper firms throughout the whole event window. In addition, most copper firms saw a continuous increase in CARs, indicating Chinese investors were optimistic about Chinese copper firms' gains from the trade restriction on Australian counterparts. Figure 13 plots the estimated CARs of three Chinese wine firms. All firms saw a positive CAR immediately after the trade restriction.

The estimated CARs of Chinese beef and wine firms also support hypothesis *H2*, that the response of firms' stock prices to the first firm-related trade restrictions is larger than subsequent restrictions.

<Insert Figures 8-13 here>

Explaining abnormal returns. We also estimate pooled OLS models to examine the

effects of China's trade restrictions on the magnitude of Chinese firms' CARs. Table 7 presents results from pooled OLS models over different post-event horizons.[25] The coefficient of CAR_{t-1} is statistically positive at the 1% significance level in all models, which is consistent with results from Australian firms. In addition, firms with larger trading volumes in the stock market tend to enjoy greater stock returns following each trade restriction. The media coverage coefficient is significantly positive in models 1 and 2 at the 0.05 level but not statistically significant in model 3. We also observe a positive lagged effect of media coverage on CARs in models 1 and 2 at the 0.05 level. This supports hypothesis *H3b* that Chinese media coverage positively affected Chinese firms' CARs.

<Insert Table 7 here>

Focusing on two trade-related explanatory variables, we observe a significantly negative effect of China's import dependence on Chinese firms' CARs at the 0.01 level in models 2 and 3, which does not support hypothesis *H4c*. One possible reason is that if China's import dependence is small, Chinese investors would expect that China can undertake the small losses in imports from Australia. Such trade restrictions will be persistent, resulting in large CARs. Chinese copper firms' stock responses support this explanation. The UN Comtrade database shows China's import dependence on Australian copper ores (HS code 2603) was only 4.9% in 2019. Still, Chinese copper firms enjoyed larger stock returns than firms associated with other commodities restricted by China. In addition, we do not observe a significant impact of Australia's export dependence on Chinese firms' CARs, which does not support hypothesis *H4d*. One possible reason is that Chinese investors are more concerned about China's import

[25] In all models, regression diagnostics (i.e., analysis of variance inflation factors, correlation matrix) reject the presence of degrading multicollinearity.

dependence than Australia's export dependence under the China-Australia trade tension.

5.3 Robustness tests

In this section, we conduct four robustness tests for the event study results shown in Sections 5.1 and 5.2. For the first robustness test, we conduct the previous event study assuming that China imposed trade restrictions one month before to verify whether the Australian and Chinese publicly traded firms underwent similar changes before the trade restrictions. For example, China released the first trade restriction on Australian wine on November 27, 2020, thus we assume that the release date of this restriction is October 27, 2020 (one month before the actual release date) and estimate the abnormal returns with that date. Note that we only conduct such robustness tests for the commodities whose CARs are significant at the 0.05 level at any value of τ_2 ($\tau_2 = 1,2,\dots,10$), shown in Tables 4 and 5. Appendix Tables A1 and A2 display the event study results with the virtual release date. Overall, the CARs do not exhibit significance at the 0.05 level for all commodities and restrictions. Except for the limited cases, results from the first robustness test largely support our main findings.

We use the ARDL specification of MM corrected for GARCH (1,1) in our main specification to estimate the abnormal returns. For the second robustness test, we use the ARDL specification of MM without GARCH to estimate the abnormal returns and compare the results with that of the main specification. Appendix Tables A3 and A4 display the results of the ARDL specification of MM without GARCH for Australian and Chinese firms, respectively. Overall, the estimated CAR results using the ARDL specification of MM without and with GARCH are consistent, supporting our main findings.

In our main specification, the length of the estimation window is set to be approximately

one year (245 trading days). For the third robustness test, we shorten the length of the estimation window from one year (245 days) to half a year (123 days). For example, in the main specification, the estimation window for China's trade restriction on Australian wine released on November 27, 2020, is 245 trading days from November 26, 2019 (T_0) to November 26, 2020 (T_1). In the current robustness test, the estimation window for the same restriction on Australian wine is 123 trading days from June 9, 2020, (T_0) to November 26, 2020 (T_1). Appendix Tables A5 and A6 display the results from the shortened estimation window for Australian and Chinese firms, respectively. Generally speaking, the estimated CAR results from the shortened estimation window are consistent with the main results shown in Tables 4 and 5, supporting our main findings.

In our main specification, we use the S&P/ASX 200 Index and CSI 300 Index as the market index for the Australian and Chinese stock markets, respectively, when estimating abnormal returns. The primary assumption in the event study is that the events of interest can only influence the stock prices of some specific firms and cannot influence the market index, such as S&P/ASX 200 Index in the Australian stock market and CSI 300 Index in the Chinese stock market. For the last robustness test, thus, we use the S&P/NZX 50 Index (New Zealand's stock market index) and CSI 100 Index for the Australian and Chinese firms' event study.[26] Given the adjacent location and close economic ties between Australia and New Zealand, we use the S&P/NZX 50 Index for the Australian firms' robustness test. Considering CSI 100 Index is a sub-index of the CSI 300 Index, we use the S&P/NZX 50 Index for Chinese firms' robustness test. Appendix Tables A7 and A8 display the results using the substituted market indexes for

[26] The S&P/NZX 50 Index is the main stock market index in New Zealand, comprised of the 50 biggest stocks by free-float market capitalization trading on the New Zealand Stock Market.

Australian and Chinese firms, respectively. Overall, the estimated CAR results from the substituted market indexes are consistent with the main results shown in Tables 4 and 5, supporting our main findings.

5.4 A plausible explanation of China's trade restrictions on Australian commodities

Why is Australia the target? There are two main reasons China imposed trade restrictions on Australian commodities in 2020. First, Australia's extremely high export exposure to China. Motivated by Laurenceson (2021), we compare Australia's top importers with that of other medium-sized and high-income peer economies, including Japan, Germany, Canada, France, the United Kingdom, the Netherlands, Italy, Spain, and the Republic of Korea. We obtain trade data from UN Comtrade to find the above nine countries' top importers in 2019. In terms of 2019 trade value, the United States was the top importer for Japan (19.9% of exports) , Germany (8.9% of exports), Canada (75.3% of exports), and the United Kingdom (15.7% of exports), Germany was the top importer for France (14.1% of exports), the Netherlands (22.2% of exports), and Italy (12.1% of exports), while France was the top importer for Spain (14.4% of exports), and China was the largest importer for the Republic of Korea (25.1% of exports). China was the top importer of Australian commodities and accounted for 38.6% of Australia's exports. Australia's export dependence on China (38.6%) was significantly higher than its peer and second only to Canada's top market share. Intuitively, Australia will suffer significant economic consequences from the trade restrictions imposed by China, the dominant importer of Australian commodities.

Second, China's demand for Australian commodities is highly concentrated in raw materials. Table 8 displays the importance and substitutability of the top 20 Australian

commodities exported to China in 2019. Nineteen of the top 20 are generally raw materials. Only medicaments (HS code 3004) are an exception. According to China's customs data, the top 10 Chinese imports from the United States in 2017 (before the China-USA trade war) were mainly high-tech manufactured goods.[27] It is not hard for China to find alternative raw materials exporters. China imposed trade restrictions on such raw materials. Iron ores (HS code 2601) are exceptions, which explains why China did not impose trade restrictions on Australian iron ores.

<Insert Table 8 here>

Why did China choose barley, beef, coal, cotton, timber, rock lobster, copper ores, and wine? First, according to Table 8, all eight commodities restricted by China are in the top 20. Second, it is reasonable that copper ores, cotton, timber, rock lobster,[28] and beef were selected as the targets because China's shares of Australian exports of these commodities are high. In contrast, Australia's shares of China's imports of these commodities are low. Particularly, China's shares of Australian copper ores and timber exports are 36.8% and 94.4%, respectively, while Australia's shares of China's copper ores and timber imports are only 4.9% and 6.2%, respectively. In addition, China accounted for 96.1% of Australia's rock lobster exports, while Australia accounted for 54.9% of China's rock lobster imports in 2019. Third, high importance for Australian total exports. From the bilateral trade of coal shown in Table 8, it seems China would not impose trade restrictions on Australian coal because Australia

[27] In 2017, the top 10 Chinese imports from the United States were electromechanical equipment and parts (HS code 85); nuclear reactor, boiler, machinery and mechanical equipment (HS code 84); motor vehicles, tractors, cycle and other land vehicles, parts and accessories (HS code 87); seeds and oil-bearing fruits; cereals, seeds and various fruits (HS code 12); aircraft, spacecraft and their components (HS code 88); optical, photographic, film, measurement, examination, precision, medical or surgical instruments and instruments (HS code 90); mineral fuels, mineral oils and their distillates (HS code 27); plastics and their products (HS code 39).

[28] Rock lobster (HS code 030631) falls under crustaceans (HS code 0306).

accounted for almost half of China's coal imports. However, Australian coal exports to China totaled US $10.58 billion in 2019, only followed by iron ores. China chose Australian coal as a target due to its high importance for Australian total exports.

6. Conclusions and policy implications

Since early 2020, China has imposed trade restrictions on Australian commodities. This article aims to describe the impact of China's trade restrictions on Australian and Chinese firms' stock returns from January 2020 to July 2021 using an event study method. Furthermore, we estimate a pooled OLS model to quantify how media coverage, trade dependence, and firm characteristics explain the magnitude of CARs estimated by the event study method. The China-Australia trade tension significantly negatively affected Australian firms' stock returns, leading to almost 20% loss within 10 trading days; however, most firms' stock returns immediately rebounded. In contrast, Chinese firms usually saw significant positive stock returns, leading to almost 30% gains; and, the positive abnormal returns continuously increased within 10 trading days. Our results also reveal that media coverage of the China-Australia trade tension exerts significant negative (positive) effects on Australian (Chinese) firms' stock returns. In addition, Australia's export dependence on China negatively impacts Australian and Chinese firms' stock returns, while Australia's export dependence on China positively (negatively) impacts Australian (Chinese) firms' stock returns. The results of robustness tests support our main findings.

Our findings have important policy implications. First, Australian exposure to China is not a severe problem because Australian exporters quickly sold restricted commodities to alternative markets via *reallocation*. As discussed in Section 5.4, Australia's export dependence

on China was significantly higher than its peers, and such "unusually" high exposure to China seems risky. Intuitively, Australia will suffer significant economic consequences from China's trade restrictions, but not long-term. Trade tension significantly adversely affected Australian firms' stock returns in the short term as Australian exports of restricted commodities to China slumped immediately after the restrictions. However, in July 2021, Australian commodities quickly and successfully pivoted to alternative markets, except for Australian wine and timber. According to UN Comtrade, Australia's export dependence on China had declined from 38.6% in 2019 to 34.2% in 2021. Even though Australia's exposure to China is still higher than its peers, our findings show that it does not need to worry too much.

Second, trade restrictions are a weak tool for China. Australian firms readily mitigated the costs of China's trade restrictions by quickly pivoting to alternative markets. As such, they are unlikely to put serious lobbying pressure on the Australian government to adjust its political position and negotiate with the Chinese government. Thus, it is hard for China to achieve its goals by imposing trade restrictions on Australian commodities.

Third, the "grey markets" would be a feasible tool for *deflection,* as is the case for Australian rock lobster. According to UN Comtrade, Australian rock lobster exports to mainland China declined from 561 tons in October 2020 to 5.4 tons in March 2020. However, Australian exporters could send their rock lobster to Hong Kong, China, and then to mainland China's markets. UN Comtrade shows that Australian rock lobster exports to Hong Kong, China, soared from 9.9 tons in October 2020 to 512 tons in March 2020. Therefore, when facing sudden trade restrictions, such "grey markets" are an effective risk mitigation tool for *deflection.*

There are two limitations to our study. First, although we use the well-established event

study method, many well-documented alternatives exist, such as difference-in-differences and the common correlated effects model. Second, we focus on the impacts of trade shocks on firms' stock prices in the short term. Future works should investigate the long-term impacts of trade shocks on firms' decisions, such as innovation investment and resource reallocation.

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Figures

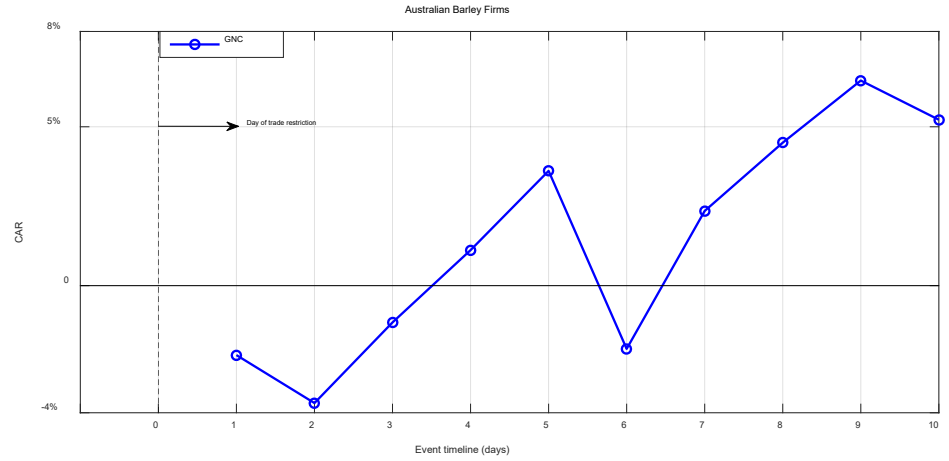

Figure 1 Cumulative abnormal returns (CAR) of an Australian barley firm for China's trade restriction released on May 18, 2020.

Notes: GNC is the code of GrainCorp.

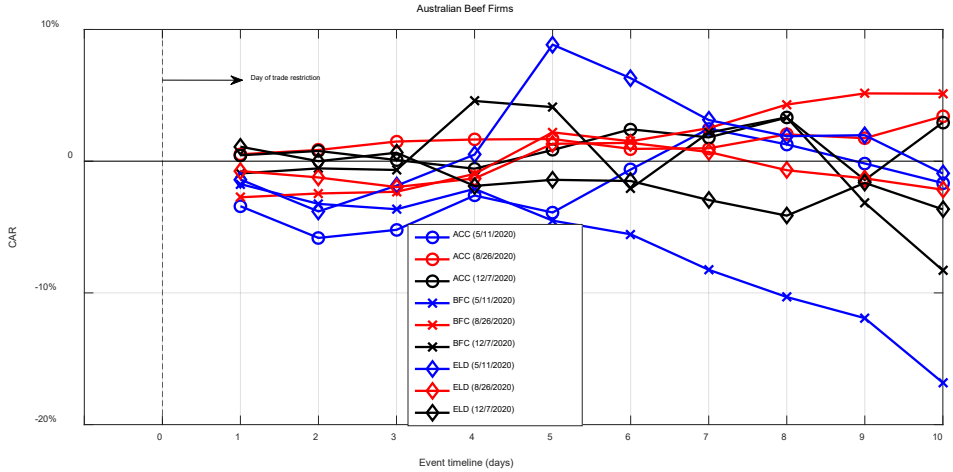

Figure 2 Cumulative abnormal returns (CAR) of three Australian beef firms for three trade restrictions released on May 11, 2020, August 26, 2020, and December 7, 2020, respectively.

Notes: ACC, BFC, and ELD are the codes of Australian Agricultural Company, Beston Global Food Company, and Elders, respectively.

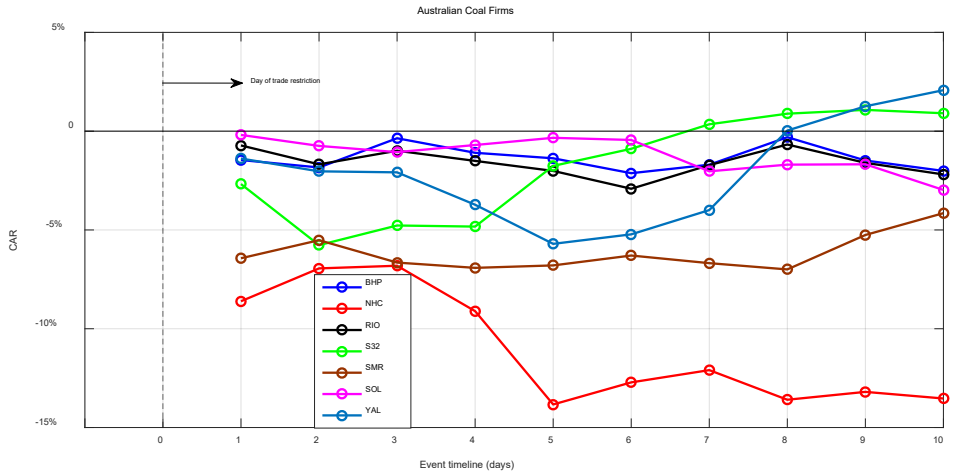

Figure 3 Cumulative abnormal returns (CAR) of seven Australian coal firms for China's trade restriction released on October 12, 2020.

Notes: BHP, NHC, RIO, S32, SMR, SOL, and YAL are the codes of BHP Billiton, New Hope Corporation, RIO Tinto Group, South32, Stanmore Resources, Washington H. Soul Pattinson and Co., and Yancoal Australia, respectively.

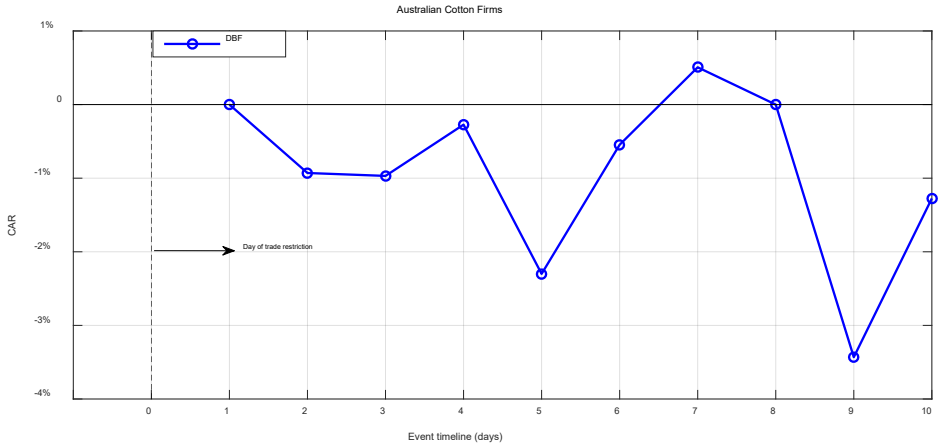

Figure 4 Cumulative abnormal returns (CAR) of an Australian cotton firm for China's trade restriction released on October 16, 2020.

Notes: DBF is the code of Duxton Broadacre Farms.

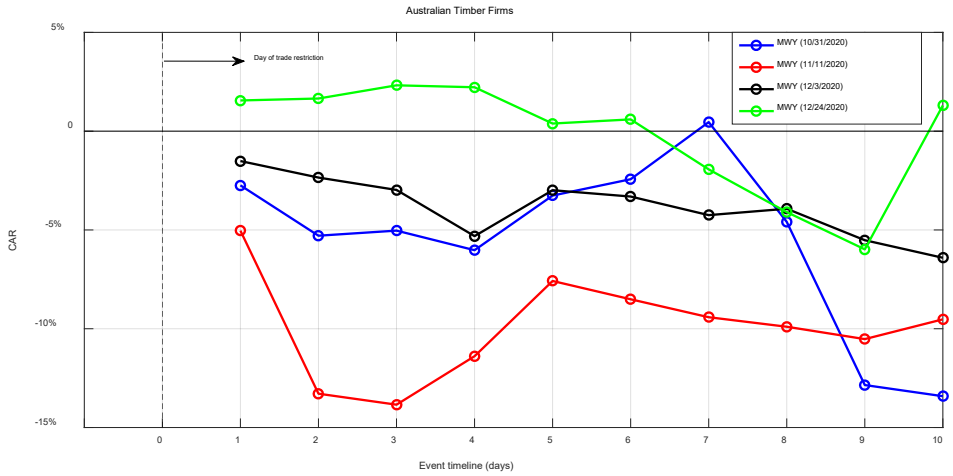

Figure 5 Cumulative abnormal returns (CAR) of an Australian timber firm for trade restrictions released on October 31, 2020, November 11, 2020, December 3, 2020, and December 24, 2020, respectively.

Notes: MWY is the code of MidWay.

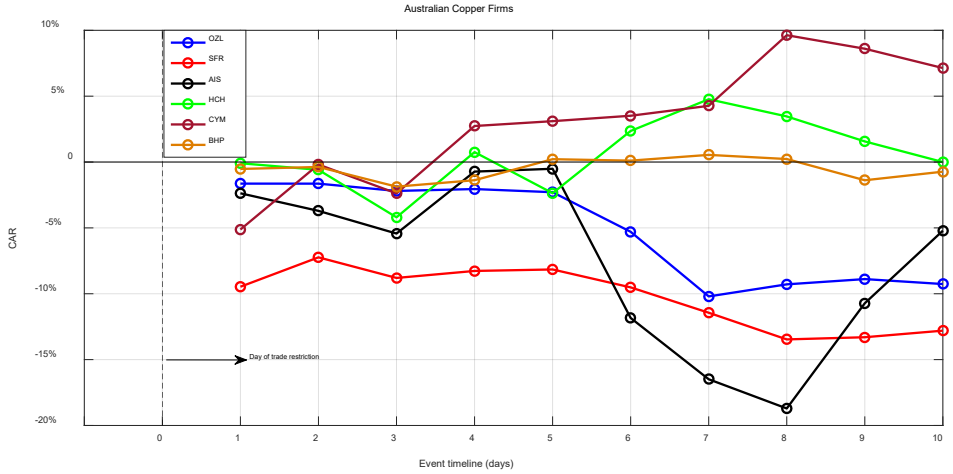

Figure 6 Cumulative abnormal returns (CAR) of six Australian copper firms for China's trade restriction released on November 2, 2020.

Notes: OZL, SFR, AIS, HCH, CYM, and BHP are codes of OZ Minerals, Sandfire Resources, Aeris Resources, Hot Chili, Cyprium Metals, and BHP Billiton.

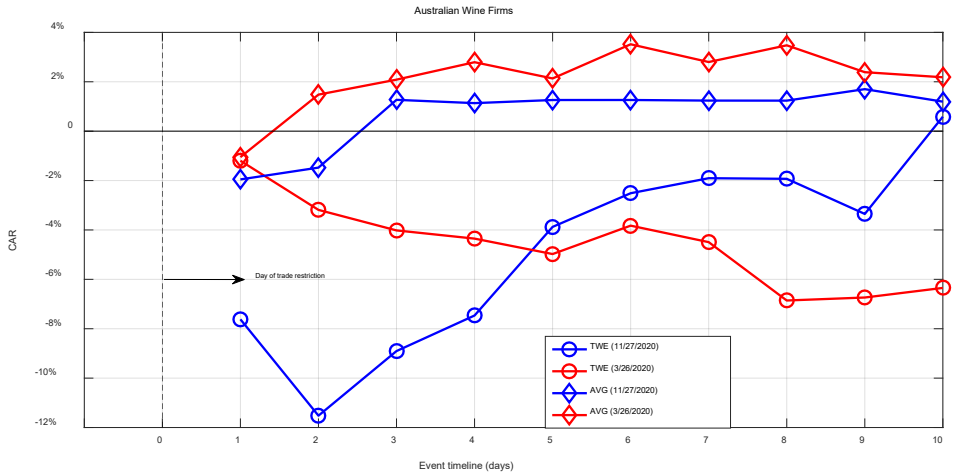

Figure 7 Cumulative abnormal returns (CAR) of two Australian wine firms for trade restrictions released on December 27, 2020, and March 26, 2021, respectively.
Notes: TWE and AVG are the codes of Treasury Wine Estates and Australian Vintage, respectively.

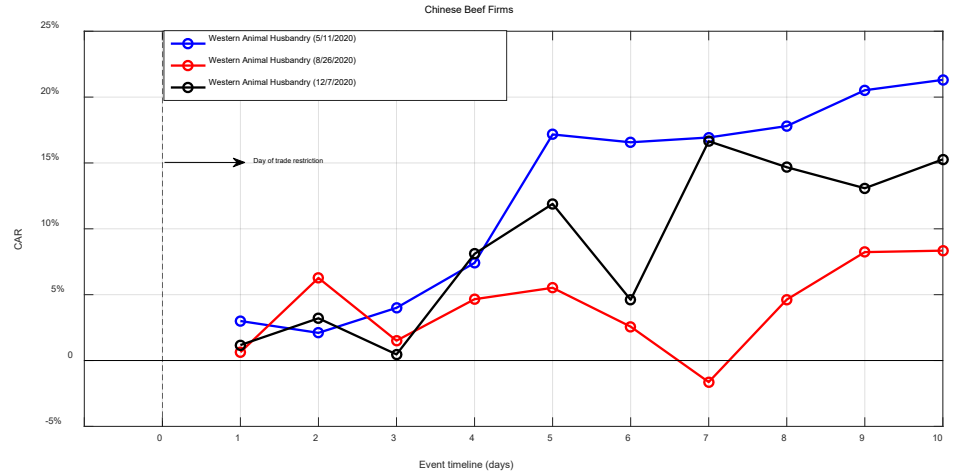

Figure 8 Cumulative abnormal returns (CAR) of a Chinese beef firm for three trade restrictions released on May 11, 2020, August 26, 2020, and December 7, 2020, respectively.

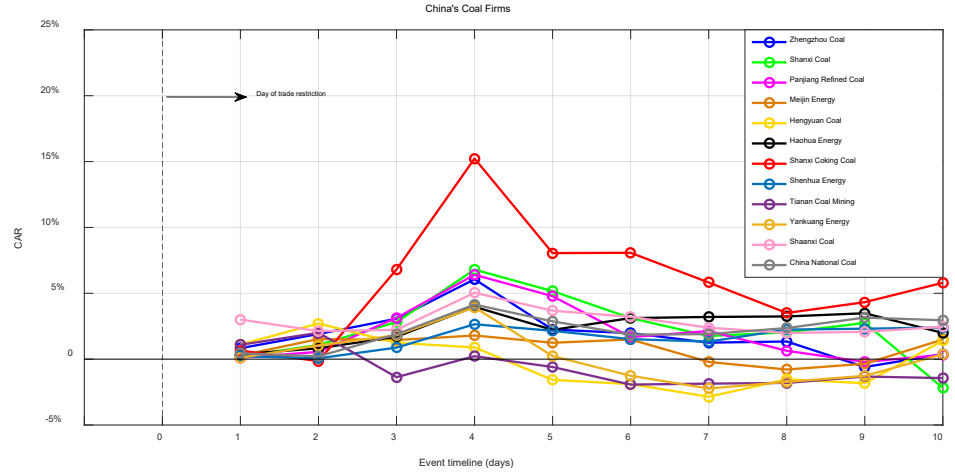

Figure 9 Cumulative abnormal returns (CAR) of twelve Chinese coal firms for China's trade restriction released on October 12, 2020.

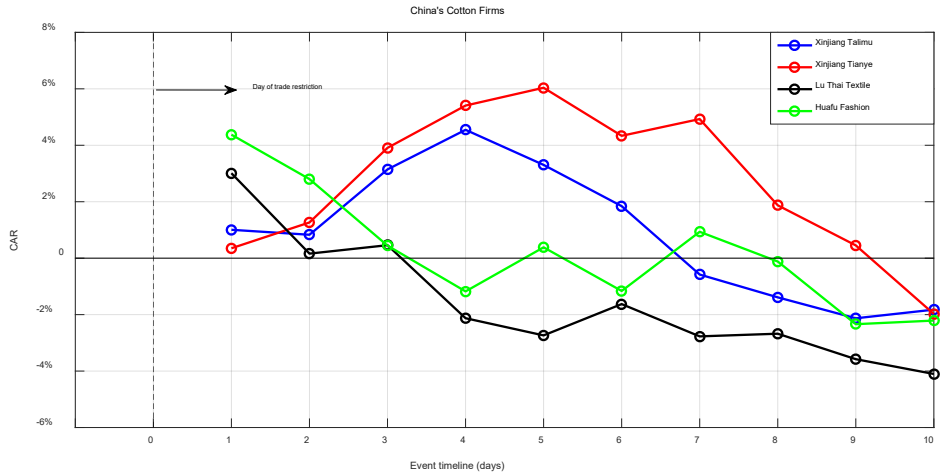

Figure 10 Cumulative abnormal returns (CAR) of four Chinese cotton firms for China's trade restriction released on October 16, 2020.

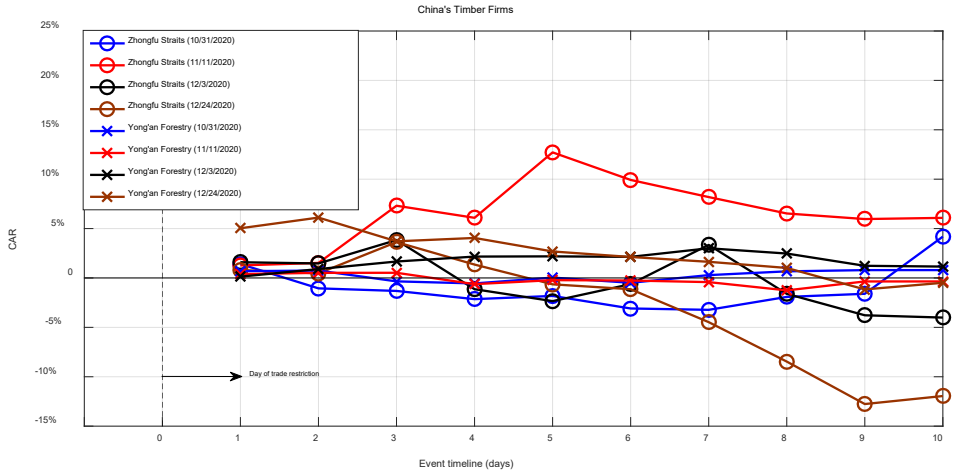

Figure 11 Cumulative abnormal returns (CAR) of two Chinese timber firms for trade restrictions released on October 31, 2020, November 11, 2020, December 3, 2020, and December 24, 2020, respectively.

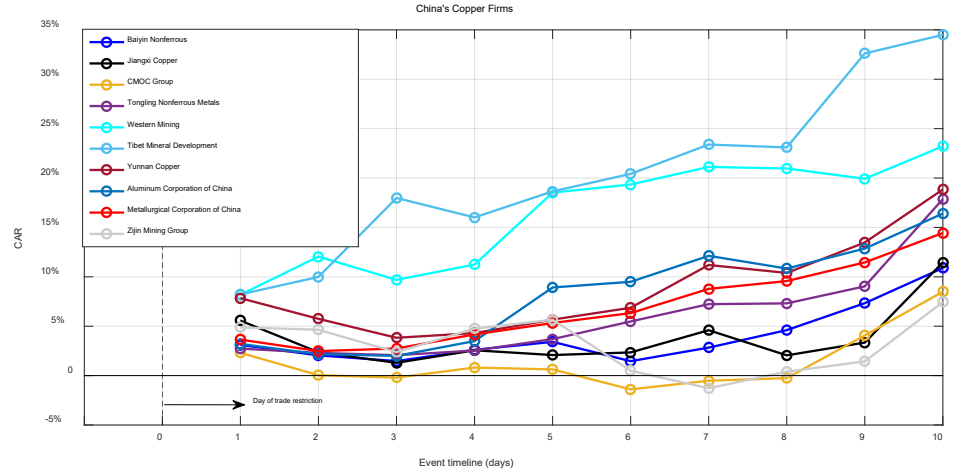

Figure 12 Cumulative abnormal returns (CAR) of ten Chinese copper firms for China's trade restriction released on November 2, 2020.

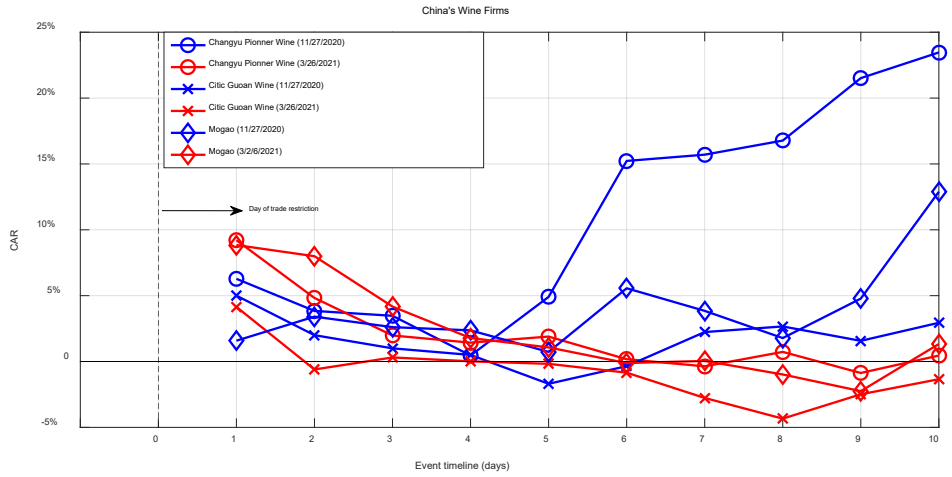

Figure 13 Cumulative abnormal returns (CAR) of three Chinese wine firms for trade restrictions released on December 27, 2020, and March 26, 2021, respectively.

Tables

Table 1 Timeline of China's trade restrictions on Australian commodities

Release date	Effective date	Commodity	Target firm	Source	Details
5/11/2020	5/11/2020	Beef	JBS Australia Northern Co-Operative Kilcoy Pastoral	General Administration of Customs	Suspension on importing beef from these firms.
5/18/2020	5/19/2020	Barley	Not applicable	Ministry of Commerce	An anti-dumping duty at a rate of 73.6% and a countervailing duty at a rate of 6.9% on barley.
8/26/2020	8/26/2020	Beef	John Dee Warwick	General Administration of Customs	Suspension on importing beef from this firm.
10/12/2020	10/12/2020	Coal	Not applicable	Medias	Chinese state-owned energy suppliers and steel mills received verbal notices to stop importing Australian coal.
10/16/2020	10/16/2020	Cotton	Not applicable	Medias	Chinese cotton mills were told to stop buying Australian cotton.
10/31/2020	10/31/2020	Timber	Not applicable	General Administration of Customs	Suspension on importing logs from Queensland.
11/1/2020	11/1/2020	Rock lobster	Not applicable	Medias	Tons of live lobsters were stranded at Chinese airports and clearance houses while waiting to be inspected by Customs officials.
11/2/2020	11/2/2020	Copper	Not applicable	Medias	Imports of copper from Australia were set to be banned by China
11/11/2020	11/11/2020	Timber	Not applicable	General Administration of Customs	Suspension on importing logs from Victoria.
11/27/2020	11/28/2020	Wine	Not applicable	Ministry of Commerce	An anti-dumping duty rate from 107.1% to 212.1%

					on wine.
12/3/2020	12/3/2020	Timber	Not applicable	General Administration of Customs	Suspension on importing logs from Tasmania and South Australia.
12/7/2020	12/7/2020	Beef	Meramist	General Administration of Customs	Suspension on importing beef from this firm.
12/24/2020	12/22/2020	Timber	Not applicable	General Administration of Customs	Suspension on importing logs from New South Wales and Western Australia.
3/26/2021	3/28/2021	Wine	Not applicable	Ministry of Commerce	The final ruling of the anti-dumping investigation on wine.

Table 2 Australian listed firms of interest with event dates

Commodity	Code	Firm	Event date
Barley	GNC	GrainCorp Ltd.	5/18/2020
Beef	ACC	Australian Agricultural Company Ltd.	5/11/2020
			8/26/2020
			12/7/2020
	BFC	Beston Global Food Company Ltd.	5/11/2020
			8/26/2020
			12/7/2020
	ELD	Elders Ltd.	5/11/2020
			8/26/2020
			12/7/2020
Coal	BHP	BHP Billiton Ltd.	10/12/2020
	NHC	New Hope Corporation Ltd.	
	RIO	RIO Tinto Group	
	S32	South32 Ltd.	
	SMR	Stanmore Resources Ltd.	
	SOL	Washington H. Soul Pattinson and Co. Ltd.	
	YAL	Yancoal Australia Ltd.	
Cotton	DBF	Duxton Broadacre Farms Ltd.	10/16/2020
Timber	MWY	MidWay Ltd.	10/31/2020
			11/11/2020
			12/3/2020
			12/24/2020
Copper	BHP	BHP Billiton Ltd.	11/2/2020
	OZL	OZ Minerals Ltd.	
	SFR	Sandfire Resources Ltd.	
	AIS	Aeris Resources Ltd.	
	HCH	Hot Chili Ltd.	
	CYM	Cyprium Metals Ltd.	
Wine	TWE	Treasury Wine Estates Ltd.	11/27/2020
			3/26/2021
	AVG	Australian Vintage Ltd.	11/27/2020
			3/26/2021

Table 3 China's listed firms of interest with event dates

Commodity	Code	Firm	Event date
Beef	300106	Western Animal Husbandry Ltd.	5/11/2020 8/26/2020 12/7/2020
Coal	600121	Zhengzhou Coal Ltd.	10/12/2020
	601001	Shanxi Coal Ltd.	
	600395	Panjiang Refined Coal Ltd.	
	000723	Meijin Energy Ltd.	
	600971	Hengyuan Coal Ltd.	
	601101	Haohua Energy Ltd.	
	000983	Shanxi Coking Coal Ltd.	
	601088	Shenhua Energy Ltd.	
	601666	Tianan Coal Mining Ltd.	
	600188	Yankuang Energy Ltd.	
	601225	Shaanxi Coal Ltd.	
	601898	China National Coal Ltd.	
Cotton	600359	Xinjiang Talimu Ltd.	5/18/2020
	600075	Xinjiang Tianye Ltd.	
	000726	Lu Thai Textile Ltd.	
	002042	Huafu Fashion Ltd.	
Timber	000592	Zhongfu Straits (pingtan) Ltd.	10/31/2020 11/11/2020 12/3/2020 12/24/2020
	000663	Yong'an Forestry Ltd.	10/31/2020 11/11/2020 12/3/2020 12/24/2020
Copper	601212	Baiyin Nonferrous Ltd.	11/2/2020
	600362	Jiangxi Copper Ltd.	
	603993	CMOC Group Ltd.	
	000630	Tongling Nonferrous Metals Ltd.	
	601168	Western Mining Ltd.	
	000762	Tibet Mineral Development Ltd.	
	000878	Yunnan Copper Ltd.	
	601600	Aluminum Corporation of China Ltd.	
	601618	Metallurgical Corporation of China Ltd.	
	601899	Zijin Mining Group Ltd.	
Wine	000869	Changyu Pionner Wine Ltd.	11/27/2020 3/26/2021
	600084	Citic Guoan Wine Ltd.	11/27/2020 3/26/2021
	600543	Mogao Ltd.	11/27/2020 3/26/2021

Table 4 Patell *t*-test results for Australian firms' cumulative abnormal returns

	Firm	Event date	CAR ($\tau_1 = 1$)									
			$\tau_2 = 1$	$\tau_2 = 2$	$\tau_2 = 3$	$\tau_2 = 4$	$\tau_2 = 5$	$\tau_2 = 6$	$\tau_2 = 7$	$\tau_2 = 8$	$\tau_2 = 9$	$\tau_2 = 10$
Barley	GNC	5/18/2020	-2.18%	-3.69%	-1.16%	1.12%	3.61%	-1.99%	2.35%	4.50%	6.45%	5.22%
Beef	ACC	5/11/2020	**-3.42%*****	**-5.83%****	**-5.21%****	-2.61%*	**-3.90%*****	-0.63%	2.47%	1.27%	-0.17%	-1.66%
	ACC	8/26/2020	0.52%	0.85%	1.49%	1.65%	1.69%	0.93%	0.98%	2.04%	1.75%	3.41%
	ACC	12/7/2020	0.45%	0.77%	0.09%	-0.57%	0.85%	2.42%	1.81%	3.31%	-1.43%	2.94%
	BFC	5/11/2020	-1.74%	-3.24%	-3.65%	-2.10%	-4.51%	-5.55%	-8.24%	-10.31%	-11.92%	-16.82%
	BFC	8/26/2020	-2.74%	-2.45%	-2.32%	-0.96%	2.19%	1.51%	2.51%	4.30%	5.14%	5.12%
	BFC	12/7/2020	-0.93%	-0.55%	-0.67%	4.57%	4.10%	-2.08%	2.17%	3.32%	-3.15%	-8.29%
	ELD	5/11/2020	-1.39%	-3.81%*	-1.86%	0.50%	8.85%	6.30%	3.13%	1.90%	1.97%	-0.94%
	ELD	8/26/2020	-0.75%	-1.24%	-1.96%	-1.31%	1.32%	1.39%	0.70%	-0.69%	-1.30%	-2.16%
	ELD	12/7/2020	1.10%	0.00%	0.64%	-1.88%	-1.42%	-1.51%	-2.95%	-4.14%	-1.65%	-3.66%
Coal	BHP	10/12/2020	-1.46%	-1.84%	-0.36%	-1.10%	-1.37%	-2.13%	-1.70%	-0.31%	-1.49%	-2.01%
	NHC	10/12/2020	**-8.61%*****	**-6.95%*****	**-6.81%*****	**-9.11%*****	**-13.83%*****	**-12.72%*****	**-12.09%*****	**-13.59%*****	**-13.20%*****	**-13.53%*****
	RIO	10/12/2020	-0.72%	-1.68%	-0.99%	-1.51%	-2.01%	-2.92%	-1.72%	-0.67%	-1.60%	-2.19%
	S32	10/12/2020	-2.68%	**-5.77%****	**-4.78%****	**-4.83%****	-1.76%	-0.89%	0.35%	0.89%	1.08%	0.91%
	SMR	10/12/2020	**-6.43%****	**-5.52%****	**-6.65%****	**-6.92%****	**-6.79%****	**-6.29%****	**-6.68%****	**-7.00%****	-5.26%*	-4.15%*
	SOL	10/12/2020	-0.19%	-0.75%	-1.06%	-0.70%	-0.34%	-0.45%	-2.03%	-1.70%	-1.68%	-2.98%
	YAL	10/12/2020	-1.39%	-2.03%	-2.08%	-3.73%	-5.70%	-5.22%	-4.00%	0.03%	1.26%	2.07%
Cotton	DBF	10/16/2020	-0.12%	-0.93%	-0.97%	-0.27%	-2.30%	-0.55%	0.51%	0.00%	-3.43%	-1.28%
Timber	MWY	10/31/2020	-2.74%	-5.29%	-5.03%	-6.02%	-3.26%	-2.43%	0.46%	-4.59%	-12.85%	-13.42%
	MWY	11/11/2020	-5.04%	**-13.29%*****	**-13.84%*****	**-11.39%*****	**-7.58%****	**-8.51%*****	**-9.42%*****	**-9.90%*****	**-10.52%*****	**-9.52%*****
	MWY	12/3/2020	-1.51%	-2.35%	-2.97%	-5.31%	-2.99%	-3.31%	-4.25%	-3.93%	-5.52%	-6.41%
	MWY	12/24/2020	1.55%	1.65%	2.32%	2.22%	0.39%	0.59%	-1.94%	-4.10%	-5.98%	1.30%
Copper	BHP	11/2/2020	-0.53%	-0.38%	-1.87%	-1.38%	0.22%	0.11%	0.54%	0.23%	-1.38%	-0.73%
	OZL	11/2/2020	-1.64%	-1.64%	-2.19%	-2.05%	-2.29%	-5.30%*	**-10.20%*****	**-9.29%****	**-8.89%****	**-9.26%****
	SFR	11/2/2020	**-9.47%*****	**-7.24%*****	**-8.80%*****	**-8.27%*****	**-8.16%*****	**-9.52%*****	**-11.44%*****	**-13.47%*****	**-13.30%*****	**-12.80%*****

	AIS	11/2/2020	-2.37%	-3.71%	-5.43%	-0.73%	-0.51%	-11.84%	-16.49%	-18.71%	-10.72%	-5.21%
	HCH	11/2/2020	-0.09%	-0.59%	-4.20%	0.75%	-2.36%	2.36%	4.77%	3.46%	1.56%	0.12%
	CYM	11/2/2020	-5.13%	-0.19%	-2.38%	2.74%	3.10%	3.51%	4.27%	9.63%	8.60%	7.14%
Wine	TWE	11/27/2020	**-7.62%****	**-11.52%*****	**-8.90%*****	**-7.46%*****	**-3.88%****	**-2.51%****	-1.91%*	-1.93%*	**-3.35%****	0.59%
	TWE	3/26/2021	-1.20%	-3.19%	-4.02%	-4.35%	-4.98%	-3.83%	-4.49%	-6.86%	-6.74%	-6.35%
	AVG	11/27/2020	-1.95%	-1.48%	1.27%	1.13%	1.26%	1.26%	1.24%	1.24%	1.70%	1.19%
	AVG	3/26/2021	-1.05%	1.48%	2.09%	2.79%	2.13%	3.52%	2.80%	3.48%	2.39%	2.18%

Note: ***p<0.01, **p<0.05, *p<0.1. Values in bold are significant at 0.05 level.

Table 5 Patell *t*-test results for Chinese firms' cumulative abnormal returns

	Firm	**Event date**	**CAR ($\tau_1 = 1$)**									
			$\tau_2 = 1$	$\tau_2 = 2$	$\tau_2 = 3$	$\tau_2 = 4$	$\tau_2 = 5$	$\tau_2 = 6$	$\tau_2 = 7$	$\tau_2 = 8$	$\tau_2 = 9$	$\tau_2 = 10$
Beef	300106	5/11/2020	**3.00%*****	**2.10%*****	**4.00%*****	**7.41%*****	**17.16%****	**16.57%****	**16.93%****	**17.80%****	**20.52%*****	**21.31%*****
	300106	8/26/2020	0.63%	6.27%	1.51%	4.66%	**5.52%*****	2.57%	-1.63%	4.62%	**8.23%*****	**8.34%*****
	300106	12/7/2020	1.17%	3.21%	0.46%	8.10%	11.89%	4.61%	**16.65%****	14.68%*	**13.08%****	**15.27%*****
Coal	600121	10/12/2020	0.83%	1.91%	3.07%	6.06%	2.24%	1.98%	1.25%	1.34%	-0.60%	0.38%
	601001	10/12/2020	0.20%	1.08%	2.81%	6.80%*	5.16%	3.12%	1.75%	2.03%	2.75%	-2.18%
	600395	10/12/2020	0.12%	0.55%	3.13%	6.41%*	4.78%	1.67%	2.13%	0.63%	-0.21%	0.33%
	000723	10/12/2020	0.28%	1.53%	1.45%	1.79%	1.24%	1.49%	-0.21%	-0.79%	-0.35%	1.49%
	600971	10/12/2020	1.12%	2.71%	1.24%	0.89%	-1.57%	-1.89%	-2.85%	-1.54%	-1.83%	1.40%
	601101	10/12/2020	0.37%	0.82%	1.70%	3.97%	2.22%	3.12%	3.20%	3.24%	3.48%	1.99%
	000983	10/12/2020	0.65%	-0.15%	6.80%	**15.23%*****	**8.05%****	**8.08%****	5.82%*	3.50%	4.33%	5.80%
	601088	10/12/2020	0.22%	0.06%	0.88%	2.65%	2.15%	1.52%	1.33%	2.25%	2.31%	2.40%
	601666	10/12/2020	1.09%	2.00%	-1.37%	0.23%	-0.60%	-1.93%	-1.86%	-1.81%	-1.32%	-1.44%
	600188	10/12/2020	0.11%	1.04%	1.82%	3.93%	0.23%	-1.26%	-2.23%	-1.72%	-1.27%	0.37%
	601225	10/12/2020	**3.00%****	**2.13%****	**2.23%****	**5.04%*****	**3.68%****	**3.21%****	2.39%*	1.98%	2.08%	2.45%
	601898	10/12/2020	0.44%	0.22%	1.89%	4.14%	2.87%	1.86%	1.90%	2.36%	3.15%	2.95%
Cotton	600359	5/18/2020	1.01%	0.83%	3.14%	4.55%	3.30%	1.84%	-0.58%	-1.39%	-2.13%	-1.82%
	600075	5/18/2020	0.35%	1.27%	3.91%	5.41%	6.04%	4.34%	4.93%	1.87%	0.45%	-1.98%

	000726	5/18/2020	**3.01%*****	0.16%	0.46%	-2.13%	-2.74%	-1.63%	-2.77%	-2.68%	-3.58%	-4.10%
	002042	5/18/2020	**4.38%*****	**2.80%*****	0.44%	-1.18%	0.38%	-1.16%	0.93%	-0.12%	-2.34%	-2.21%
Timber	000592	10/31/2020	1.41%	-1.05%	-1.31%	-2.14%	-1.82%	-3.09%	-3.23%	-1.92%	-1.60%	4.19%
	000592	11/11/2020	1.27%	1.52%	**7.31%*****	6.09%	**12.71%*****	**9.92%****	8.19%*	6.53%*	5.96%	6.08%
	000592	12/3/2020	1.59%	1.47%	3.84%	-1.14%	-2.34%	-0.62%	3.35%	-1.61%	-3.78%	-4.01%
	000592	12/24/2020	0.81%	0.46%	3.63%	1.36%	-0.64%	-1.14%	-4.47%	-8.46%	-12.76%	-11.95%
	000663	10/31/2020	0.69%	0.75%	-0.35%	-0.55%	0.04%	-0.49%	0.29%	0.67%	0.79%	0.80%
	000663	11/11/2020	0.39%	0.52%	0.52%	-0.63%	-0.22%	-0.26%	-0.42%	-1.26%	-0.35%	-0.35%
	000663	12/3/2020	0.13%	0.90%	1.66%	2.16%	2.19%	2.14%	3.00%	2.47%	1.23%	1.15%
	000663	12/24/2020	**5.03%****	**6.11%****	3.71%	4.05%	2.68%	2.12%	1.63%	1.01%	-1.16%	-0.49%
Copper	601212	11/2/2020	3.10%	2.05%	1.47%	2.61%	3.42%	1.46%	2.83%	4.61%	7.33%	10.89%
	600362	11/2/2020	**5.57%*****	2.36%*	**1.29%****	2.56%*	2.08%*	2.35%*	4.59%**	2.05%*	3.35%*	**11.46%*****
	603993	11/2/2020	2.31%	0.04%	-0.20%	0.82%	0.63%	-1.39%	-0.52%	-0.26%	4.07%	8.50%
	000630	11/2/2020	**2.73%****	**2.30%****	**2.07%****	**2.54%****	3.69%*	**5.48%****	**7.23%*****	**7.31%*****	**9.03%*****	**17.87%*****
	601168	11/2/2020	**8.19%*****	**12.05%*****	**9.69%*****	**11.24%*****	**18.53%*****	**19.35%*****	**21.12%*****	**20.97%*****	**19.92%*****	**23.22%*****
	000762	11/2/2020	**8.22%*****	**9.99%*****	**17.98%*****	**16.01%*****	**18.65%*****	**20.42%*****	**23.39%*****	**23.10%*****	**32.61%*****	**34.49%*****
	000878	11/2/2020	**7.84%*****	**5.75%*****	**3.83%*****	**4.30%*****	**5.67%*****	**6.87%*****	**11.20%*****	**10.39%*****	**13.47%*****	**18.84%*****
	601600	11/2/2020	**3.20%*****	**2.17%****	2.00%*	**3.50%*****	**8.92%*****	**9.49%*****	**12.12%*****	**10.84%*****	**12.86%*****	**16.40%*****
	601618	11/2/2020	**3.65%*****	**2.48%****	2.74%*	**4.17%****	**5.33%*****	**6.33%*****	**8.78%*****	**9.57%*****	**11.46%*****	**14.44%*****
	601899	11/2/2020	4.88%*	4.64%*	2.37%	4.76%*	**5.65%****	0.49%	-1.28%	0.40%	1.44%	**7.45%****
Wine	000869	11/27/2020	**6.28%*****	**3.84%*****	**3.47%*****	0.46%	**4.91%*****	**15.23%*****	**15.70%*****	**16.77%*****	**21.52%*****	**23.46%*****
	000869	3/26/2021	**9.21%*****	**4.82%*****	**1.98%****	1.43%*	**1.89%****	0.17%*	-0.37%	0.73%*	-0.87%	0.45%*
	600084	11/27/2020	5.00%	2.00%	1.00%	0.50%	-1.69%	-0.35%	2.24%	2.66%	1.57%	2.94%
	600084	3/26/2021	**4.15%****	-0.60%	0.31%	0.01%	-0.18%	-0.85%	-2.77%	-4.34%	-2.49%	-1.34%
	600543	11/27/2020	1.58%	3.41%	2.61%	2.36%	0.73%	5.56%	3.84%	1.78%	4.78%	12.89%
	600543	3/26/2021	**8.84%*****	**7.99%*****	4.17%*	1.78%	1.07%	-0.12%	0.04%	-0.98%	-2.25%	1.33%

Note: $^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.1$. Values in bold are significant at 0.05 level.

Table 6 Pooled OLS results of Australian firms' cumulative abnormal returns

	Model 1 $(\tau_1 = 1, \tau_2 = 4)$	**Model 2** $(\tau_1 = 1, \tau_2 = 7)$	**Model 3** $(\tau_1 = 1, \tau_2 = 10)$
$Intercept$	-0.007	-0.025	-0.045***
	(0.018)	(0.021)	(0.017)
CAR_{t-1}	0.797***	0.851***	0.922***
	(0.081)	(0.059)	(0.044)
$Trading\ volume$	1.461	1.744*	0.809
	(1.433)	(0.941)	(0.904)
$Trading\ volume_{t-1}$	-2.264**	-1.577**	-0.635
	(1.116)	(0.649)	(0.716)
$Media\ coverage$	-0.001**	-0.001**	-0.0004
	(0.0005)	(0.0004)	(0.0003)
$Media\ coverage_{t-1}$	-0.0009***	-0.0008***	-0.0002
	(0.0003)	(0.0003)	(0.003)
$Imports\ dependence$	0.316***	0.189**	0.204***
	(0.081)	(0.083)	(0.067)
$Exports\ dependence$	-0.149***	-0.057**	-0.053**
	(0.038)	(0.028)	(0.023)
Observations	128	224	320
Adjusted R^2	0.872	0.812	0.831
Day Dummies	Yes	Yes	Yes
Month Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes

Note: ***p<0.01, **p<0.05, *p<0.1.

Table 7 Pooled OLS results of Chinese firms' cumulative abnormal returns

	Model 1 $(\tau_1 = 1, \tau_2 = 4)$	**Model 2** $(\tau_1 = 1, \tau_2 = 7)$	**Model 3** $(\tau_1 = 1, \tau_2 = 10)$
$Intercept$	0.056	0.068	0.018
	(0.068)	(0.074)	(0.053)
CAR_{t-1}	0.821***	0.758***	0.878***
	(0.176)	(0.091)	(0.059)
$Trading\ volume$	0.299***	0.244***	0.283***
	(0.065)	(0.047)	(0.051)
$Trading\ volume_{t-1}$	-0.271***	-0.231***	-0.271***
	(0.063)	(0.058)	(0.061)
$Media\ coverage$	0.0025***	0.0017**	0.0003
	(0.0008)	(0.0007)	(0.0002)
$Media\ coverage_{t-1}$	0.0018**	0.0014**	0.0005
	(0.0008)	(0.0005)	(0.0006)
$Imports\ dependence$	-0.057*	-0.075***	-0.085***
	(0.032)	(0.024)	(0.039)
$Exports\ dependence$	-0.035	-0.031	-0.057*

	(0.061)	(0.041)	(0.033)
Observations	188	329	470
Adjusted R^2	0.784	0.775	0.751
Day Dummies	Yes	Yes	Yes
Month Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes

Note: $^{***}p<0.01$, $^{**}p<0.05$, $^{*}p<0.1$.

Table 8 Importance and substitutability of top 20 Australian commodities exports to China in 2019

Commodity	Importance to Australia		Substitutability for China			
	Australian exports to China	China's share of Australian exports	Australia's share of China's imports	Australia's rank in China's imports	China's share in global imports	Top exporters other than Australia
Iron ores	54.9	82.60%	61.10%	1	70.00%	Brazil (22%), South Africa (4%)
Coal	10.58	21.30%	49.30%	1	14.20%	Mongolia (16%), Indonesia (15%)
Gold	2.08	12.80%	17.10%	2	13.30%	Switzerland (35%), South Africa (14%)
Wool	1.7	76.50%	74.20%	1	64.40%	New Zealand (8%), South Africa (7%)
Beef	1.6	33.10%	22.50%	3	31.00%	Brazil (26%), Argentina (23%)
Copper ores	1.59	36.80%	4.90%	5	56.80%	Chile (35%), Peru (27%)
Aluminum ores	1.07	97.60%	31.00%	2	71.80%	Guinea (49%), Indonesia (14%)
Copper	0.98	36.40%	3.90%	8	37.90%	Chile (30%), Kazakhstan (8%)
Zinc ores	0.94	55.00%	36.30%	1	25.00%	Peru (19%), Spain (7%)
Medicaments	0.92	47.90%	4.10%	8	5.40%	Germany (26%), France (10%)
Mineral substances	0.9	92.40%	80.90%	1	46.60%	USA (5%), Canada (4%)
Mutton	0.85	28.20%	41.70%	2	24.60%	New Zealand (56%), Uruguay (2%)
Wine	0.79	38.60%	35.40%	1	6.70%	France (29%), Chile (14%)
Cotton	0.77	70.90%	22.90%	2	26.90%	Brazil (27%), USA (20%)
Malt	0.71	68.80%	4.90%	6	26.40%	Netherlands (29%), New Zealand (23%)
Petroleum oils	0.67	15.90%	0.50%	22	22.10%	Saudi Arabia (17%), Russia (15%)
Fuelwood	0.63	60.70%	33.40%	2	19.80%	Viet Nam (44%), Chile (12%)
Crustaceans	0.53	86.60%	7.80%	4	24.10%	Ecuador (26%), India (13%)
Timber	0.43	94.40%	6.20%	5	55.20%	New Zealand (24%), Russia (10%)
Barley	0.41	56.60%	42.40%	1	25.20%	Canada (26%), France (18%)

Note: HS commodity codes in the UN Comtrade database are 2601 (iron ore), 2701 (coal), 7108 (gold), 5101 (wool), 0202 (beef), 2603 (copper ores), 2606 (aluminum ores), 7403 (copper), 2608 (zinc ores), 3004 (medicaments), 2530 (mineral substances), 0204 (mutton), 2204 (wine), 5201 (cotton), 1901 (malt), 2709 (petroleum oils), 4401 (fuelwood), 0306 (crustaceans), 4403 (timber), and 1003 (barley). Australian exports to China are in US $billion.

Appendix

for

When China Strikes: Quantifying Australian Companies' Stock Price Responses to China's Trade Restrictions

Table A.1 Robustness test results for Australian firms with the virtual release date of the trade restrictions

	Firm	Event date	CAR ($\tau_1 = 1$)									
			$\tau_2 = 1$	$\tau_2 = 2$	$\tau_2 = 3$	$\tau_2 = 4$	$\tau_2 = 5$	$\tau_2 = 6$	$\tau_2 = 7$	$\tau_2 = 8$	$\tau_2 = 9$	$\tau_2 = 10$
Beef	ACC	5/11/2020	2.00%	1.84%	2.87%	-0.94%	-0.66%	0.77%	2.67%	1.19%	0.85%	4.14%
Coal	NHC	10/12/2020	1.63%	1.37%	-0.41%	2.98%	3.55%	2.14%	0.65%	2.45%	2.91%	1.44%
	S32	10/12/2020	0.81%	0.08%	0.37%	1.40%	2.09%	3.67%	2.56%	1.56%	-0.93%	-0.21%
	SMR	10/12/2020	0.77%	5.11%	6.05%	3.86%	4.42%	-0.60%	-0.13%	0.67%	0.07%	1.38%
Timber	MWY	11/11/2020	0.06%	2.25%	1.73%	1.12%	2.38%	2.24%	1.58%	2.19%	2.93%*	2.45%*
Copper	OZL	11/2/2020	0.53%	1.36%	-0.02%	0.58%	1.22%	1.40%	-0.20%	0.16%	0.12%	1.28%
	SFR	11/2/2020	0.43%	1.69%	4.20%	3.96%	3.72%	4.54%	1.73%	3.06%	3.27%	1.50%
Wine	TWE	11/27/2020	1.10%	3.03%	4.57%	5.30%	0.76%	-2.78%	-1.64%	-4.95%	-2.07%	-1.75%

Note: ***p<0.01, **p<0.05, *p<0.1.

Table A.2 Robustness test results for Chinese firms with the virtual release date of the trade restrictions

	Firm	Event date	CAR ($\tau_1 = 1$)									
			$\tau_2 = 1$	$\tau_2 = 2$	$\tau_2 = 3$	$\tau_2 = 4$	$\tau_2 = 5$	$\tau_2 = 6$	$\tau_2 = 7$	$\tau_2 = 8$	$\tau_2 = 9$	$\tau_2 = 10$
Beef	300106	5/11/2020	0.28%	0.14%	1.64%	-2.15%	-2.15%	0.11%	3.49%	7.16%	2.70%	-0.64%
	300106	8/26/2020	1.73%	1.63%	2.49%	1.65%	1.09%	0.16%	0.34%	-0.45%	-1.34%	-0.86%
	300106	12/7/2020	1.08%	3.44%	2.36%	1.58%	1.04%	1.47%	0.41%	0.32%	0.73%	0.96%
Coal	000983	10/12/2020	-0.14%	0.56%	1.72%	4.72%**	7.62%**	5.96%**	4.88%	3.49%	6.23%	9.22%
	601225	10/12/2020	-0.53%	1.58%	0.73%	2.11%	3.29%	2.29%	2.98%	3.18%	4.48%	5.30%
Cotton	000726	5/18/2020	0.34%	-0.38%	-0.60%	-0.18%	-0.02%	-0.52%	-0.70%	-2.27%	-2.11%	-3.06%
	002042	5/18/2020	-0.31%	2.20%	2.94%	1.35%	1.91%	1.90%	0.68%	1.38%	1.14%	0.99%
Timber	000592	11/11/2020	-1.40%	-1.52%	-1.03%	-0.79%	-0.69%	-0.57%	-0.24%	-0.34%	-0.88%	-0.86%
	002679	12/24/2020	-0.02%	0.75%	-0.07%	0.12%	-1.50%	-1.51%	-0.98%	-1.49%	-1.37%	-0.18%
	000663	12/24/2020	0.28%	-1.17%	-1.72%	-1.00%	-1.93%	-3.94%	-2.46%	-2.20%	-1.21%	-0.29%
Copper	600362	11/2/2020	-1.85%	-2.27%	-2.81%	-2.45%	-1.96%	-0.73%	-0.03%	-0.54%	-0.53%	0.62%
	000630	11/2/2020	-0.60%	-2.63%	-2.59%	-2.83%	-2.67%	-1.57%	-2.53%	-2.09%	-2.65%	-2.53%
	601168	11/2/2020	-1.20%	-2.47%	-2.49%	-3.38%	-1.17%	-2.20%	-1.05%	-0.98%	-0.76%	-0.34%
	000762	11/2/2020	-0.30%	1.44%	3.22%	0.25%	-2.34%	2.56%	2.55%	2.13%	0.00%	-2.08%
	000878	11/2/2020	-0.65%	-2.69%	-3.74%	-4.31%	-3.94%	-1.74%	-3.23%*	-1.09%	-1.52%	-1.82%
	601600	11/2/2020	-0.87%	-1.73%	-2.63%	-2.30%	-1.27%	-0.31%	-0.78%	-1.28%	-1.15%	-0.12%
	601618	11/2/2020	-0.43%	-1.69%	-1.93%	-2.66%	-1.74%	-1.18%	-2.17%	-1.53%	-2.10%	0.05%
	601899	11/2/2020	1.26%	0.48%	-0.27%	1.02%	1.85%	4.22%	4.77%	7.78%	8.49%	9.36%
Wine	000869	11/27/2020	1.63%	2.17%	-1.03%	2.41%	3.84%	4.93%	2.02%	3.92%	3.46%	2.76%
	000869	3/26/2021	-0.60%	0.16%	-1.44%	-1.59%	2.78%	3.14%	2.77%	2.26%	2.15%	-0.14%
	600084	3/26/2021	-0.16%	1.02%	1.72%	3.65%*	2.80%	2.67%	1.88%	2.46%	2.35%	1.63%
	600543	3/26/2021	2.04%	2.17%	0.79%	0.27%	5.40%	5.37%	3.79%	1.35%	2.78%	2.36%

Note: ***p<0.01, **p<0.05, *p<0.1.

Table A.3 Robustness test results for Australian firms using the ARDL specification of MM without GARCH

	Firm	Event date	CAR ($\tau_1 = 1$)									
			$\tau_2 = 1$	$\tau_2 = 2$	$\tau_2 = 3$	$\tau_2 = 4$	$\tau_2 = 5$	$\tau_2 = 6$	$\tau_2 = 7$	$\tau_2 = 8$	$\tau_2 = 9$	$\tau_2 = 10$
Barley	GNC	5/18/2020	-2.51%	-4.34%	-1.74%	1.93%	3.96%	-2.05%	3.17%	3.71%	6.94%	5.69%
Beef	ACC	5/11/2020	-3.30%	-6.46%	-5.02%	-3.01%	-4.63%	-1.20%	3.26%	0.41%	-0.69%	-2.55%
	ACC	8/26/2020	0.40%	-0.12%	2.28%	1.04%	0.88%	0.54%	0.89%	1.24%	2.74%	3.07%
	ACC	12/7/2020	0.04%	-0.11%	-0.31%	-1.48%	0.86%	2.94%	2.07%	2.49%	-2.27%	3.49%
	BFC	5/11/2020	-0.93%	-3.17%	-4.43%	-1.45%	-4.83%	-5.96%	-7.75%	-11.29%	-12.82%	-16.48%
	BFC	8/26/2020	-2.53%	-2.40%	-1.86%	-0.55%	2.75%	1.09%	2.90%	4.41%	4.93%	4.24%
	BFC	12/7/2020	-0.37%	-0.87%	-0.45%	5.05%	3.31%	-2.82%	2.27%	3.29%	-2.37%	-7.69%
	ELD	5/11/2020	-0.92%	-4.71%	-2.71%	-0.32%	9.45%	7.19%	3.50%	1.16%	2.42%	-1.72%
	ELD	8/26/2020	-0.52%	-0.96%	-2.30%	-1.00%	1.82%	1.56%	1.18%	-1.22%	-0.83%	-1.22%
	ELD	12/7/2020	1.83%	-0.83%	0.37%	-2.14%	-1.05%	-1.31%	-2.37%	-4.40%	-2.24%	-4.49%
Coal	BHP	10/12/2020	-0.92%	-2.43%	-0.58%	-1.00%	-1.91%	-1.85%	-1.73%	-1.01%	-0.93%	-2.81%
	NHC	10/12/2020	-9.02%***	-7.48%***	-6.75%***	-9.93%***	-14.02%***	-13.51%***	-12.87%***	-13.02%***	-13.62%***	-13.32%***
	RIO	10/12/2020	-0.21%	-1.82%	-0.60%	-0.99%	-2.14%	-2.61%	-2.50%	0.20%	-2.23%	-2.66%
	S32	10/12/2020	-2.08%	-5.79%***	-4.24%**	-5.04%**	-2.21%	-1.82%	0.70%	0.75%	0.98%	1.13%
	SMR	10/12/2020	-7.31%***	-5.89%***	-6.10%***	-6.53%***	-7.54%***	-7.03%***	-7.50%***	-7.98%***	-5.41%**	-3.84%*
	SOL	10/12/2020	-0.26%	-0.69%	-1.84%	-0.44%	-1.09%	-1.18%	-2.83%	-2.42%	-2.34%	-3.59%
	YAL	10/12/2020	-1.76%	-2.40%	-2.64%	-4.23%	-4.91%	-4.81%	-3.89%	-0.60%	0.68%	1.22%
Cotton	DBF	10/16/2020	0.71%	-0.52%	-0.85%	-0.64%	-2.97%	-0.31%	1.49%	-0.66%	-3.91%	-1.49%
Timber	MWY	10/31/2020	-3.59%	-4.92%	-5.23%	-5.05%	-3.46%	-2.19%	-0.23%	-4.83%	-13.53%	-12.90%
	MWY	11/11/2020	-4.30%	-13.59%***	-13.47%***	-11.80%***	-7.52%***	-7.85%***	-9.23%***	-10.23%***	-10.92%***	-9.61%***
	MWY	12/3/2020	-1.66%	-2.63%	-2.85%	-4.82%	-3.14%	-3.45%	-5.00%	-4.88%	-5.94%	-6.77%
	MWY	12/24/2020	1.86%	2.56%	3.19%	2.14%	-0.13%	1.12%	-1.42%	-3.62%	-5.49%	0.51%
Copper	BHP	11/2/2020	-0.17%	-0.45%	-2.45%	-2.18%	0.87%	-0.54%	-0.13%	0.56%	-0.59%	-0.70%
	OZL	11/2/2020	-1.23%	-2.33%	-1.28%	-1.97%	-1.93%	-6.23%**	-9.58%**	-8.79%**	-9.65%**	-9.21%**
	SFR	11/2/2020	-9.82%***	-7.15%***	-9.00%***	-8.44%***	-8.80%***	-10.01%***	-12.40%***	-12.62%***	-12.99%***	-11.93%***

	AIS	11/2/2020	-3.04%	-2.87%	-4.84%	-0.58%	-0.63%	-12.32%	-15.99%	-19.25%	-11.59%	-4.68%
	HCH	11/2/2020	-0.25%	-0.16%	-3.92%	0.59%	-2.58%	2.99%	4.40%	4.09%	2.14%	0.82%
	CYM	11/2/2020	-5.12%	0.08%	-1.48%	2.63%	2.22%	4.24%	4.53%	9.34%	9.59%	6.59%
Wine	TWE	11/27/2020	-7.32%***	-11.31%***	-9.13%***	-8.18%***	-4.83%***	-2.67%**	-2.54%**	-1.48%	-3.61%**	1.27%
	TWE	3/26/2021	-0.73%	-3.05%	-4.67%	-3.44%	-5.45%	-2.98%	-5.04%	-7.11%	-7.56%	-6.07%
	AVG	11/27/2020	-2.59%	-2.39%	1.72%	0.82%	1.58%	1.03%	1.49%	0.28%	2.52%	1.79%
	AVG	3/26/2021	-0.56%	2.11%	1.86%	3.02%	2.28%	3.58%	2.35%	2.98%	2.29%	1.64%

Note: ***p<0.01, **p<0.05, *p<0.1.

Table A.4 Robustness test results for Chinese firms using the ARDL specification of MM without GARCH

	Firm	Event date	CAR ($\tau_1 = 1$)									
			$\tau_2 = 1$	$\tau_2 = 2$	$\tau_2 = 3$	$\tau_2 = 4$	$\tau_2 = 5$	$\tau_2 = 6$	$\tau_2 = 7$	$\tau_2 = 8$	$\tau_2 = 9$	$\tau_2 = 10$
Beef	300106	5/11/2020	3.43%***	1.94%***	4.13%***	7.46%***	16.75%**	15.98%**	17.26%**	18.12%***	20.43%***	20.78%***
	300106	8/26/2020	0.73%	5.88%	1.78%	4.70%	5.22%***	3.07%	-1.32%	5.08%	7.71%***	7.96%***
	300106	12/7/2020	1.45%	3.45%	0.79%	8.10%	11.80%	4.74%	17.08%**	14.88%*	13.11%**	15.03%***
Coal	600121	10/12/2020	1.07%	1.77%	3.15%	6.53%	2.65%	2.46%	1.78%	1.72%	-1.20%	-0.22%
	601001	10/12/2020	-0.30%	0.79%	2.24%	6.71%	4.97%	3.17%	2.26%	1.79%	2.56%	-1.75%
	600395	10/12/2020	-0.07%	0.12%	3.14%	6.84%	4.64%	1.90%	2.28%	0.57%	-0.24%	0.87%
	000723	10/12/2020	-0.22%	1.27%	1.39%	1.90%	1.69%	1.45%	-0.29%	-0.49%	-0.39%	1.92%
	600971	10/12/2020	1.08%	2.71%	1.22%	0.57%	-2.07%	-2.41%	-2.38%	-1.86%	-1.40%	1.65%
	601101	10/12/2020	0.82%	1.35%	1.27%	3.84%	2.80%	3.29%	3.68%	3.22%	2.90%	2.14%
	000983	10/12/2020	0.33%	-0.12%	7.07%	15.36%***	8.16%**	8.00%**	5.51%*	3.41%	3.74%	5.93%
	601088	10/12/2020	0.77%	-0.43%	0.32%	3.11%	1.85%	0.93%	1.71%	1.82%	2.77%	1.91%
	601666	10/12/2020	0.91%	2.11%	-1.27%	0.43%	-0.42%	-2.01%	-2.29%	-1.51%	-1.63%	-1.26%
	600188	10/12/2020	0.54%	0.54%	2.39%	3.37%	0.63%	-0.86%	-2.77%	-1.66%	-0.74%	0.16%
	601225	10/12/2020	3.37%**	2.25%**	2.58%**	5.40%***	3.14%**	2.95%**	2.57%*	1.97%	2.65%	2.75%
	601898	10/12/2020	0.52%	-0.02%	1.60%	4.60%	2.81%	2.24%	1.42%	2.79%	2.58%	3.43%
Cotton	600359	5/18/2020	1.49%	0.86%	2.68%	4.16%	3.55%	2.24%	-1.14%	-1.08%	-1.58%	-2.01%
	600075	5/18/2020	0.52%	1.08%	3.57%	5.75%	6.31%	4.07%	5.03%	1.78%	-0.04%	-2.55%
	000726	5/18/2020	3.00%	-0.11%	0.27%	-2.39%	-3.13%	-1.75%	-2.53%	-3.04%	-3.38%	-4.17%
	002042	5/18/2020	4.30%***	2.41%**	0.07%	-1.04%	0.10%	-1.09%	1.46%	0.14%	-2.12%	-1.66%
Timber	000592	10/31/2020	1.74%	-0.92%	-0.77%	-2.67%	-2.10%	-2.51%	-2.90%	-1.95%	-1.38%	4.09%
	000592	11/11/2020	1.13%	1.18%	7.17%***	5.53%	12.68%***	9.72%**	8.76%*	6.60%*	6.38%	5.97%
	000592	12/3/2020	1.54%	1.86%	4.43%	-1.11%	-1.83%	-0.33%	3.43%	-1.05%	-3.39%	-3.46%
	000592	12/24/2020	0.99%	0.32%	3.60%	1.85%	-1.22%	-1.55%	-4.50%	-8.41%	-13.29%	-11.76%
	002679	10/31/2020	1.14%	1.35%	3.39%	4.59%	2.98%	0.21%	-0.19%	1.13%	2.79%	2.19%
	002679	11/11/2020	1.87%	3.07%	1.35%	2.69%	2.79%	0.48%	1.65%	-3.93%	-5.27%	-5.47%

	002679	12/3/2020	0.47%	0.02%	0.77%	1.16%	1.98%	1.19%	2.74%	2.38%	0.70%	-1.67%
	002679	12/24/2020	1.17%	9.53%	19.62%	10.53%	6.15%	7.03%	2.14%	2.93%	-5.82%	-10.14%
	000663	10/31/2020	0.42%	0.61%	0.09%	-0.65%	-0.27%	-0.37%	0.27%	1.15%	1.31%	1.18%
	000663	11/11/2020	0.64%	0.81%	1.00%	-1.15%	-0.42%	-0.85%	-0.03%	-1.25%	-0.51%	-0.68%
	000663	12/3/2020	0.17%	0.65%	1.14%	1.66%	1.67%	2.03%	2.55%	2.40%	1.71%	0.97%
	000663	12/24/2020	4.57%**	6.19%**	4.16%	3.87%	2.13%	1.69%	1.12%	1.30%	-1.21%	-0.29%
Copper	601212	11/2/2020	3.34%	2.14%	1.62%	3.06%	3.61%	1.91%	2.79%	4.18%	6.81%	11.15%
	600362	11/2/2020	5.34%***	2.57%*	1.47%**	2.60%*	2.34%*	2.36%*	4.58%**	2.05%*	3.87%*	11.33%***
	603993	11/2/2020	1.85%	-0.27%	0.02%	1.23%	1.19%	-1.73%	-0.21%	-0.16%	3.95%	8.51%
	000630	11/2/2020	2.72%**	2.48%**	2.36%**	2.30%**	3.20%*	5.87%***	7.10%***	7.64%***	8.65%***	17.40%***
	601168	11/2/2020	8.68%***	12.50%***	10.29%***	11.68%***	17.97%***	19.40%***	21.72%***	20.98%***	20.37%***	22.70%***
	000762	11/2/2020	8.81%***	10.50%***	18.06%***	15.93%***	18.46%***	20.68%***	22.81%***	22.95%***	33.12%***	34.55%***
	000878	11/2/2020	7.81%***	5.75%***	3.60%***	4.84%***	6.25%***	6.89%***	11.79%***	10.34%***	13.38%***	18.50%***
	601600	11/2/2020	2.83%***	2.57%**	2.27%*	3.54%***	9.31%***	9.50%***	12.18%***	10.50%***	12.97%***	15.97%***
	601618	11/2/2020	3.11%***	2.70%**	2.87%*	3.83%**	5.22%***	6.49%***	8.85%***	9.12%***	11.06%***	13.84%***
	601899	11/2/2020	4.78%*	4.63%*	1.96%	4.96%**	5.07%***	0.03%	-0.74%	0.97%	0.88%	7.44%**
Wine	000869	11/27/2020	6.72%***	3.53%***	3.87%***	0.84%***	5.06%***	14.63%***	15.56%***	17.26%***	21.74%***	23.31%***
	000869	3/26/2021	9.37%***	4.51%***	2.07%**	2.01%*	2.31%**	-0.09%	-0.15%	0.56%*	-0.29%	0.35%
	600084	11/27/2020	4.70%	2.37%	0.50%	0.54%	-1.33%	-0.06%	1.81%	2.59%	1.39%	2.91%
	600084	3/26/2021	4.25%***	-1.03%	0.80%	0.18%	-0.58%	-0.77%	-2.25%	-4.00%	-2.27%	-1.38%
	600543	11/27/2020	1.29%	3.49%	2.31%	2.14%	1.22%	6.02%	4.19%	2.29%	4.39%	12.91%
	600543	3/26/2021	8.99%***	8.49%***	4.37%	1.65%	1.36%	0.26%	0.16%	-1.48%	-1.74%	0.79%

Note: ***p<0.01, **p<0.05, *p<0.1.

Table A.5 Robustness test results for Australian firms with the shortened estimation window

	Firm	Event date	CAR ($\tau_1 = 1$)									
			$\tau_2 = 1$	$\tau_2 = 2$	$\tau_2 = 3$	$\tau_2 = 4$	$\tau_2 = 5$	$\tau_2 = 6$	$\tau_2 = 7$	$\tau_2 = 8$	$\tau_2 = 9$	$\tau_2 = 10$
Barley	GNC	5/18/2020	-2.30%	-3.29%	-1.60%	0.59%	3.11%	-2.39%	2.14%	4.26%	5.86%	5.27%
Beef	ACC	5/11/2020	-3.91%***	-6.25%***	-5.05%**	-2.18%*	-3.33%***	-0.54%	3.07%	1.33%	-0.15%	-1.86%
	ACC	8/26/2020	0.44%	0.84%	0.98%	2.12%	1.17%	0.85%	1.37%	1.91%	1.89%	3.79%
	ACC	12/7/2020	0.91%	1.29%	-0.28%	-0.86%	1.33%	2.53%	1.81%	3.45%	-1.05%	2.98%
	BFC	5/11/2020	-2.10%	-3.30%	-3.74%	-1.54%	-4.37%	-5.32%	-7.98%	-10.49%	-11.90%	-16.75%
	BFC	8/26/2020	-3.15%	-2.38%	-2.09%	-1.05%	2.59%	1.79%	2.34%	4.25%	5.00%	5.45%
	BFC	12/7/2020	-0.65%	-0.63%	-0.44%	5.10%	4.44%	-1.83%	1.70%	3.19%	-3.04%	-8.34%
	ELD	5/11/2020	-1.93%	-4.14%	-1.46%	-0.08%	9.29%	5.79%	3.33%	1.90%	1.63%	-0.85%
	ELD	8/26/2020	-1.20%	-1.03%	-1.84%	-1.84%	0.79%	0.97%	0.12%	-0.77%	-0.90%	-2.02%
	ELD	12/7/2020	1.12%	0.44%	0.16%	-1.39%	-1.89%	-1.49%	-3.38%	-4.07%	-2.24%	-3.34%
Coal	BHP	10/12/2020	-1.04%	-1.34%	0.22%	-1.09%	-1.64%	-2.61%	-1.69%	-0.21%	-1.17%	-2.51%
	NHC	10/12/2020	-8.42%***	-6.93%***	-7.20%***	-8.58%***	-13.72%***	-12.79%***	-11.56%***	-13.40%***	-13.26%***	-13.12%***
	RIO	10/12/2020	-0.68%	-1.62%	-0.77%	-1.67%	-2.32%	-2.83%	-1.28%	-0.78%	-2.06%	-2.26%
	S32	10/12/2020	-2.92%	-5.89%**	-4.38%*	-4.95%*	-1.89%	-1.06%	-0.08%	0.60%	0.58%	0.83%
	SMR	10/12/2020	-6.72%**	-5.76%**	-6.74%**	-7.38%**	-6.80%**	-6.04%**	-6.99%**	-6.66%**	-5.77%*	-4.28%
	SOL	10/12/2020	-0.79%	-1.09%	-1.66%	-1.07%	-0.77%	-0.73%	-2.42%	-2.13%	-1.56%	-2.50%
	YAL	10/12/2020	-0.86%	-2.36%	-2.10%	-3.88%	-5.67%	-5.50%	-4.52%	-0.05%	0.87%	1.50%
Cotton	DBF	10/16/2020	-0.43%	-1.01%	-0.42%	0.04%	-2.89%	-0.33%	0.76%	0.17%	-3.37%	-1.62%
Timber	MWY	10/31/2020	-2.41%	-5.62%	-5.18%	-5.55%	-2.83%	-2.55%	0.24%	-4.46%	-12.36%	-12.93%
	MWY	11/11/2020	-4.93%	-13.49%***	-13.42%***	-11.46%***	-7.09%***	-9.07%***	-9.38%***	-9.64%***	-10.90%***	-9.72%***
	MWY	12/3/2020	-1.88%	-2.56%	-3.09%	-5.25%	-3.53%	-3.25%	-4.52%	-4.24%	-5.83%	-6.83%
	MWY	12/24/2020	2.10%	2.17%	2.70%	2.49%	9.74E-06	0.42%	-2.31%	-4.70%	-6.20%	1.54%
Copper	BHP	11/2/2020	-0.38%	-0.33%	-1.94%	-1.64%	0.22%	0.42%	0.85%	0.32%	-1.08%	-0.56%
	OZL	11/2/2020	-2.09%	-1.63%	-2.37%	-2.54%	-2.71%	-5.66%*	-9.99%**	-9.37%**	-8.66%**	-9.55%**
	SFR	11/2/2020	-9.96%***	-7.20%***	-9.06%***	-7.73%***	-7.67%***	-9.65%***	-12.01%***	-13.26%***	-12.90%***	-12.23%***

	AIS	11/2/2020	-2.90%	-3.77%	-5.33%	-0.51%	-0.25%	-11.66%	-16.22%	-18.86%	-10.62%	-5.67%
	HCH	11/2/2020	-0.62%	-0.01%	-4.46%	0.86%	-1.81%	1.98%	4.40%	3.27%	2.08%	-0.01%
	CYM	11/2/2020	-5.40%	-0.61%	-2.50%	2.59%	2.66%	3.43%	3.78%	9.77%	8.01%	7.23%
Wine	TWE	11/27/2020	-7.27%**	-11.84%***	-8.96%***	-7.38%***	-4.41%**	-2.51%**	-1.74%*	-2.26%*	-2.95%*	1.16%
	TWE	3/26/2021	-0.78%	-3.18%	-4.29%	-4.05%	-5.30%	-3.28%	-4.35%	-6.74%	-7.13%	-6.84%
	AVG	11/27/2020	-2.24%	-1.05%	1.76%	1.37%	1.53%	0.94%	1.33%	1.61%	1.58%	1.78%
	AVG	3/26/2021	-1.54%	1.27%	2.10%	2.26%	2.40%	3.59%	2.84%	3.88%	2.82%	2.53%

Note: ***p<0.01, **p<0.05, *p<0.1.

Table A.6 Robustness test results for Chinese firms with the shortened estimation window

	Firm	Event date	CAR ($\tau_1 = 1$)									
			$\tau_2 = 1$	$\tau_2 = 2$	$\tau_2 = 3$	$\tau_2 = 4$	$\tau_2 = 5$	$\tau_2 = 6$	$\tau_2 = 7$	$\tau_2 = 8$	$\tau_2 = 9$	$\tau_2 = 10$
Beef	300106	5/11/2020	3.15%***	1.87%***	4.09%***	7.27%***	17.46%**	16.28%**	16.61%**	18.17%***	20.24%***	21.03%***
	300106	8/26/2020	0.35%	5.94%	1.47%	4.80%	5.79%	2.80%	-1.46%	4.60%	8.40%***	8.71%***
	300106	12/7/2020	1.17%	3.05%	0.69%	7.89%	11.68%	4.58%	16.75%**	14.77%**	12.78%***	14.97%***
Coal	600121	10/12/2020	0.66%	2.10%	3.00%	6.32%	2.59%	1.90%	0.89%	1.40%	-0.40%	0.24%
	601001	10/12/2020	0.19%	0.86%	3.16%	6.79%	5.19%	2.90%	1.43%	1.68%	3.01%	-1.96%
	600395	10/12/2020	-0.12%	0.87%	3.28%	6.54%	5.17%	1.30%	2.07%	0.62%	-0.14%	0.23%
	000723	10/12/2020	0.41%	1.17%	1.50%	1.96%	1.23%	1.58%	-0.44%	-0.67%	-0.45%	1.17%
	600971	10/12/2020	1.02%	2.52%	1.03%	0.99%	-1.55%	-1.96%	-3.08%	-1.25%	-1.54%	1.23%
	601101	10/12/2020	0.46%	1.04%	2.06%	4.31%	2.13%	2.85%	3.44%	2.93%	3.21%	1.87%
	000983	10/12/2020	0.93%	-0.08%	6.87%	15.57%***	8.11%**	7.69%**	6.07%*	3.59%	4.31%	5.61%
	601088	10/12/2020	0.03%	0.04%	0.66%	2.29%	1.89%	1.33%	1.09%	2.33%	2.57%	2.65%
	601666	10/12/2020	1.33%	2.17%	-1.08%	0.45%	-0.84%	-1.54%	-2.19%	-1.69%	-1.55%	-1.64%
	600188	10/12/2020	-0.02%	0.80%	1.83%	4.29%	0.15%	-1.19%	-2.14%	-1.55%	-1.35%	0.66%
	601225	10/12/2020	3.34%**	2.33%**	2.06%**	5.28%***	3.39%**	3.21%**	2.48%*	2.14%	1.99%	2.63%
	601898	10/12/2020	0.75%	-0.14%	1.60%	4.43%	2.81%	1.79%	2.27%	2.56%	3.53%	2.74%
Cotton	600359	5/18/2020	0.69%	0.74%	3.14%	4.61%	3.68%	1.83%	-0.66%	-0.99%	-2.32%	-1.69%
	600075	5/18/2020	0.72%	1.41%	3.75%	5.43%	5.64%	4.65%	4.85%	1.71%	0.81%	-2.01%
	000726	5/18/2020	2.84%***	-0.17%	0.53%	-2.41%	-3.08%	-1.57%	-2.94%	-2.79%	-3.40%	-3.81%
	002042	5/18/2020	4.26%***	3.17%***	0.80%	-1.42%	0.59%	-1.07%	1.27%	-0.04%	-2.18%	-2.02%
Timber	000592	10/31/2020	1.32%	-1.25%	-1.68%	-2.16%	-1.70%	-3.27%	-3.22%	-2.12%	-1.76%	4.31%
	000592	11/11/2020	1.58%	1.81%	7.08%***	6.01%	13.02%***	9.73%**	8.56%**	6.63%*	5.69%	6.34%
	000592	12/3/2020	1.71%	1.51%	3.64%	-1.51%	-2.55%	-0.73%	3.46%	-1.22%	-4.01%	-3.80%
	000592	12/24/2020	1.12%	0.44%	3.36%	1.61%	-0.66%	-1.45%	-4.17%	-8.35%	-13.08%	-11.62%
	002679	10/31/2020	0.30%	1.45%	3.85%	5.00%	2.30%	0.08%	0.32%	1.21%	2.92%	1.96%
	002679	11/11/2020	1.44%	2.74%	1.58%	2.38%	2.26%	1.27%	1.00%	-4.52%	-5.07%	-5.29%

	002679	12/3/2020	0.51%	-0.11%	1.13%	1.44%	1.89%	1.48%	3.33%	2.24%	0.92%	-1.72%
	002679	12/24/2020	0.72%	9.76%	19.47%	10.57%	6.10%	6.85%	2.14%	2.31%	-6.24%	-9.39%
	000663	10/31/2020	0.96%	0.89%	-0.42%	-0.44%	-0.19%	-0.40%	0.43%	0.75%	0.67%	0.69%
	000663	11/11/2020	0.13%	0.76%	0.51%	-0.75%	-0.01%	-0.47%	-0.14%	-1.01%	-0.07%	-0.45%
	000663	12/3/2020	0.04%	1.19%	1.63%	2.22%	2.35%	2.51%	3.04%	2.58%	1.29%	1.49%
	000663	12/24/2020	5.32%**	5.85%**	3.45%	3.84%	2.88%	1.88%	2.02%	1.18%	-1.42%	-0.20%
Copper	601212	11/2/2020	3.43%	2.42%	1.53%	2.66%	3.16%	1.47%	2.87%	4.34%	7.33%	10.92%
	600362	11/2/2020	5.33%***	2.46%*	0.91%*	2.42%**	2.11%*	2.21%*	4.67%**	1.94%*	3.06%*	11.79%***
	603993	11/2/2020	2.42%	0.17%	-0.06%	1.02%	0.90%	-1.38%	-0.80%	-0.36%	4.33%	8.24%
	000630	11/2/2020	2.59%**	2.67%**	2.32%**	2.32%**	4.09%***	5.13%***	7.17%***	7.23%***	8.95%***	17.56%***
	601168	11/2/2020	8.13%***	12.14%***	10.08%***	11.02%***	18.41%***	19.16%***	20.95%***	20.72%***	19.54%***	23.18%***
	000762	11/2/2020	8.01%***	10.28%***	18.00%***	16.34%***	19.03%***	20.49%***	23.09%***	23.44%***	32.68%***	34.80%***
	000878	11/2/2020	7.78%***	5.84%***	3.49%***	4.64%***	5.78%***	6.55%***	11.36%***	10.31%***	13.14%***	18.61%***
	601600	11/2/2020	3.00%***	1.95%**	2.16%*	3.70%***	8.96%***	9.53%***	12.22%***	11.23%***	12.97%***	16.48%***
	601618	11/2/2020	3.98%***	2.54%**	2.61%*	4.54%***	5.28%***	6.41%***	8.96%***	9.71%***	11.23%***	14.11%***
	601899	11/2/2020	4.70%*	4.93%*	2.42%*	4.73%*	5.59%**	0.71%	-1.16%	0.53%	1.17%	7.40%**
Wine	000869	11/27/2020	6.28%***	3.74%***	3.45%***	0.33%	5.13%***	15.14%***	15.87%***	16.75%***	21.70%***	23.81%***
	000869	3/26/2021	9.22%***	5.14%***	1.75%**	1.73%*	1.56%**	0.14%	-0.75%	0.98%	-1.13%	0.18%
	600084	11/27/2020	4.75%	2.15%	0.77%	0.34%	-1.48%	-0.35%	2.57%	2.31%	1.52%	3.00%
	600084	3/26/2021	4.20%***	-0.34%	0.01%	-0.15%	-0.58%	-0.49%	-2.56%	-4.14%	-2.78%	-1.46%
	600543	11/27/2020	1.30%	3.41%	2.86%	2.47%	0.88%	5.67%	4.02%	2.07%	4.88%	12.63%
	600543	3/26/2021	8.90%***	7.72%***	4.49%*	1.44%	0.94%	-0.06%	0.02%	-0.74%	-2.23%	1.11%

Note: ***p<0.01, **p<0.05, *p<0.1.

Table A.7 Robustness test results for Australian firms with the changed market index

	Firm	Event date	CAR ($\tau_1 = 1$)									
			$\tau_2 = 1$	$\tau_2 = 2$	$\tau_2 = 3$	$\tau_2 = 4$	$\tau_2 = 5$	$\tau_2 = 6$	$\tau_2 = 7$	$\tau_2 = 8$	$\tau_2 = 9$	$\tau_2 = 10$
Barley	GNC	5/18/2020	-2.54%	-3.79%	-0.66%	0.34%	2.83%	-2.45%	2.40%	5.45%	6.87%	4.84%
Beef	ACC	5/11/2020	-3.84%***	-5.13%**	-4.39%**	-2.33%*	-4.39%***	-1.45%	3.15%	1.44%	0.73%	-2.54%
	ACC	8/26/2020	0.69%	0.42%	2.15%	1.03%	1.58%	0.72%	1.63%	2.39%	1.17%	3.05%
	ACC	12/7/2020	-0.28%	1.11%	0.23%	-1.23%	0.15%	2.37%	2.63%	3.41%	-2.36%	2.05%
	BFC	5/11/2020	-1.13%	-3.34%	-3.88%	-1.52%	-4.78%	-5.49%	-7.82%	-9.57%	-12.26%	-16.52%
	BFC	8/26/2020	-1.79%	-3.30%	-2.15%	-1.13%	1.81%	1.04%	3.03%	5.29%	4.51%	5.68%
	BFC	12/7/2020	-1.54%	0.43%	-0.07%	4.42%	4.56%	-2.08%	2.79%	3.03%	-4.00%	-8.11%
	ELD	5/11/2020	-0.57%	-4.42%	-2.00%	1.00%	7.93%	7.19%	3.66%	2.02%	1.34%	-0.94%
	ELD	8/26/2020	-0.71%	-0.25%	-1.25%	-0.39%	1.68%	1.20%	1.57%	-0.73%	-1.84%	-2.37%
	ELD	12/7/2020	1.51%	0.12%	1.15%	-0.89%	-0.50%	-1.44%	-2.02%	-4.91%	-2.55%	-4.05%
Coal	BHP	10/12/2020	-1.30%	-1.78%	0.44%	-1.02%	-1.51%	-2.04%	-1.28%	-1.28%	-0.89%	-2.72%
	NHC	10/12/2020	-8.65%***	-7.44%***	-7.07%***	-8.79%***	-14.49%***	-13.16%***	-12.69%***	-14.20%***	-13.55%***	-12.77%***
	RIO	10/12/2020	-0.78%	-1.87%	-1.63%	-0.57%	-2.20%	-2.23%	-1.49%	-0.92%	-0.85%	-1.62%
	S32	10/12/2020	-2.75%	-5.14%**	-3.98%**	-4.97%**	-2.09%	-0.70%	1.15%	1.29%	0.83%	1.38%
	SMR	10/12/2020	-5.52%**	-5.43%**	-6.57%**	-7.30%**	-7.65%**	-6.93%**	-7.49%**	-7.07%**	-6.24%**	-3.32%
	SOL	10/12/2020	-0.10%	-1.75%	-2.00%	-1.28%	-0.43%	-1.20%	-3.01%	-1.25%	-1.97%	-2.42%
	YAL	10/12/2020	-1.52%	-2.16%	-2.98%	-4.63%	-6.52%	-5.03%	-4.52%	0.71%	1.97%	3.00%
Cotton	DBF	10/16/2020	-0.14%	-1.49%	-1.52%	-0.20%	-1.78%	-0.85%	0.43%	0.28%	-2.60%	-1.96%
Timber	MWY	10/31/2020	-2.31%	-5.13%	-5.16%	-5.25%	-3.47%	-3.07%	0.73%	-4.34%	-13.19%	-12.81%
	MWY	11/11/2020	-4.04%	-12.33%***	-14.59%***	-11.93%***	-8.53%***	-8.30%***	-10.20%***	-10.09%***	-9.75%***	-9.42%***
	MWY	12/3/2020	-1.77%	-2.93%	-3.09%	-4.40%	-3.74%	-3.37%	-3.54%	-4.84%	-5.14%	-5.45%
	MWY	12/24/2020	1.12%	0.92%	2.69%	3.04%	6.12E-03	1.39%	-2.55%	-3.59%	-6.29%	1.14%
Copper	BHP	11/2/2020	-1.22%	0.26%	-1.62%	-0.90%	0.83%	-0.76%	1.44%	0.23%	-0.87%	-0.25%
	OZL	11/2/2020	-0.98%	-2.33%	-2.28%	-1.81%	-1.43%	-4.63%	-9.41%***	-9.12%**	-8.72%**	-8.55%**
	SFR	11/2/2020	-9.40%***	-6.47%***	-8.98%***	-9.20%***	-7.67%***	-10.21%***	-12.15%***	-13.26%***	-13.79%***	-13.15%***

	AIS	11/2/2020	-2.57%	-3.90%	-5.66%	-0.51%	-1.18%	-12.46%	-17.30%	-19.06%	-10.18%	-5.74%
	HCH	11/2/2020	-0.39%	-0.20%	-3.55%	1.41%	-2.77%	1.98%	4.82%	3.11%	2.22%	0.74%
	CYM	11/2/2020	-5.02%	-0.66%	-2.02%	2.21%	3.01%	3.28%	4.35%	10.61%	9.11%	8.10%
Wine	TWE	11/27/2020	-8.15%***	-11.46%***	-9.80%***	-6.95%***	-3.68%*	-1.80%*	-0.93%	-1.07%*	-3.53%**	-0.41%
	TWE	3/26/2021	-1.12%	-3.77%	-4.58%	-4.70%	-5.79%	-3.33%	-3.99%	-6.77%	-7.06%	-5.69%
	AVG	11/27/2020	-1.84%	-0.56%	2.06%	0.84%	1.35%	0.95%	1.49%	1.83%	2.19%	0.44%
	AVG	3/26/2021	-0.41%	0.53%	1.92%	3.25%	2.69%	3.25%	3.29%	4.26%	1.88%	1.44%

Note: ***p<0.01, **p<0.05, *p<0.1.

Table A.8 Robustness test results for Chinese firms with the changed market index

	Firm	Event date	CAR ($\tau_1 = 1$)									
			$\tau_2 = 1$	$\tau_2 = 2$	$\tau_2 = 3$	$\tau_2 = 4$	$\tau_2 = 5$	$\tau_2 = 6$	$\tau_2 = 7$	$\tau_2 = 8$	$\tau_2 = 9$	$\tau_2 = 10$
Beef	300106	5/11/2020	3.02%***	1.80%**	3.90%***	7.66%***	16.96%**	16.88%**	17.10%**	17.70%***	20.32%***	21.11%***
	300106	8/26/2020	0.84%	5.91%	1.66%	4.76%	5.72%***	2.95%	-1.72%	4.43%	8.53%***	8.58%***
	300106	12/7/2020	1.14%	2.88%	0.51%	7.85%	11.92%	4.49%	16.50%**	14.86%**	13.09%**	15.50%***
Coal	600121	10/12/2020	0.59%	2.05%	2.71%	6.30%	2.38%	2.34%	0.92%	1.67%	-0.59%	0.47%
	601001	10/12/2020	0.05%	0.74%	3.09%	6.52%	5.06%	3.22%	2.15%	2.04%	3.14%	-2.40%
	600395	10/12/2020	0.04%	0.71%	2.78%	6.61%	4.72%	1.92%	2.03%	0.49%	0.18%	0.50%
	000723	10/12/2020	0.21%	1.21%	1.64%	1.90%	0.90%	1.19%	0.18%	-0.79%	-0.73%	1.13%
	600971	10/12/2020	0.83%	3.02%	1.21%	0.94%	-1.57%	-2.24%	-2.53%	-1.71%	-2.01%	1.48%
	601101	10/12/2020	0.35%	0.71%	1.82%	4.32%	2.32%	2.95%	2.96%	3.19%	3.10%	2.29%
	000983	10/12/2020	0.74%	-0.39%	6.82%	14.87%***	8.34%**	8.03%**	5.86%	3.55%	4.47%	5.70%
	601088	10/12/2020	-0.12%	0.03%	0.52%	2.84%	1.78%	1.88%	1.52%	2.60%	2.32%	2.19%
	601666	10/12/2020	0.90%	2.21%	-0.98%	0.12%	-0.40%	-2.24%	-1.78%	-1.87%	-1.14%	-1.63%
	600188	10/12/2020	-0.21%	1.00%	1.93%	3.64%	0.19%	-1.14%	-1.97%	-1.87%	-1.35%	0.68%
	601225	10/12/2020	3.16%***	1.92%***	2.44%***	4.87%***	3.50%***	2.81%**	2.29%*	1.93%	1.92%	2.28%
	601898	10/12/2020	0.23%	0.57%	2.18%	4.06%	2.85%	1.91%	1.89%	2.18%	3.54%	2.70%
Cotton	600359	5/18/2020	1.30%	0.46%	3.01%	4.75%	3.42%	1.58%	-0.22%	-1.36%	-2.33%	-1.76%
	600075	5/18/2020	0.68%	1.59%	3.90%	5.36%	5.89%	3.98%	5.13%	1.58%	0.33%	-2.06%
	000726	5/18/2020	3.32%***	-0.22%	0.74%	-2.30%	-2.94%	-1.64%	-2.59%	-2.92%	-3.81%	-3.72%
	002042	5/18/2020	4.45%***	2.64%**	0.81%	-0.86%	0.13%	-1.56%	1.10%	0.17%	-2.65%	-2.58%
Timber	000592	10/31/2020	1.49%	-0.97%	-1.30%	-2.53%	-1.67%	-2.73%	-2.93%	-2.23%	-1.72%	3.98%
	000592	11/11/2020	1.32%	1.61%	7.15%***	6.33%*	12.95%***	10.14%***	8.07%*	6.17%*	6.13%*	6.47%
	000592	12/3/2020	1.32%	1.16%	4.17%	-1.15%	-2.06%	-0.37%	3.10%	-1.81%	-4.14%	-3.92%
	000592	12/24/2020	1.03%	0.47%	3.25%	1.75%	-0.64%	-1.27%	-4.73%	-8.36%	-12.70%	-11.75%
	002679	10/31/2020	0.39%	1.71%	3.18%	5.13%	2.27%	-0.10%	-0.29%	1.81%	2.74%	1.83%
	002679	11/11/2020	1.77%	2.85%	1.84%	2.38%	2.38%	1.30%	1.30%	-4.16%	-4.54%	-4.65%

	002679	12/3/2020	0.27%	-0.75%	0.77%	0.87%	1.96%	2.00%	2.98%	1.85%	0.53%	-1.13%
	002679	12/24/2020	0.99%	10.02%	19.57%	10.60%	6.53%	7.34%	2.47%	2.47%	-5.92%	-9.66%
	000663	10/31/2020	0.97%	0.66%	-0.16%	-0.17%	0.06%	-0.55%	0.06%	0.53%	0.48%	0.70%
	000663	11/11/2020	0.25%	0.39%	0.77%	-0.60%	-0.20%	-0.04%	-0.72%	-1.16%	-0.47%	-0.48%
	000663	12/3/2020	0.19%	1.19%	1.42%	2.30%	2.51%	1.90%	2.84%	2.47%	1.54%	1.15%
	000663	12/24/2020	4.85%**	6.14%**	3.77%	3.98%	2.29%	2.28%	1.64%	0.92%	-1.51%	-0.60%
Copper	601212	11/2/2020	2.89%	1.81%	1.72%	2.52%	3.06%	1.36%	3.05%	4.34%	7.66%	10.75%
	600362	11/2/2020	5.43%***	2.12%	1.50%**	2.22%*	2.44%*	2.08%*	4.42%**	2.20%*	3.06%*	11.47%***
	603993	11/2/2020	2.49%	0.38%	-0.01%	1.02%	0.56%	-1.60%	-0.50%	-0.48%	4.34%	8.63%
	000630	11/2/2020	2.98%**	2.54%**	2.05%**	2.39%***	3.84%***	5.87%***	7.45%***	7.57%***	9.19%***	17.95%***
	601168	11/2/2020	8.39%***	12.05%***	9.98%***	10.89%***	18.90%***	19.03%***	21.16%***	20.89%***	19.61%***	23.40%***
	000762	11/2/2020	8.31%***	10.22%***	18.03%***	16.26%***	18.71%***	20.78%***	23.69%***	23.11%***	32.84%***	34.47%***
	000878	11/2/2020	8.10%***	5.61%***	4.21%***	4.12%***	5.33%***	7.07%***	11.46%***	10.73%***	13.33%***	19.08%***
	601600	11/2/2020	3.23%***	2.14%*	2.26%*	3.86%***	8.58%***	9.66%***	11.91%***	10.76%***	12.67%***	16.67%***
	601618	11/2/2020	4.05%***	2.60%**	2.90%*	4.52%***	5.48%***	6.38%***	8.68%***	9.68%***	11.35%***	14.37%***
	601899	11/2/2020	4.77%*	4.61%*	2.37%*	5.09%**	5.42%**	0.36%	-1.22%	0.39%	1.25%	7.51%
Wine	000869	11/27/2020	6.58%***	3.49%***	3.42%***	0.13%	4.96%***	15.26%***	15.91%***	16.56%***	21.59%***	23.43%***
	000869	3/26/2021	9.50%***	4.95%***	1.86%**	1.31%*	1.69%**	0.53%	-0.53%	0.46%	-0.98%	0.64%
	600084	11/27/2020	5.16%	2.16%	0.60%	0.40%	-1.37%	-0.50%	2.32%	2.50%	1.27%	2.85%
	600084	3/26/2021	4.40%***	-0.22%	0.60%	-0.32%	-0.31%	-1.06%	-2.92%	-3.95%	-2.45%	-1.14%
	600543	11/27/2020	1.85%	3.14%	2.93%	2.04%	0.93%	5.74%	4.01%	1.49%	4.74%	12.90%
	600543	3/26/2021	8.86%***	8.28%***	4.31%*	2.02%	1.09%	0.24%	-0.31%	-0.95%	-2.42%	1.31%

Note: ***p<0.01, **p<0.05, *p<0.1.