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A leap of faith that echoes well? The value impact of Chinese firms starting up business overseas

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ABSTRACT

We investigate the impact of greenfield outward foreign direct investment (GODI) by Chinese firms on their subsequent Tobin's Q. Our findings indicate that Chinese listed companies from 2003 to 2019 generally experience a significantly positive boost in perceived firm value (or growth prospects) when engaging in overseas business start-ups (i.e., with no foreign partners) when compared to their inactive peers. The positive GODI effect is more prominent among privately owned enterprises vs. state-owned enterprises (SOEs). Our mechanism tests indicate that lowered effective tax rates and reduced illiquidity due to conducting greenfield ODI serve as the value-enhancing channels. Possibly driven by political objectives, SOEs tend to prioritize developing and Belt-Road countries as the destination for their greenfield overseas endeavors.

1. Introduction

Another nickname widely known for China is "The Sleeping Giant." A quote often attributed to Napoleon Bonaparte states, "*Let China Sleep, for when she wakes, she will shake the world.*" In the context of overseas investment, the sleeping giant might have been awakened in an international setting. China's outward foreign direct investment (ODI) rises significantly after the Going Global Strategy in 1999. According to the Ministry of Commerce of China (MOFCOM) and The National Bureau of Statistics of China (NBS), China's outward foreign direct investment reached about U.S. $153.71 billion in 2020, representing a year-on-year increase of 12.3%, ranking first place worldwide for the first time ever. The capital stock of Chinese ODI reached $2.58 trillion at the end of 2020, ranking just behind the U.S. and the Netherlands and accounting for 20.2% of the total global investment volume. It is evident that China's overseas investment plays an increasingly important role in enhancing her comparative advantages and integrating the country into the global economy (Lin, 2016; Panthamit and Chaiboonsri, 2020). However, whether this rising move across The Great Wall is perceived as favorable by local Chinese investors is largely left unanswered. In this study, we investigate the impact of "greenfield" outward foreign direct investment (GODI) by Chinese firms on their subsequent Tobin's Q. We also provide a comprehensive analysis of what conditions and through which channels GODI may be perceived as value-enhancing by the Chinese stock market.

At some point in a corporation's life cycle, a leap of faith is required to achieve entrepreneurial growth. Greenfield outward direct investment (GODI) represents the most committed type of ODI as a parent company begins a new venture in a foreign country by constructing new operational facilities from the ground up and without foreign partners. In this way, GODI firms retain absolute control of the venture as setting-up and on-going operations (i.e., including personnel and training) are executed to the company's

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original standards. With more serious commitments, GODIs generally command higher capital outlay and longer-term orientation. Thus, it provides an excellent venue to investigate how well ODI transactions are echoed in the mind of investors. Surprisingly, GODI receives relatively less attention in the literature, especially for China.

In academia, the presence of Chinese firms' outward foreign direct investment has received reasonable interest in the corporate finance literature. One strand of the literature focuses on the motivation of Chinese firms' ODI and finds the key drivers of these activities are to seek markets (Cai, 1999; Cheung and Qian, 2009), a continuous supply of resources, strategic assets (Deng, 2004), and lower labor costs, more advanced technology, and management skills (Cai, 1999; Hong and Sun, 2006; Wu and Chen, 2001). Another strand of the literature focuses on the economic consequences of Chinese firms' ODI. In particular, the literature finds evidence of improved firm productivity (Chen and Tang, 2014; Huang and Zhang, 2017; Li, Liu, Yuan, and Yu, 2017; Tian, Yu, and Zhang, 2016), but mixed results regarding profitability using various "accounting-based" measures. For example, Cozza, Rabellotti, and Sanfilippo (2015) note a negative effect of Chinese firms' overseas investment on ROA, attributable to the lack of experience and capability to obtain the value, especially for those firms that engage in ODI for the first time. However, Tian et al. (2016) determine that Chinese manufacturing firms' ODI has a positive effect on firm profitability measured by the profit to sales ratio. Similarly, Cui and Xu (2019) find that outward foreign direct investment increases intangible assets growth and short-to-medium term profitability measured by net profits and ROA using data on Chinese listed firms from 2002 to 2009. They attribute this finding to the use of overseas investments by multinational firms as a tactic to diversify the risk of resource dependence in the home country in the context of the early stages of internationalization.

Building on the existing literature and motivated by the debate as to whether Chinese firms' ODI actually improves firm performance when focusing on only accounting based measures, we investigate the impact of Chinese firms' greenfield ODI (GODI) on firms' performance measured by market-based performance measures employing Tobin's Q (e.g., firm value or growth prospect/opportunities perceived by the stock market). Our market-based performance measure offers several advantages over the conventional accounting-based performance measures used in the previous literature. First, accounting-based measurements, such as ROA (Return on Assets) and ROS (Return on Sales) are likely to be manipulated by a firm's management, especially in transition economies with weak institutions, such as China (Delios and Wu, 2005; Ma, Yao, and Xi, 2006). In addition, Tobin's Q, as a market-based measure, has been used to measure longer-term corporate performance in terms of perceived firm value or growth opportunities/prospects in more recent corporate finance studies (Bennouri, Chtioui, Nagati, and Nekhili, 2018; Daniliuc, Li, and Wee, 2020; Ibhagui and Olokoyo, 2018).

Studying ODI in a Chinese context is of particular interest given that political interference is still pronounced in China. Yeung and Liu (2008) find that SOEs conducted 82% of China's non-financial overseas investment activities in 2006. Similarly, Shao (2020) proposes that government-to-government relationships rather than market-oriented factors may serve as the basis for Chinese firms' ODI decisions. As an important extension, we investigate how political interference matters to Chinese firms' GODI decisions and how it reshapes the impact of these activities on a firm's Tobin's Q. We postulate that state owners may interfere with firms' GODI decisions to achieve political goals instead of seeking profit maximization leading to a different impact on firm performance that may not necessarily be optimal for Chinese investors.

Employing a sample of 3744 Chinese listed firms collected from 2003 to 2019, we investigate the relation between firm-level GODI and Tobin's Q in our baseline regression analysis. We find that undertaking GODI has a positive effect on Tobin's Q for Chinese firms in general. To alleviate endogeneity concerns, we employ a difference-in-differences (DiD) approach combined with a propensity-score matching (PSM) technique, as well as an instrumental variable two-stage least square (2SLS) regression. Our results hold after these robustness checks. To investigate the role of political interference on firms' GODI decisions, we examine the differential effect of greenfield ODI on Tobin's Q between SOEs and non-SOEs. We find that GODI improves firms' performance only among non-SOE firms suggesting that the market recognizes and responds positively to greenfield ODI activities that are not driven by political interference. Further investigating firms' destination choices when making GODI decisions, we find that SOE firms are more likely to invest in developing economies and Belt-Road countries, corroborating the notion that outward foreign direct investment activities by SOEs are induced by political objectives rather than profit maximization. In the final section, we identify two mechanisms through which Chinese GODI improves firm performance including tax benefits and lower illiquidity, respectively. Our results show that GODI has a positive effect on Tobin's Q by lowering the effective tax rate and reducing the illiquidity.[1] More importantly, we find that these channels only exist among non-SOE firms.

We contribute to the literature in three aspects. First, we join the debate as to whether ODI improves firm performance and provide further supportive evidence based on a market-based performance measure, Tobin's Q. Our market-based performance measure overcomes certain weaknesses inherent in the conventional accounting-based measures of the existing literature and more directly reflects investors' expectations of firms' future earnings that is more consistent with the long-term nature of ODI activities. In addition, we conduct a direct investigation of the role of political interference on firm-level ODI decisions along with its associated impact on firm performance. Our findings indicate that greenfield ODI activities in SOEs tend to be politically oriented, and state ownership weakens the positive effect of GODI on firm performance. Our study complements the existing literature studying the political impact of corporate behavior in the Chinese context (Li et al., 2017; Lin, Cai, and Li, 1998; Lioukas, Bourantas, and Papadakis, 1993; Wang, Hong, Kafouros, and Boateng, 2012; Wang, Hong, Kafouros, and Wright, 2012) and improves our understanding regarding the real incentives of Chinese firms' ODI decisions and their associated impact. Finally, our findings shed further light on the efficiency of the

[1] We thank our anonymous referee for this insight.

Chinese market. By separating SOE and non-SOE firms, we find that the market-based performance among non-SOE firms, measured by Tobin's Q, is both statistically and economically higher than SOE firms following GODI activities. Our results indicate that market recognizes and rewards firms with ODI activities that are not driven by political incentives, which is in line with the literature suggesting that the Chinese stock market has become gradually more efficient (Chong, Lam, and Yan, 2012).

2. Literature review and hypotheses development

2.1. Outward foreign direct investment (ODI) and firm performance

The research on the impact of ODI on firm performance in developed countries is primarily based on cross-border merger and acquisitions (M&As). There are two general kinds of approaches to measure firm performance in the previous literature: expected performance and realized performance (Pangarkar and Lim, 2003). Several studies have used stock market reactions to relevant M&A ODI announcements as a measure of expected performance (Chari, Chen, and Dominguez, 2012; Doukas and Travlos, 1988; Jensen-Vinstrup, Rigamonti, and Wulff, 2018; Morck and Yeung, 1992; Paul, Maher, and Jean-François, 2004). However, the empirical results of the previous literature have been inconclusive. Paul et al. (2004) find that Canadian acquirers underperform significantly over the three-year post-acquisition period by using alpha and abnormal returns. Consistently, Jensen-Vinstrup et al. (2018) note cross-border acquirer firms underperform firms without cross-border M&As by investigating the long run stock return performance of European international M&As. However, according to Doukas and Travlos (1988) and Morck and Yeung (1992), overseas M&As increase abnormal returns significantly. They argue that the positive M&A ODI effect can be explained by the exploitation of resources of foreign countries or imperfections in the financial markets.

Some studies have examined the impact of M&A ODI activities on profitability using accounting-based and market-based measures to evaluate realized performance. Agyei-Boapeah (2019) uses a sample of 9414 acquisitions by UK firms to investigate the impact of cross-border acquisitions. They find that overseas acquisitions have a negative impact on firm performance as measured by ROA, Tobin's Q, operating cash flow ratios, and operating cost ratios. The decline in financial performance suggests that international diversification is generally associated with more costs than benefits, at least in the short-term. However, Chari et al. (2012) find opposite results by focusing on targets instead of acquirers in the U.S. Specifically, they find that the profitability and ROA of the target firms tend to improve following acquisitions.

When compared to the literature studying the effect of cross-border M&As, the studies on the effect of greenfield ODI on firm performance in developed markets remains relatively scarce. Limited evidence has been documented in the previous literature. Doukas and Lang (2003) find that undertaking GODI related to a core business increases shareholders value and improves long-term performance in U.S. firms. Chang and Chang (2012) use a sample of U.S. firms and find that greenfield investment has a positive effect on abnormal stock returns around the announcement day. They also note that greenfield investment can improve ROE and BHARs in both the short-term and the long-term when it enters a host country for the first time or a developing country.

Similar to the studies in developed countries, the impact of ODI on performance in developing countries has also been investigated through M&A activities. That is, the stock market's reaction to foreign M&As and the realized performance of acquirers or targets of overseas M&As (Aybar and Ficici, 2009; Bertrand and Betschinger, 2012; Buckley, Elia, and Kafouros, 2014; Edamura, Haneda, Inui, Tan, and Todo, 2014; Gubbi, Aulakh, Ray, Sarkar, and Chittoor, 2010). Firms engaging in overseas investment would expect high returns, but also face greater risk and uncertainty. For example, Aybar and Ficici (2009) find stock markets react negatively to foreign M&As using 433 foreign M&A announcements in developing countries. Alternatively, Gubbi et al. (2010) investigate the impact of cross-border M&As on shareholder value using a sample of Indian firms and find that abnormal returns increase for the acquirers' shareholders. Their findings support the view that firms in developing countries tend to use M&As as a springboard to overcome their competitive disadvantages and improve their competitive advantages by acquiring strategic assets in overseas markets (Luo and Tung, 2007).

When compared with firms in developed countries, firms in developing countries have less competitive advantages and international experience when exploring overseas markets, which could lead to negative impacts (Contractor, 2007). Bertrand and Betschinger (2012) find that international acquisitions have a negative effect on the performance of the acquirers using a sample of Russian firms. They argue that the negative relation between cross-border M&As and performance is due to a lack of international M&A experience and expertise. However, Buckley et al. (2014) determine that cross-border M&As made by firms in developing countries improve the performance of the target firms. Acquisitions can be associated with agency problems and organizational costs, but can also be associated with synergy, competitive advantages, and greater market power.

In the Chinese context, most of the earlier studies were conducted using state-level and provincial-level aggregate data and argued that the motives of Chinese ODI are mainly to seek markets, a continuous supply of resources, and strategic assets. Research also examines the market seeking and resource seeking motives using firm-level data. Luo, Zhao, Wang, and Xi (2011) argue that due to the underdevelopment of China's institutions and market imperfections, privately owned firms' ODI is motivated to exploit their firm-specific competitive advantages.

As for firm-level ODI data, some research has been undertaken to examine the relation between Chinese ODI and firm productivity. Specifically, Chinese listed firms undertaking ODI tend to be more productive (Chen and Tang, 2014; Huang and Zhang, 2017; Li et al., 2017; Tian et al., 2016) and Chinese ODI into advanced European countries improves firm sales and employment, which can be attributed to the transfer of technology, knowledge, and management skills between the parent and overseas affiliates (Cozza et al., 2015). While there are a few studies investigating the effect of Chinese ODI on firms' profitability or accounting-based performance, there is no separation between the types of ODI (Cozza et al., 2015; Cui and Xu, 2019; Tian et al., 2016). The impact of more committed

greenfield overseas direct investment (GODI) on Chinese firms' market-based performance remains unexplored. We intend to fill this gap.

While the previous literature has tackled the effect of ODI on firm performance, the results are mixed at best. To the best of our knowledge, the only relevant study that focuses on "market-based" measures is Yuan, Pangarkar, and Wu (2016), who investigate the relation between the degree of internationalization and firm performance measured by Tobin's Q using panel data of Chinese listed multinational corporations from 1992 to 2005. Their results indicate that multinational corporations' expansion from a developing country to other developing countries has a positive effect on firm performance in the short term, while expansion to developed countries has a negative effect on firm performance. Our focus is on whether firms' greenfield ODI activities improve firm performance and through which mechanisms. Collecting firm-level greenfield ODI activities based on a larger sample of firms and a longer sample period, we investigate the effect of firm-level GODI on firm performance among Chinese listed firms. We propose that Chinese firms' GODI would have a statistically significant impact on Tobin's Q (i.e., firm value and growth prospects perceived by the capital markets).

H1. Chinese listed firms' GODI has a significant impact on a firm's Tobin's Q.

2.2. The mediating role of tax rate and illiquidity

Since the Going Global Strategy was initiated in 1999, the Chinese government has provided various support to promote firms to conduct overseas investment including simplifying approval processes, providing guidance and financial support, and tax benefits. Sutherland and Anderson (2015) find that China has some favorable regulations regarding enterprise income tax law for firms undertaking overseas investment by granting them lower corporate tax rates. For example, the State Taxation Administration of the People's Republic of China introduced and released several tax reduction and beneficial policies to encourage and provide support for firms investing overseas. In addition, the Chinese government also provides support by signing double taxation avoidance treaties with 89 nations to make sure a single corporate income tax rate is used and to avoid double taxation of Chinese firms conducting overseas investments (Luo, Xue, and Han, 2010).

With tax benefits related to outward foreign direct investment, the effective tax rates, defined as a firm's income tax expense divided by the total profit before taxes, on GODI firms would decrease resulting in improved cash flows and higher Tobin's Q. As such, Bryant-Kutcher, Guenther, and Jackson (2012) find that Tobin's Q is negatively related to foreign effective tax rates. We use effective tax rates for the following reason. Some previous studies use effective tax rates to study the impact of different tax policies on the taxes paid by firms (Adhikari, Derashid, and Zhang, 2006; Wu, Wu, Zhou, and Wu, 2012). In addition, governments usually use income tax policies to implement their goals instead of total taxation according to Wu et al. (2012). Therefore, we propose Chinese firms with GODI would have relatively lower effective tax rates compared to firms without ODI.

H2. The impact of Chinese listed firms' GODI on a firm's Tobin's Q will be mediated by the effective tax rate.

As one of the national strategies, the Going Global Strategy has attracted much attention from the public since it was first initiated in 1999. This strategy has proven to be beneficial for not only Chinese firms with ODI, but also China's economy overall over the long term. In 2013, China unveiled its One Belt One Road initiative, which again attracted great attention both domestically and internationally.

Greenfield ODI announcements can attract public attention and increase a firm's visibility. As a result, the trading volume of firms conducting greenfield ODI may improve accordingly. It has been documented that liquidity can promote information efficiency and improve the information environment, which, in turn, enhances Tobin's Q. Fang, Noe, and Tice (2009) find that firms with liquid stocks have better performance (i.e., firm value as measured by Tobin's Q). Based on their investigation, liquidity is beneficial to the information content of market prices. Therefore, we propose that Chinese GODI firms would have lower illiquidity compared to firms without ODI thereby increasing Tobin's Q as a result.[2]

H3. The impact of Chinese listed firms' GODI on Tobin's Q will be mediated by illiquidity.

2.3. The moderating role of state ownership

Empirical studies indicate that Chinese ODI is one of the primary channels used to build political and commercial interaction with other countries and promote collaboration, which is of national interest to China (Bräutigam and Xiaoyang, 2011; Jiang, 2009). Chinese ODI includes various economic and political objectives that result in location patterns that are not necessarily maximizing profits (Kang and Jiang, 2012; Liou, 2009; Ramasamy, Yeung, and Laforet, 2012). For example, state ownership stimulates SOEs to follow and serve political goals rather than seek economic optimization (Wang, Hong, Kafouros, and Boateng, 2012; Wang, Hong, Kafouros, and Wright, 2012). In contrast, non-SOEs are more likely to focus more on profit and efficiency due to the pressure of survival (Li et al., 2017). Moreover, the different incentives between managers of SOEs and non-SOEs results in different ODI decisions. SOEs managers intend to undertake overseas investments to follow the guidance, policy, and capital control of the government as they are appointed by the state directly as government officials or after serving as government officials (Brockman, Rui, and Zou, 2013; Fan,

[2] We thank the anonymous referee for pointing us in this direction.

Wong, and Zhang, 2007). Accordingly, managers of SOEs are more likely incentivized by not only the prospect of firm performance, but also the political goals and objectives of the government (Cuervo-Cazurra and Dau, 2009).

Political goals can lead to both government support and intervention to SOEs. Governments may support SOEs by providing subsidies, tax benefits, and backing in poor economic circumstances, while governments may also intercede in SOEs by controlling and influencing their decisions, strategies, and activities with complicated administration procedures and policy pressure (Lin et al., 1998; Lioukas et al., 1993).

SOEs and non-SOEs also tend to have different motives and location choices when undertaking outward direct foreign investment (Amighini, Rabellotti, and Sanfilippo, 2013; Ramasamy et al., 2012). SOEs tend to invest more in countries with large natural resources and risky political environments, while private firms tend to seek large markets and strategic assets (Voss, Buckley, and Cross, 2010). Luo et al. (2010) find that when compared to SOEs, non-SOEs are more vulnerable to political risk, market volatility, and foreign competition without substantial policy and financial support from the government making survival in a foreign market a primary goal, as well as seeking value adding activities.

In addition, the literature demonstrates that host country institutions may put greater pressure on SOEs to prevent them from resource-seeking activities due to their political status (Cui and Jiang, 2012). This result is inconsistent with the resource-based view that argues that SOEs should outperform non-SOEs in international markets with more institution-based resources (Wang, Hong, Kafouros, and Boateng, 2012; Wang, Hong, Kafouros, and Wright, 2012). Special theories must be nested within general theories when explaining Chinese ODI in SOEs as SOEs tend to invest in complex and costly projects and make frequent risky acquisitions (Quer, Claver, and Rienda, 2012). Overall, we postulate that state ownership has an influential role in firms' GODI decisions leading to a different impact on subsequent Tobin's Q.

H4. The impact of Chinese listed firms' GODI on Tobin's Q differs between state-owned enterprises and privately owned firms.

3. Data and variable construction

3.1. Data

Our initial sample includes all A-share firms listed on the Shanghai and Shenzhen Stock Exchanges. We obtain firms' greenfield ODI, financial, accounting, and ownership data from the China Stock Market & Accounting Research (CSMAR) database. The sample period is from 2003 to 2019. We winsorize all the continuous variables at the 1% and 99% levels to minimize the effect of outliers. We exclude all of the financial firms due to their special nature. Then, we merge all the greenfield investment, financial, accounting, and ownership data for empirical analyses. Our final sample includes 3744 firms and 32,484 firm-year observations.

3.2. Variables construction

In the existing ODI literature, researchers usually capture firm-level ODI in different ways. ODI can be measured by the amount of capital a firm invested overseas in a given year (Wang, Hong, Kafouros, and Wright, 2012), the number of foreign investment projects of a firm in a specific foreign country (Ramasamy et al., 2012), the number of a firm's newly established foreign subsidiaries in a given year (Xia, Ma, Lu, and Yiu, 2014), or a dummy variable that a firm invests in foreign countries (Lu, Liu, Wright, and Filatotchev, 2014). Following Lu et al. (2014), we use a dummy variable that a firm has greenfield investment in foreign countries as the measurement of greenfield ODI in our baseline regression. We define greenfield ODI as the investment in new plants as a form of ODI through which a company enters a foreign market (Görg, 2000). Due to data availability, a dummy variable is commonly used in Chinese studies that examine the ODI effect by providing firm-level evidence (Bu, Li, and Jiang, 2019; Yan, Zhang, Shen, and Han, 2018). *GODI* is the key independent variable in this study that is equal to one if a firm engages in greenfield ODI in a year and zero if a firm does not engage in ODI at all. We also use the number of foreign projects (*Nproject*) a firm undertakes in a year and the number of foreign investment destinations (countries) (*Ncountry*) a firm invests in over a year as alternative measures for firm-level ODI as robustness checks.

Firm performance is measured based on Tobin's Q defined as the market value of the firm divided by the book value of the total assets of the firm. When compared with conventional accounting-based profitability measures (i.e., ROA, ROS, and ROE), our market-based performance measure is less likely to be manipulated by management, especially in transition economies with weak institutions like China (Delios and Wu, 2005; Ma et al., 2006), avoids incorporating a complicated equity structure (e.g., tradable and non-tradable shares) for Chinese listed firms (Delios and Wu, 2005), and better captures the long-term nature of the ODI projects.[3]

We include a vector of control variables correlated with firm performance following the literature. We first include financial and accounting measures (i.e., firm size, leverage ratios, the percentage of fixed assets, the percentage of capital expenditures, the percentage of operating cash flow, cash dividends, and firm growth). *Firm Size* is calculated as the natural logarithm of total assets. *Leverage* is total debt to total assets. *PPE/TA* is calculated as the value of a firm's plant, property, and equipment divided by total assets. *CAPEX/TA* is a firm's capital expenditures divided by total assets. CF/*TA* is a firm's operating cash flow divided by total assets. *Cash Dividend* takes a value of one if firm pays cash dividends and zero otherwise. *Firm Growth* is calculated as a firm's revenue growth. We then include corporate governance variables including board size, the percentage of independent directors, firm age, and the top ten

[3] We are thankful for the reviewer's suggestion and have included the annual stock return as an alternative variable of firm performance and find consistent results. For brevity, this is not reported, but is available upon request.

shares concentration. *Ln(Board Size)* is calculated as the natural logarithm of the number of directors on the board. *Independent Directors%* is the ratio of the number of independent directors to the total number of directors. *Ln(1 + Firm Age)* is calculated as the natural logarithm of one plus firm age. *Top 10 Shareholders* is the total shareholdings of the top 10 shareholders. We also include CEO characteristics variables: CEO age and CEO gender. *Ln(CEO Age)* is calculated as the natural logarithm of CEO age. *CEO Gender* is a dummy variable that takes a value of one if the CEO is male and zero otherwise. Finally, we include the variable *Financial Constraint* to measure the firm's financial constraints following Whited and Wu (2006).[4]

3.3. Regression model

We use an ordinary least squares regression to investigate whether firms' greenfield ODI enhances or impedes firm performance in the baseline regression:

$$Tobin's\ Q_{i,t} = \alpha + \beta_1 GODI_{i,t-1} + \beta_2 X_{i,t-1} + \varepsilon_i \quad (1)$$

where $Tobin's\ Q_{i,t}$ indicates firm performance measured by the market value of a firm divided by the book value of total assets for firm i in year t. $GODI_{i,t-1}$ is a dummy variable takes a value of one if a firm engages in greenfield ODI in year t-1 and zero if a firm does not engage in ODI at all. $X_{i,t-1}$ is a vector of control variables for firm i in year t-1. ε_i refers to the error term. The key independent variable and all of the control variables are lagged for one year as firms must get approval from the government before they can undertake greenfield ODI. Another reason why we use one-year lagged independent and control variables is that it partially mitigates the endogeneity problem. For example, firm performance may affect a firm's decisions to undertake ODI in future years. Industry and year fixed effects are included with robust standard errors clustered by firm in all of the regressions.

3.4. Descriptive statistics

Table 1 reports the descriptive statistics of the main variables used in this study. Tobin's Q is 2.136, on average, in line with previous Chinese studies (Cheng, Chan, and Leung, 2018; Yuan et al., 2016). For the control variables, firms, on average, have a firm size of 21.955, leverage of 43.2%, a firm age of 2.743, 93.9% of male CEOs, and a growth rate of 6.4%. In addition, 73.1% of firms in our sample pay cash dividends.[5]

4. Empirical results

4.1. Baseline regression

The results of the baseline regression are presented in Table 2. GODI is employed as our main variable of interest here. We begin our analysis by running an ordinary least square (OLS) regression of Tobin's Q on GODI and other control variables with industry fixed effects and standard errors clustered at the firm level.

The results indicate that undertaking greenfield ODI has a significant and positive effect on Tobin's Q in Column (1). Specifically, the coefficient of *L.GODI* is 0.122 and is statistically significant at the 1% level. Our results of the positive GODI effect on Tobin's Q indicate that GODI can increase market-based performance. Generally, undertaking GODI would result in a 12.2% increase in a firm's Tobin's Q. We argue that the market responds positively to firms engaging in overseas investment as greenfield ODI sends a good signal to the market that they are mature and capable of expanding investments in foreign markets leading to an increase in Tobin's Q. The results for robustness checks using *Nproject* and *Ncountry* as alternative measures of greenfield ODI are provided in Table A3.[6]

As for the control variables, our results indicate a significant and negative relation between firm size and Tobin's Q. This demonstrates that small firms tend to seek value-adding projects to increase their Tobin's Q. We also find a significantly negative relation between *PPE/TA* and Tobin's Q. According to Gulen and Ion (2016), higher *PPE/TA* represents higher adjustment costs for a firm. The significantly negative relationship between *PPE/TA* and Tobin's Q in our results indicates that firms with lower adjustment costs would have higher Tobin's Q. We also find a significant negative relation between *CAPEX* and firm performance suggesting that greater capital expenditures reduce Tobin's Q. Firm age and firm growth are both shown to be positively related to Tobin's Q indicating that mature firms and firms with high growth prospects are associated with better market-based performance.

4.2. Endogeneity

Our baseline regression results may be subject to endogeneity problems including the possibility of self-selection and reverse causality. Although our results indicate that firms undertaking GODI are associated with increased Tobin's Q, firms with higher Tobin's Q might also be more likely to undertake GODI as a result. First, we re-estimate the baseline regression by controlling for firm and year fixed effects to account for any time-invariant observable or unobservable firm characteristics. Next, due to a possible selection bias

[4] Detailed variable definitions are described in the Appendix Table A1.
[5] The correlation matrix for all of the variables included are reported in Appendix Table A2.
[6] As shown in Table A3, the results remain significant and consistent when using *Nproject* and *Ncountry* as alternative measures of greenfield ODI.

Table 1
Descriptive statistics.

Variable	Obs	Mean	SD	Max	Min	P25	P50	P75
Tobin's Q	32,484	2.136	1.446	10.482	0.925	1.280	1.663	2.415
Firm Size	32,484	21.955	1.282	25.846	19.061	21.027	21.785	22.682
Leverage	32,484	0.432	0.209	1.256	0.052	0.267	0.428	0.587
PPE/TA	32,484	0.228	0.170	0.738	0.002	0.095	0.193	0.326
CAPEX/TA	32,484	0.054	0.052	0.250	0.000	0.016	0.039	0.076
CF/TA	32,484	0.048	0.074	0.261	−0.205	0.008	0.047	0.090
Cash Dividend	32,484	0.731	0.444	1.000	0.000	0.000	1.000	1.000
Ln (Board Size)	32,484	2.155	0.205	2.996	1.099	2.079	2.197	2.197
%Independent Directors	32,484	0.370	0.054	0.800	0.083	0.333	0.333	0.400
Ln (1 + Firm Age)	32,484	2.743	0.407	4.139	0.263	2.515	2.802	3.034
Financial Constraint	32,484	−1.064	0.072	−0.880	−1.249	−1.110	−1.065	−1.017
Ln (CEO Age)	32,484	3.875	0.141	4.500	3.178	3.784	3.892	3.970
CEO Gender	32,484	0.939	0.240	1.000	0.000	1.000	1.000	1.000
Top 10 Shareholders	32,484	57.988	16.383	91.190	9.090	47.240	59.680	70.480
Firm Growth	32,484	0.064	0.094	0.448	−0.839	0.023	0.054	0.094

This table provides descriptive statistics of the main variables used in this study. The full sample is comprised of 32,484 firm-year observations. The definitions of all variables are presented in the Appendix Table A1.

Table 2
Greenfield ODI and firm performance.

	(1)	(2)
Variables	Tobin's Q	Tobin's Q
L.GODI	0.122***	0.041*
	(4.45)	(1.87)
L.Firm Size	−0.762***	−0.831***
	(−12.81)	(−34.76)
L.Leverage	0.059	0.546***
	(0.46)	(9.72)
L.PPE/TA	−0.734***	−0.476***
	(−7.23)	(−6.64)
L.CAPEX/TA	−0.540***	−0.355**
	(−2.63)	(−2.39)
L.CF/TA	1.487***	0.542***
	(7.35)	(5.07)
L.Cash Dividend	−0.645***	−0.187***
	(−8.81)	(−5.44)
L.Ln (Board Size)	−0.057	−0.152**
	(−0.77)	(−2.56)
L.Independent Directors%	0.748***	0.349*
	(3.13)	(1.95)
L. Ln (1 + Firm Age)	0.163***	0.707***
	(4.32)	(10.17)
L. Financial Constraint	−6.925***	−3.289***
	(−6.21)	(−7.04)
L.Ln (CEO Age)	0.182*	0.221***
	(1.94)	(3.60)
L.CEO Gender	−0.030	−0.042
	(−0.61)	(−1.10)
L.Top 10 Shareholders	−0.004***	−0.002***
	(−4.57)	(−4.18)
L.Firm Growth	0.377**	0.428***
	(2.23)	(5.85)
Constant	10.063***	13.537***
	(20.00)	(33.78)
Observations	29,344	29,344
R-squared	0.379	0.636
Industry FE	Yes	No
Firm FE	No	Yes
Year FE	Yes	Yes

This table provides the OLS results of Eq. (1). It investigates the relation between undertaking GODI and firm performance using the full sample controlling for multiple fixed effects. The key independent variable and all control variables are lagged for one year. The definitions of all variables are presented in the Appendix Table A1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

and reverse causality concern, we use a DiD approach combined with the propensity score matching technique to address possible endogeneity concerns. Another potential endogeneity problem is that our results could be influenced by omitted variables and it is possible that there are non-observable factors affecting both Tobin's Q and GODI decisions. As such, we employ a 2SLS regression with instrumental variables to further address endogeneity issues.

4.2.1. Controlling for firm and year fixed effects

The results of Column (2) in Table 2 provide the relation between greenfield ODI and firm performance measured by Tobin's Q by controlling for firm and year fixed effects to account for any time-invariant observable or unobservable firm characteristics. Based on the results in Column (2), we find that undertaking greenfield ODI has a significant and positive effect on Tobin's Q after controlling for firm and year fixed effects. Specifically, the coefficient on *L.GODI* is 0.041 and is statistically significant at the 10% level in Column (2) indicting that undertaking greenfield ODI will result in a 4.1% increase in a firm's Tobin's Q.

4.2.2. PSM technique and DiD approach

Following Barba Navaretti and Castellani (2004), Debaere, Lee, and Lee (2010), and Fang, Tian, and Tice (2014), we adopt a PSM technique to build a counterfactual by constructing a treatment group that consists of firms employing greenfield ODI and a control group of comparable firms that do not undertake ODI at all. We match observable characteristics of the treatment and control groups to deal with the concern that the treatment and control firms are fundamentally different. After PSM matching, when compared with treatment firms, control firms should have the same observable characteristics, but without undertaking ODI at all. We use a Probit model to estimate the probability of undertaking GODI as a function of firm characteristics:

$$Pr\left(GODI_{i,x,t} = 1 \middle| X_{i,x,t-1}\right) \tag{2}$$

where $GODI_{i,\,x,\,t}$ is equal to one if a firm has greenfield ODI and zero if a firm does not engage in ODI at all. $X_{i,\,x,\,t-1}$ is a vector of observable lagged firm characteristics [e.g., all of the control variables in Eq. (1)]. We also control for industry effects using three-digit industry codes. Finally, we employ the propensity score matching approach with one-to-one matching to estimate the propensity of engaging in GODI.

Panel A in Table A4 reports the results of the Probit estimates and the post-match diagnostic tests. The results in Column (1) indicate that the Probit model captures a good amount of variation in the variables included with the pseudo R^2 of 12.3% and the *p*-value of the chi-square test of 0.000. We find that larger, more mature, less leveraged, and less financially constrained firms are more likely to engage in greenfield ODI. Then, we compute the propensity scores based on the output of the Probit regression and perform a one-to-one nearest-neighbor propensity score matching. As such, each GODI firm is matched with a firm without ODI at all. Next, we conduct diagnostic tests to evaluate the results of the matching procedures following Cozza et al. (2015) and Fang et al. (2014). We re-run the Probit model using the PSM matched sample and the results are presented in Column (2) of Panel A, Table A4. The results indicate that none of the variables are significant anymore except for *L.Cash Dividend* signifying not much observable difference between the treatment and the control groups. Moreover, the coefficients on the variables in Column (2) are all smaller in absolute value than those in Column (1). Additionally, the pseudo R^2 (Sianesi, 2004) decreases sharply from 12.3% in the pre-matching sample to 0.18% in the post-matching analysis. The p-value of the chi-square test changes from 0.000 in Column (1) to 1.0000 in Column (2). Moreover, as presented in Panel B of Table A4, we estimate the propensity score distribution for both the treatment and the control groups and examine the difference between the two groups. The results show that the differences in propensity scores of the two groups are rather small. All are below 0.01 in absolute value. As such, the diagnostic tests indicate that the PSM process helps address the observable differences of the treatment and control groups.

Before running the DiD regression, we conduct a parallel trends test (Fang et al., 2014) using the OBOR initiative in 2013 as the exogenous shock. The OBOR initiative is a top-level national policy that promotes the economic integration of China with Asia, Europe, and Africa. The OBOR initiative is exogenous and unpredictable for firms as it promotes GODI, but is not directly related to Tobin's Q. Therefore, we expect the OBOR initiative to serve as a good exogenous shock to perform a DiD test. Because the parallel trends assumption needs to be satisfied to verify that our results are reliable, we estimate the coefficients of the interactions of *Treat* dummy and year dummies from 2010 to 2016, a seven-year window including the pre-OBOR shock period from 2010 to 2012 and the post-OBOR shock period from 2014 to 2016. The regression we use is shown as below:

$$\begin{aligned} Tobin's\ Q_{i,t} = {} & \alpha + \beta_1 Treat_i{*}Before^3 + \beta_2 Treat_i{*}Before^2 + \beta_3 Treat_i{*}Before^1 + \beta_4 Treat_i{*}Current \\ & + \beta_5 Treat_i{*}After^1 + \beta_6 Treat_i{*}After^2 + \beta_7 Treat_i{*}After^3 + \beta_8 X_{i,t} + \varepsilon_i \end{aligned} \tag{3}$$

The dependent variable is $Tobin's\ Q_{i,\,t}$. $Treat_i$ is a dummy variable takes a value of one for the treatments firms (i.e., firms that engage in GODI) and zero for the control firms (i.e., firms that do not engage in ODI). $Before^3$, $Before^2$, $Before^1$, *Current*, $After^1$, $After^2$, and $After^3$ are dummy variables take a value of one if the observation year is from 2010, 2011, 2012, 2013, 2014, 2015, and 2016, respectively, and zero otherwise. The control variables remain the same as in Eq. (1). ε_i refers to the error term. The benchmark (omitted group) includes firm-year observations during 2012 (e.g., one year prior to the OBOR initiative) to avoid multicollinearity.[7] Column (1) of Table A5 reports the results of the parallel trends test controlling for industry and year fixed effects, while Column (2) provides the results controlling for firm and year fixed effects. The coefficients on $Treat_i$ * $Before^3$ and $Treat_i$ * $Before^2$ are both statistically

[7] The results of the parallel trend are provided in Table A5.

insignificant in Columns (1) and (2) suggesting that there are no observable different trends between the treatment and control groups before the OBOR initiative. Thus, the parallel trends assumption is valid. The results in Column (1) demonstrate that treatment firms have higher Tobin's Q in the year of the OBOR initiative (2013) and one year, as well as two years, after the initiative (2014 and 2015) when compared to the control firms as the coefficient on $Treat_i$ * *Current*, $Treat_i$ * *After*[1], and $Treat_i$ * *After*[2] is 0.133, 0.167, and 0.334, respectively, and the significant level increases accordingly. The results in Column (2) show that treatment firms have higher Tobin's Q in 2015 and 2016 compared to the control firms after controlling for firm and year fixed effects. Overall, the results in Table A5 indicate that the parallel trends assumption is valid for performing the DiD estimation. We can also come to the same conclusion that the parallel trends assumption is not violated based on Fig. 1 in the appendix.

We use the PSM matched sample to estimate the DiD estimator to address the time-invariant unobservable differences between the treatment and the control groups in Table 3. The DiD model is shown as below:

$$Tobin's\ Q_{i,t} = \alpha + \beta_1 Treat_i * T_i + \beta_2 Treat_i + \beta_3 T_i + \beta_4 X_{i,t} + \varepsilon_i \quad (4)$$

The dependent variable is *Tobin's* $Q_{i,t}$. As discussed, $Treat_i$ is a dummy variable takes a value of one for treatment firms and zero for control firms. T_i is a dummy variable takes a value of one if the observation year is from the shock and post-shock period (i.e., 2013–2016) and zero otherwise. $Treat_i$ * T_i (DiD) is the interaction of the *Treat* dummy and the shock dummy, so β_1 is the DiD estimator for our key interest. The control variables remain the same as in Eq. (1). ε_i refers to the error term. Table 3 presents the results of the DiD model.[8] Column (1) reports the difference in Tobin's Q between the treatment and the control groups before and after the OBOR initiative controlling for industry and year fixed effects with robust standard errors clustered by firm. Column (2) provides the results controlling for firm and year fixed effects and the results still hold. The coefficients on the DiD estimator is 0.147 in Column (1) and 0.150 in Column (2) and both are significant at the 1% level indicating that GODI has a significant and positive impact on Tobin's Q after addressing the endogeneity concerns. These results are consistent with our baseline finding as shown in Table 2. In addition, consistent with the results in Table 2, it shows that firm size and *PPE/TA* (a proxy for adjustment cost) have a negative relationship with Tobin's Q, while firm age and firm growth have positive relationship with Tobin's Q in Columns (1) and (2).

4.2.3. 2SLS estimation

In this section, we use an instrumental variable 2SLS method to mitigate potential endogeneity concerns. The first instrumental variable we use is *International School* measured by the natural log of one plus the number of international schools in each province where a firm is headquartered. We hand collect the data on international schools from Xinxueshuo. This is a website providing detailed information about Chinese international schools. The number of international schools varies with local education background and the level of foreign culture acceptance. In addition, the number of foreigners living and working in each province also affects the number of international schools as the international schools were originally established to facilitate the education requirement for foreigners' children. Therefore, we expect that firms located in provinces with more international schools are more likely to have international exposure and engage in greenfield ODI.

In addition, we hand collect the latitude and longitude data of international airports in China from Wikipedia. Using the hand-collecting data, we calculate the natural log of the average distance of a firm's headquarters to two of its nearest international airports as the second instrumental variable (*DIST*). The latitude and longitude data of each firm's headquarters are obtained from the CSMAR database. We expect closer proximity to international airports facilitates international travel which promotes international business. Thus, firms that are closer distance to international airports are more likely to have international exposure and undertake overseas investment as a result. The two variables, *International School* and *DIST*, are exogenous as the number of international schools and the average distance to international airports are not correlated with firm performance. They serve as appropriate instrumental variables for our 2SLS test.

Table 4 presents the 2SLS regression results. Columns (1) and (2) report the results of the first-stage analysis controlling for industry and year fixed effects, as well as firm and year fixed effects, respectively. The coefficient of *International School* is significantly positive at the 1% level in Column (1) and it is significantly positive at the 5% level in Column (2). The coefficients of *DIST* are both significantly negative at the 1% level in Columns (1) and (2). Several diagnostic tests were conducted to examine the reliability of the instrumental variable estimates. The statistics of the under-identification test and the weak identification test indicate the strength of the instrumental variables. Moreover, the Hansen J test (i.e., the overidentification test) does not reject the null hypothesis that the instrumental variables are valid at the 10% significance level. The results of the second stage analysis are presented in Columns (3) and (4). The coefficient on GODI is 0.308 in Column (3) and 0.334 in Column (4) and both are significant at the 1% level. Taken together, the results in Table 4 indicate that our baseline finding of the positive effect of greenfield ODI on Tobin's Q remains significant after using the instrumental variable 2SLS estimate.

4.3. Channel test

In this section, we identify two channels, effective tax rate and illiquidity, to examine the mechanisms through which greenfield ODI affects Tobin's Q using a two-step regression approach (Chen, Xie, You, and Zhang, 2018; Kim, Luo, and Xie, 2014). In the first-step

[8] We include the *Treat* dummy and shock variable when running the DiD regression, but they are omitted in Table 3 due to potential collinearity issues.

Table 3
DiD estimation.

	(1)	(2)
Variables	Tobin's Q	Tobin's Q
$Treat_i * T_i$ (DiD)	0.147***	0.150***
	(2.82)	(3.80)
Firm Size	−0.678***	−0.768***
	(−8.24)	(−19.81)
Leverage	−0.303**	0.259***
	(−2.35)	(2.88)
PPE/TA	−0.679***	−0.603***
	(−6.03)	(−5.70)
CAPEX/TA	−0.415	0.011
	(−1.64)	(0.05)
CF/TA	1.497***	0.838***
	(5.48)	(5.22)
Cash Dividend	−0.540***	−0.078
	(−4.78)	(−1.44)
Ln (Board Size)	−0.032	0.062
	(−0.34)	(0.69)
Independent Directors%	0.336	0.113
	(1.08)	(0.41)
Ln (1 + Firm Age)	0.224***	0.929***
	(4.18)	(6.82)
Financial Constraint	−5.196***	−0.777
	(−3.00)	(−1.02)
Ln (CEO Age)	0.023	−0.004
	(0.21)	(−0.05)
CEO Gender	−0.025	0.015
	(−0.39)	(0.28)
Top 10 Shareholders	−0.003***	−0.002***
	(−2.76)	(−2.79)
Firm Growth	1.736***	1.626***
	(7.77)	(13.55)
Constant	10.470***	14.550***
	(15.31)	(22.35)
Observations	13,728	13,728
R-squared	0.408	0.694
Industry FE	Yes	No
Firm FE	No	Yes
Year FE	Yes	Yes

This table presents the DiD estimators to examine the impact of GODI on Tobin's Q employing the One Belt One Road initiative in 2013 as the exogenous shock. $Treat_i$ is a dummy variable equal to one for the treatment firms (firms engaged in GODI) and zero for the control firms. T_i is a dummy variable that is equal to one if the year of the observation is from 2013 to 2016 and zero otherwise. It reports the full sample DiD test results controlling for multiple fixed effects. The definitions of all variables are presented in the Appendix Table A1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

regression, we examine the relation between greenfield ODI and each channel variable, respectively. Then, we explore the relationship between the channels and Tobin's Q in the second-step analysis. We expect greenfield ODI to have a positive effect on Tobin's Q by reducing effective the tax rate and illiquidity.

The effective tax rate is calculated as a firm's income tax expense divided by the total profits before taxes. We expect greenfield ODI to have a positive effect on Tobin's Q by reducing the effective tax rate. Previous studies use the effective tax rate to study the impact of different tax policies on the tax paid by firms (Adhikari et al., 2006; Wu et al., 2012). In addition, governments usually use income tax policies to implement their goals instead of total taxation according to Wu et al. (2012).

As one of the strategic decisions, greenfield ODI announcements may attract public attention and increase a firm's visibility. As a result, firms conducting greenfield ODI can increase trading volume of their stock. Thus, we use illiquidity (*ILLIQ*), measured as the annualized average ratio of the daily absolute returns to the trading volume on that day (Amihud, 2002), as the second channel variable.

The results of channel test are presented in Table 5. Columns (1) and (2) report the results of the first-step regression of the channel test. The coefficient on *GODI* in Column (1) is −0.021 and is statistically significant at the 5% level suggesting that firms undertaking greenfield ODI are more likely to receive beneficial tax rates. The coefficient on *ILLIQ* in Column (2) is −0.044 and is statistically

Table 4
2SLS test.

	First Stage of 2SLS Test		Second Stage of 2SLS Test	
	(1)	(2)	(3)	(4)
Variables	GODI	GODI	Tobin's Q	Tobin's Q
International School	0.051***	0.024**		
	(16.96)	(2.48)		
DIST	−0.061***	−0.058***		
	(−12.62)	(−5.41)		
GODI			0.308***	0.334***
			(3.59)	(4.04)
Firm Size	0.098***	0.099***	−0.822***	−0.126***
	(10.65)	(12.66)	(−14.82)	(−13.03)
Leverage	0.047***	0.028	0.206***	0.071***
	(3.03)	(1.60)	(2.80)	(6.88)
PPE/TA	−0.185***	0.029	−0.745***	−0.077***
	(−10.03)	(1.31)	(−11.60)	(−6.61)
CAPEX/TA	0.213***	−0.047	−0.112	0.068***
	(4.20)	(−1.10)	(−0.77)	(3.25)
CF/TA	0.119***	0.037	1.205***	0.043**
	(2.88)	(1.10)	(6.95)	(2.44)
Cash Dividend	−0.027*	−0.044***	−0.746***	−0.007
	(−1.88)	(−3.97)	(−9.90)	(−1.08)
Ln (Board Size)	−0.020	0.021	0.056	0.000
	(−1.35)	(1.18)	(1.37)	(0.02)
Independent Directors%	0.154***	−0.000	0.878***	0.052*
	(2.98)	(−0.01)	(5.74)	(1.91)
Ln (1 + Firm Age)	−0.023***	0.081***	0.212***	0.072***
	(−2.86)	(3.54)	(10.45)	(5.85)
Financial Constraint	−0.595***	−0.587***	−7.886***	−0.124
	(−2.87)	(−3.85)	(−6.66)	(−1.28)
Ln (CEO Age)	−0.080***	0.002	0.103*	0.008
	(−4.32)	(0.10)	(1.91)	(0.84)
CEO Gender	0.005	0.054***	0.005	−0.015**
	(0.50)	(4.58)	(0.15)	(−2.10)
Top 10 Shareholders	−0.000**	−0.001***	−0.006***	−0.000
	(−2.47)	(−6.28)	(−14.00)	(−1.19)
Firm Growth	−0.099***	−0.085***	1.212***	0.163***
	(−3.43)	(−3.58)	(7.37)	(9.92)
Observations	29,182	29,063	29,182	29,063
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes
Wald F statistic	253.649	165.550		
Underidentification test (Kleibergen-Paap rk LM statistic)	1045.606	41.340		
Weak identification test (Kleibergen-Paap rk Wald F statistic)	548.946	21.320		
Overidentification test (Hansen J statistic)	0.725	0.045		
(Hansen J p-value)	0.394	0.832		

This table provides the results of the 2SLS regression with instrumental variables controlling for multiple fixed effects. *International School* is measured by the number of international schools in each province where a firm is headquartered. *DIST* is calculated by averaging the distance of a firm's headquarters to two of its nearest international airports. The definitions of all variables are presented in the Appendix Table A1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

significant at the 1% level implying that undertaking greenfield ODI reduces illiquidity. As shown in Columns (3) to (4), the coefficients on the tax rate and illiquidity are −0.139 and − 0.078, respectively, and all are significant at the 1% level. These results indicate a significantly negative relationship between the effective tax rate/illiquidity and Tobin's Q. Thus, the findings in Table 5 support our expectations that greenfield ODI increases Tobin's Q through reduced effective tax rates and reduced illiquidity.[9]

4.4. Why state ownership matters?

In this section, we explore the moderating effect of state ownership by re-estimating the tests discussed above to demonstrate the differential effects on firm performance for non-SOEs vs. SOEs. We separate our full sample into SOE and non-SOE subsamples to investigate whether state ownership reshapes the relationship between GODI and Tobin's Q. We expect the relationship to be stronger

[9] We also use average daily turnover following Lee and Swaminathan (2000) as an alternative measure of liquidity in the channel test and find consistent results.

Table 5
Channel test.

	(1)	(2)		(3)	(4)
Variables	Tax	ILLIQ	Variables	Tobin's Q	Tobin's Q
GODI	−0.021**	−0.044***	L.Tax	−0.139***	
	(−2.56)	(−3.26)		(−5.35)	
Firm Size	0.053***	−0.243***	L.ILLIQ		−0.078***
	(4.29)	(−10.26)			(−11.23)
Leverage	0.237***	0.376***	L.Firm Size	−0.744***	−0.778***
	(9.27)	(9.80)		(−12.70)	(−12.94)
PPE/TA	0.189***	−0.165***	L.Leverage	0.099	0.157
	(5.90)	(−3.79)		(0.75)	(1.18)
CAPEX/TA	−0.585***	−0.093	L.PPE/TA	−0.742***	−0.775***
	(−11.17)	(−0.85)		(−7.38)	(−7.61)
CF/TA	0.032	0.111	L.CAPEX/TA	−0.588***	−0.534***
	(0.67)	(1.15)		(−2.87)	(−2.58)
Cash Dividend	0.008	0.081**	L.CF/TA	1.510***	1.665***
	(0.43)	(2.41)		(7.49)	(8.17)
Ln (Board Size)	0.030	0.053*	L.Cash Dividend	−0.647***	−0.612***
	(1.22)	(1.68)		(−8.85)	(−8.32)
Independent Directors%	0.136*	−0.024	L.Ln (Board Size)	−0.059	−0.043
	(1.79)	(−0.23)		(−0.79)	(−0.58)
Ln (1 + Firm Age)	0.025**	−0.012	L.Independent Directors%	0.782***	0.753***
	(2.50)	(−0.60)		(3.26)	(3.14)
Financial Constraint	0.959***	−0.298	L. Ln (1 + Firm Age)	0.165***	0.153***
	(3.44)	(−0.59)		(4.36)	(4.01)
Ln (CEO Age)	0.004	0.132***	L. Financial Constraint	−6.894***	−6.761***
	(0.21)	(3.15)		(−6.21)	(−6.00)
CEO Gender	0.013	−0.006	L.Ln (CEO Age)	0.176*	0.182*
	(0.99)	(−0.21)		(1.87)	(1.92)
Top 10 Shareholders	−0.001***	0.009***	L.CEO Gender	−0.028	−0.018
	(−3.87)	(21.47)		(−0.56)	(−0.37)
Firm Growth	−0.188***	0.133*	L.Top 10 Shareholders	−0.004***	−0.002**
	(−4.95)	(1.76)		(−4.70)	(−2.40)
Constant	−0.003	4.020***	L.Firm Growth	0.321*	0.533***
	(−0.02)	(18.66)		(1.90)	(3.00)
			Constant	9.795***	10.416***
				(19.90)	(20.69)
Observations	33,573	33,185	Observations	29,344	29,055
R-squared	0.201	0.122	R-squared	0.379	0.387
Industry FE	Yes	Yes	Industry FE	Yes	Yes
Year FE	Yes	Yes	Year FE	Yes	Yes

This table reports the results of channel tests. *Tax* refers to the effective tax rate measured as the income tax expense divided by the total profit before taxes of each firm-year observation. *ILLIQ* is the illiquidity measure calculated following Amihud (2002). Columns (1) and (2) present the results of the first step of the channel test. Columns (3) and (4) provide the results of the second step of the channel test. The definitions of all variables are presented in the Appendix Table A1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

in privately owned firms as the political objectives associated with state ownership may weaken the GODI effect. As discussed, the political connection between SOEs and the government makes political interference much more pronounced in SOEs compared to privately owned firms. As the controlling shareholders of Chinese SOEs, government agencies must accomplish social and political objectives by utilizing listed firms' resources to strengthen their political capital (Li et al., 2017). According to Dunning (1998), there are four types of motivation for ODI decisions: international production resource seeking, market seeking, efficiency seeking, and strategic assets seeking. We expect that SOEs and non-SOEs have different goals and objectives when undertaking greenfield outward foreign direct investments. Non-SOEs are more likely to seek value-adding projects that increase firm performance. Alternatively, SOEs' GODI decisions are mainly driven by political goals. As a result, we expect that the effect of GODI on Tobin's Q is stronger in non-SOEs than in SOEs.

Table 6 reports the greenfield ODI effect on firm performance in non-SOEs and SOEs in Columns (1) and (2), respectively. The coefficient on GODI in Column (1) is 0.158 and is significant at the 1% level, while the coefficient on GODI in the SOEs subsample is insignificant in Column (2) in line with our expectations. The results suggest that the positive effect of greenfield ODI on Tobin's Q exists only in non-SOEs, which is consistent with the argument that SOEs focus on political goals rather than seeking economic optimization or profit maximization (Kang and Jiang, 2012; Liou, 2009; Luo et al., 2010; Ramasamy et al., 2012; Wang, Hong, Kafouros, and Boateng, 2012; Wang, Hong, Kafouros, and Wright, 2012). This result also implies that the market can determine whether the greenfield ODI is driven by political objectives, thereby potentially weakening the ODI's economic benefits.

Table 6
SOE vs. Non-SOE.

	(1)	(2)
Variables	Tobin's Q	Tobin's Q
	Non-SOE	SOE
L.GODI	0.158***	0.034
	(4.39)	(0.93)
L.Firm Size	−0.760***	−0.662***
	(−10.21)	(−6.46)
L.Leverage	0.191	−0.235
	(1.12)	(−1.47)
L.PPE/TA	−0.622***	−0.897***
	(−4.76)	(−5.80)
L.CAPEX/TA	−0.910***	0.333
	(−3.31)	(1.17)
L.CF/TA	2.006***	0.741**
	(8.04)	(2.36)
L.Cash Dividend	−0.614***	−0.481***
	(−6.83)	(−3.74)
L.Ln (Board Size)	−0.130	0.049
	(−1.20)	(0.60)
L.Independent Directors%	0.609*	0.331
	(1.70)	(1.25)
L. Ln (1 + Firm Age)	0.193***	0.100*
	(4.10)	(1.68)
L. Financial Constraint	−5.157***	−6.353***
	(−3.77)	(−3.15)
L.Ln (CEO Age)	0.123	0.198*
	(1.06)	(1.65)
L.CEO Gender	−0.042	−0.022
	(−0.67)	(−0.36)
L.Top 10 Shareholders	−0.008***	0.002**
	(−6.56)	(2.29)
L.Firm Growth	0.450**	0.578*
	(2.20)	(1.94)
Constant	12.214***	8.198***
	(17.29)	(11.83)
Observations	17,826	11,518
R-squared	0.383	0.387
Industry FE	Yes	Yes
Year FE	Yes	Yes

This table provides the OLS results of Eq. (1). It reports the relation between greenfield ODI using the SOE and non-SOEs subsamples, respectively, controlling for industry and year fixed effects with robust standard errors clustered by firm. The key independent variable and all control variables are lagged for one year. The definitions of all variables are presented in the Appendix Table A1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table A6 presents the results of the DiD regressions in non-SOEs vs. SOEs. Column (1) reports the DiD regression in non-SOEs. The coefficient on the DiD estimator is 0.164 and is statistically significant at the 5% level. Column (2) indicates the DiD regression in SOEs with an insignificant coefficient on the DiD estimator. Consistent with Table 6, the results find that the positive effect of GODI on Tobin's Q only exists in non-SOEs. These results are in line with our expectations that SOEs are more likely to be politically driven when undertaking GODI. In sum, our results indicate that GODI has a positive impact on market-based firm performance, and this effect is more pronounced in the non-SOE subsample.

Next, we re-run the two-step regression of channel tests using the non-SOEs vs. the SOEs subsamples. Wu et al. (2012) investigate the differential effect of political connections on firm performance in Chinese listed firms from 1999 to 2017. They find that politically connected managers of privately owned firms can help their firms to obtain tax benefits, while managers of SOE firms do not influence taxation significantly. Thus, we expect that non-SOEs benefit more from tax reductions when undertaking greenfield ODI when compared with SOEs that are more likely to conduct greenfield ODI with political objectives in mind. As for the moderating effect of state ownership on the illiquidity channel, given that investors generally think that SOEs tend to behave in the interests of the government, while non-SOEs are more likely to seek for value-adding activities and profit maximization, we expect the illiquidity channel to be more salient in non-SOEs.

The results in Columns (1) and (2) in Panel A of Table 7 indicate that there is a negative relationship between greenfield ODI and the effective tax rate of non-SOEs, while the relationship becomes insignificant for SOEs. The results demonstrate that the tax benefit effect is more pronounced in non-SOEs than in SOEs, consistent with the findings in Wu et al. (2012). Similar to the effective tax rate, we find a significantly negative relationship between greenfield ODI and illiquidity in non-SOEs and the relationship becomes insignificant in

Table 7
Channel test, SOE vs. non-SOE.

Panel A.				
	(1)	*(2)*	*(3)*	*(4)*
Variables	Tax	Tax	ILLIQ	ILLIQ
	Non-SOE	SOE	Non-SOE	SOE
GODI	−0.017**	−0.008	−0.082***	0.008
	(−2.21)	(−0.43)	(−4.17)	(0.74)
R-squared	0.188	0.203	0.143	0.132
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Panel B.				
	(1)	*(2)*	*(3)*	*(4)*
Variables	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q
	Non-SOE	SOE	Non-SOE	SOE
L.Tax	−0.149***	−0.134***		
	(−3.46)	(−4.90)		
L.ILLIQ			−0.088***	−0.046
			(−12.00)	(−1.53)
Observations	17,826	11,518	17,567	11,488
R-squared	0.382	0.389	0.395	0.388
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

This table reports the results of channel tests by splitting the full sample into SOE and non-SOE subsamples controlling for industry and year fixed effects with robust standard errors clustered by firm. *Tax* is the effective tax rate measured as the income tax expense divided by the total profit before taxes of each firm-year observation. *ILLIQ* is the measure of illiquidity constructed following Amihud (2002). Panel A reports the results of the first step of the channel test in the non-SOEs vs. SOEs subsamples, respectively. Panel B provides the results of the second step of the channel test in the non-SOEs vs. SOEs subsamples, respectively. The definitions of all variables are presented in the Appendix Table A1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

SOEs as shown in Columns (3) and (4). Viewed collectively, our first-step mechanism test suggests that the favorable effects of GODI on effective tax rates and reduced illiquidity only exist for non-SOEs.

Panel B of Table 7 reports the results of the second-step regression of non-SOEs vs. SOEs. The coefficient on the effective tax rate is −0.149 for non-SOEs in Column (1) and − 0.134 for SOEs in Column (2) and both are significant at the 1% level. As presented in Columns (3) and (4) in Panel B, the coefficient on illiquidity is −0.088 and is statistically significant at the 1% level for non-SOEs in Column (3), while it is −0.046 and insignificant for SOEs in Column (4). Overall, the results of Table 7 suggest that the channels that explain the impact of GODI on increased Tobin's Q through reduced effective tax rates and reduced illiquidity also only exist in non-SOEs. This is consistent with the results in Table 6.

4.5. Additional tests

In this section, we explore the possible explanations as to why GODI has differential effects on firm performance for non-SOEs vs. SOEs. According to Ramasamy et al. (2012), the destination choice of host countries differs across different ownership. Inspired by Ramasamy et al. (2012), we separate the host countries of GODI into different categories to investigate the differential effect of GODI on firm performance due to state ownership.

We separate the host countries into developed and developing economies as the first classification. Then, according to the OBOR initiative, host countries are classified into Belt-Road countries and non-Belt-Road countries. Because the OBOR initiative is a national level strategic initiative, we use it to investigate whether political interference matters to the impact of GODI on firm performance. Based on the literature discussed previously (Cuervo-Cazurra, Inkpen, Musacchio, and Ramaswamy, 2014; Li et al., 2017; Lin et al., 1998; Lioukas et al., 1993; Wang, Hong, Kafouros, and Boateng, 2012; Wang, Hong, Kafouros, and Wright, 2012), we expect that non-SOEs are more likely to invest in developed economies to pursue value-adding activities, while SOEs tend to invest in relatively less developed economies to pursue political objectives. In addition, when compared to non-SOEs, SOEs are expected to invest in Belt-Road countries due to the political objectives associated with state ownership.

We use a two-step regression approach following Kim et al. (2014) and Chen et al. (2018) to further examine the relation between ownership and destination choice and the effect of GODI destination on Tobin's Q. In the first-step regression, we examine the relation between state ownership and destination choice, and then we examine the relation between destination choice and Tobin's Q in the second-step analysis. The variables *SOE*, *DVLP*, and *BRC* are used as proxy for ownership, developing/developed countries, and Belt-

Table 8
Greenfield ODI destinations.

Panel A: Regression of ownership and destinations			Panel B: Regression of destinations and Tobin's Q		
	(1)	(2)		(1)	(2)
Variables	DVLP	BRC	Variables	Tobin's Q	Tobin's Q
SOE	−0.024***	0.052**	DVLP	0.157***	
	(−2.61)	(2.28)		(3.95)	
Firm Size	0.005	−0.007	BRC		−0.080**
	(0.25)	(−0.29)			(−2.36)
Leverage	−0.134***	0.143***	L.Firm Size	−0.386***	−0.384***
	(−5.70)	(3.21)		(−3.79)	(−7.23)
PPE/TA	0.027	0.063	L.Leverage	−0.471**	−0.476***
	(0.84)	(1.02)		(−2.48)	(−5.67)
CAPEX/TA	0.299***	−0.232*	L.PPE/TA	−1.074***	−1.065***
	(3.75)	(−1.95)		(−6.52)	(−9.31)
CF/TA	0.033	0.109	L.CAPEX/TA	−0.484	−0.455*
	(0.49)	(1.18)		(−1.32)	(−1.65)
Cash Dividend	−0.032	0.028	L.CF/TA	2.455***	2.478***
	(−1.14)	(0.76)		(7.09)	(11.23)
Ln (Board Size)	−0.090***	0.048	L.Cash Dividend	−0.320**	−0.319***
	(−4.26)	(1.18)		(−2.28)	(−3.99)
Independent Directors%	0.014	0.119	L.Ln (Board Size)	−0.104	−0.112
	(0.20)	(0.78)		(−0.87)	(−1.49)
Ln (1 + Firm Age)	−0.065***	0.014	L.Independent Directors%	0.569*	0.592**
	(−6.00)	(0.57)		(1.65)	(2.37)
Financial Constraint	−0.077	−0.021	L. Ln (1 + Firm Age)	0.063	0.055
	(−0.18)	(−0.04)		(1.05)	(1.49)
Ln (CEO Age)	−0.037	−0.058	L. Financial Constraint	−1.351	−1.318
	(−1.54)	(−1.32)		(−0.65)	(−1.11)
CEO Gender	0.006	0.023	L.Ln (CEO Age)	0.091	0.077
	(0.46)	(0.92)		(0.62)	(0.89)
Top 10 Shareholders	−0.000	−0.000	L.CEO Gender	−0.030	−0.026
	(−0.29)	(−0.36)		(−0.44)	(−0.53)
Firm Growth	−0.074*	0.087	L.Top 10 Shareholders	−0.003**	−0.003***
	(−1.82)	(1.58)		(−2.56)	(−3.67)
Constant	1.174***	0.482*	L.Firm Growth	0.964***	0.955***
	(7.95)	(1.82)		(3.42)	(6.52)
			Constant	8.449***	8.687***
				(11.28)	(16.78)
Observations	9846	9849	Observations	9156	9158
R-squared	0.105	0.081	R-squared	0.407	0.406
Industry FE	Yes	Yes	Industry FE	Yes	Yes
Year FE	Yes	Yes	Year FE	Yes	Yes

This table provides the results of a two-step regression approach. *SOE* is a dummy variable that takes a value of one if the firm is state owned enterprise and zero otherwise. *DVLP* is a dummy variable that takes a value of one if the host country is a developed country and zero otherwise. *BRC* is a dummy variable that takes a value of one if the destination is classified as a Belt-Road country and zero otherwise. Panel A investigates the relation between state ownership and investment destination choice with a first-step regression. Panel B reports the second-step regression between destinations and Tobin's Q. The definitions of all variables are presented in the Appendix Table A1. ***, **, and * indicate significance at the 1%, 5%, and 10%, respectively.

Road countries/non-Belt-Road countries, respectively. Specifically, *SOE* is a dummy variable that takes a value of one if the firm is a state-owned enterprise and zero otherwise. *DVLP* is a dummy variable that takes a value of one if the host country is a developed country and zero otherwise. *BRC* is a dummy variable takes a value of one if the GODI destination is classified as a Belt-Road country and zero otherwise. We expect a negative relationship between *SOE* and *DVLP* and a positive relation between *SOE* and *BRC* in the first-step regression. In the second-step regression, we expect a positive relationship between *DVLP* and Tobin's and a negative relationship between *BRC* and Tobin's Q.

Table 8 presents the results of the two-step regression. As shown in Panel A, the coefficient on *SOE* in Column (1) is −0.024, the coefficient on SOE in Column (2) is 0.052, and both are statistically significant at the 1% level suggesting that SOEs are more likely to invest in developing countries and Belt-Road countries when compared to non-SOEs. The results in Panel B report that *DVLP* is significantly and positively associated with Tobin's Q at the 1% level, while *BRC* is significantly and negatively associated with Tobin's Q at the 5% level indicating that firms investing in developing countries or Belt-Road countries have lower Tobin's Q. These results support our expectations.

5. Conclusions

We investigate the impact of firm-level greenfield ODI (GODI) on perceived firm value and growth prospects. We find that GODI has a positive effect on Tobin's Q. This result is robust to the endogeneity tests including a DiD approach combined with the PSM technique and a 2SLS regression with instrumental variables. Further analyses indicate that our results are more pronounced in non-SOEs than SOEs. We then explore the possible explanations as to why the impact of GODI on a firm's Tobin's Q is different between non-SOEs and SOEs. We find that SOEs are more likely to invest in developing countries, as well as Belt-Road countries, which explains the lower level of Tobin's Q identified among SOEs engaging in GODI when compared with non-SOEs. This finding suggests that the stock market does not respond positively if overseas investment is recognized as politically motivated.

Finally, our channel tests point to the effective tax rate and reduced illiquidity as two mechanisms through which GODI activities enhance Tobin's Q. Specifically, GODIs carried out by non-SOE companies in China help lower the firm's effective tax rate and reduce illiquidity (as these activities could attract more public attention and increase firm's visibility). Further analysis shows that the positive effect of GODI on Tobin's Q achieved through tax benefits and reduced illiquidity channels only exists in non-SOE companies (e.g., when overseas investments are not primarily driven by political agendas from the government).

CRediT authorship contribution statement

Baizhou Lu: Conceptualization, Methodology, Software, Formal analysis, Investigation, Data curation, Writing – original draft. **Wei Hao:** Validation, Writing – review & editing, Visualization, Supervision. **Jing Liao:** Validation, Writing – review & editing, Visualization, Supervision. **Udomsak Wongchoti:** Validation, Writing – review & editing, Visualization, Supervision.

Declaration of Competing Interest

All authors declare that they have no conflicts of interest.

Data availability

Data will be made available on request.

Appendix A. Appendix

Table A1
Variables definition.

Variables	Definition
Tobin's Q	The market value of a firm divided by total assets of the firm.
GODI	A dummy variable equal to one if a firm engages in greenfield ODI in a year and zero if a firm does not engage in ODI at all.
Nproject	The number of foreign projects a firm undertakes in a year.
Ncountry	The number of foreign investment destinations (countries) where a firm invests in a year.
Firm Size	Natural log of the total assets.
Leverage	Total debt/Total assets.
PPE/TA	Value of a firm's plant, property, and equipment divided by total assets.
CAPEX/TA	Firm's capital expenditures divided by total assets.
CF/TA	Firm's operating cash flow divided by total assets.
Cash Dividend	Takes a value of one if firm pays cash dividends and zero otherwise.
Ln (Board Size)	Natural log of the number of directors.
Independent Directors%	The percentage of independent directors on the board.
Ln (1 + Firm Age)	Natural log of one plus firm age.
Financial Constraint	The index of a firm's financial constraints.
Ln (CEO Age)	Natural log of CEO age.
CEO Gender	Takes a value of one if the CEO is male and zero otherwise.
Top 10 Shareholders	The percentage of total top 10 shareholders.
Firm Growth	Firm's revenue growth.
SOE	A dummy variable that takes a value of one if the firm is a state owned enterprise and zero otherwise.
DVLP	A dummy variable that takes a value of one if the host country is a developed country and zero otherwise.
BRC	A dummy variable that takes a value of one if the destination is classified as a Belt-Road country and zero otherwise.
International school	Natural log of one plus the number of international schools in each province where a firm is headquartered.
DIST	Natural log of the average distance of a firm's headquarters to two of its nearest international airports.
Tax	The effective tax rate measured as a firm's income tax expense divided by the total profit before taxes.
ILLIQ	The illiquidity measure following Amihud (2002).

Table A2
Correlation matrix.

	Tobin's Q	GODI	Firm Size	Leverage	PPE/TA	CAPEX/ TA	CF/TA	Cash Dividend	Ln (Board Size)	Independent Directors%	Ln (1 + Firm Age)	Financial Constraint	Ln (CEO Age)	CEO Gender	Top 10 Shareholders	Firm Growth
Tobin's Q	1															
GODI	−0.008	1														
Firm Size	−0.327***	0.290***	1													
Leverage	−0.217***	0.033***	0.429***	1												
PPE/TA	−0.142***	−0.140***	0.072***	0.092***	1											
CAPEX/TA	−0.063***	−0.032***	−0.030***	−0.054***	0.325***	1										
CF/TA	0.087***	0.010*	0.039***	−0.131***	0.272***	0.177***	1									
Cash Dividend	−0.087***	0.118***	0.163***	−0.221***	−0.071***	0.099***	0.132***	1								
Ln (Board Size)	−0.150***	−0.055***	0.211***	0.153***	0.188***	0.070***	0.058***	0.026***	1							
Independent Directors%	0.063***	0.091***	0.048***	−0.021***	−0.090***	−0.028***	−0.035***	0.006	−0.482***	1						
Ln (1 + Firm Age)	0.090***	0.125***	0.225***	0.134***	−0.071***	−0.227***	−0.007	−0.051***	−0.066***	0.053***	1					
Financial Constraint	0.230***	−0.316***	−0.810***	−0.138***	0.009	−0.012**	−0.188***	−0.573***	−0.125***	−0.059***	−0.203***	1				
Ln (CEO Age)	0.000	0.060***	0.157***	−0.007	0.023***	−0.026***	0.048***	0.089***	0.020***	0.039***	0.169***	−0.189***	1			
CEO Gender	−0.016***	0.000	0.032***	0.018***	0.049***	0.017***	−0.009*	−0.009	0.072***	−0.052***	−0.026***	−0.019***	0.017***	1		
Top 10 Shareholders	−0.123***	0.027***	0.080***	−0.132***	−0.004	0.128***	0.078***	0.205***	0.016***	0.019***	−0.236***	−0.150***	0.012**	−0.025***	1	
Firm Growth	0.085***	0.000	0.092***	0.016***	−0.067***	0.065***	0.199***	0.125***	0.023***	−0.009*	−0.005	−0.189***	−0.005	−0.014***	0.089***	1

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A3
Alternative greenfield ODI measures.

	(1)	(2)	(3)	(4)
Variables	Tobin's Q	Tobin's Q	Tobin's Q	Tobin's Q
L.Nproject	0.021***	0.012***		
	(3.12)	(2.97)		
L.Ncountry			0.054***	0.015**
			(5.45)	(2.00)
L.Firm Size	−0.797***	−0.836***	−0.800***	−0.834***
	(−12.71)	(−32.39)	(−12.75)	(−32.32)
L.Leverage	0.142	0.530***	0.138	0.532***
	(1.05)	(8.81)	(1.03)	(8.84)
L.PPE/TA	−0.748***	−0.438***	−0.739***	−0.438***
	(−7.07)	(−5.76)	(−7.01)	(−5.76)
L.CAPEX/TA	−0.558**	−0.347**	−0.551**	−0.344**
	(−2.56)	(−2.21)	(−2.54)	(−2.20)
L.CF/TA	1.563***	0.582***	1.551***	0.584***
	(7.39)	(5.10)	(7.34)	(5.12)
L.Cash Dividend	−0.657***	−0.212***	−0.652***	−0.211***
	(−8.56)	(−5.71)	(−8.49)	(−5.69)
L.Ln (Board Size)	−0.061	−0.109*	−0.051	−0.104
	(−0.77)	(−1.70)	(−0.65)	(−1.62)
L.Independent Directors%	0.802***	0.394**	0.807***	0.404**
	(3.15)	(2.04)	(3.17)	(2.10)
L. Ln (1 + Firm Age)	0.177***	0.738***	0.178***	0.736***
	(4.47)	(9.67)	(4.51)	(9.65)
L. Financial Constraint	−7.049***	−3.496***	−6.941***	−3.488***
	(−5.99)	(−6.90)	(−5.90)	(−6.88)
L.Ln (CEO Age)	0.187*	0.163**	0.193**	0.166**
	(1.94)	(2.49)	(2.01)	(2.54)
L.CEO Gender	−0.008	−0.046	−0.006	−0.046
	(−0.16)	(−1.13)	(−0.11)	(−1.13)
L.Top 10 Shareholders	−0.004***	−0.002***	−0.004***	−0.002***
	(−5.06)	(−3.76)	(−4.98)	(−3.75)
L.Firm Growth	0.296*	0.396***	0.303*	0.398***
	(1.67)	(5.09)	(1.72)	(5.10)
Constant	10.581***	13.440***	10.680***	13.386***
	(19.56)	(31.34)	(19.70)	(31.21)
Observations	26,424	26,424	26,424	26,424
R-squared	0.386	0.650	0.387	0.650
Industry FE	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes
Year FE	Yes	Yes	Yes	Yes

This table provides the OLS results of Eq. (1). It investigates the relation between alternative measures of undertaking greenfield ODI and firm performance using the full sample controlling for multiple fixed effects. The key independent variable and all control variables are lagged for one year. The definitions of all variables are presented in the Appendix Table A1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table A4
Probit model.

Panel A. Pre-match propensity score regression and post-match diagnostic regression

	(1)	(2)
Variables	Pre-match	Post-match
L.Firm Size	0.360***	0.026
	(11.20)	(0.79)
L.Leverage	0.212***	−0.013
	(4.21)	(−0.23)
L.PPE/TA	−1.176***	−0.035
	(−18.53)	(−0.48)
L.CAPEX/TA	1.346***	−0.043
	(7.89)	(−0.22)
L.CF/TA	0.622***	0.090
	(4.62)	(0.60)
L.Cash Dividend	0.183***	0.091*
	(3.82)	(1.81)
L.Ln (Board Size)	−0.061	−0.010
	(−1.30)	(−0.18)
L.Independent Directors%	0.557***	−0.108
	(3.28)	(−0.52)

(*continued on next page*)

Table A4 (*continued*)

Panel A. Pre-match propensity score regression and post-match diagnostic regression			
	(1)	(2)	
L. Ln (1 + Firm Age)	−0.179***	0.012	
	(−7.98)	(0.45)	
L. Financial Constraint	1.592**	1.083	
	(2.33)	(1.56)	
L.Ln (CEO Age)	−0.541***	0.065	
	(−9.30)	(0.95)	
L.CEO Gender	−0.032	0.052	
	(−0.96)	(1.32)	
L.Top 10 Shareholders	0.002***	0.001	
	(4.01)	(1.41)	
L.Firm Growth	0.257***	0.114	
	(2.83)	(1.14)	
Constant	−4.403***	0.137	
	(−14.88)	(0.38)	
Observations	30,029		18,417
Industry FE	Yes		Yes
Prob > Chi2	0.000	1.000	
Pseudo R-squared	0.123	0.002	

Panel B: Estimated propensity score distribution								
P-Score	Obs	Min	p5	Mean	p50	SD	p95	Max
Treatment	9099	0.0450	0.295	0.580	0.591	0.154	0.812	0.985
Control	9318	0.0420	0.288	0.581	0.597	0.160	0.820	0.994
Difference		0.000	0.007	−0.001	−0.006	−0.006	−0.008	−0.009

This table reports the Probit model results from Eq. (2). It estimates the probability of undertaking GODI as a function of firm characteristics. The results indicate which characteristics of firms are more likely to invest overseas. The key independent variable and all control variables are lagged for one year. The definitions of all variables are presented in the Appendix Table A1. ***, **, and * indicate significance at the 1%, 5%, and 10%, respectively.

Table A5
Parallel trend T.

	(1)	(2)
Variables	Tobin's Q	Tobin's Q
$Treat_i$ * $Before^3$	−0.079	−0.047
	(−0.80)	(−0.63)
$Treat_i$ * $Before^2$	0.101	0.048
	(1.59)	(0.69)
$Treat_i$ * *Current*	0.133**	0.046
	(2.17)	(0.71)
$Treat_i$ * $After^1$	0.167**	0.062
	(2.27)	(0.95)
$Treat_i$ * $After^2$	0.334***	0.247***
	(2.98)	(3.78)
$Treat_i$ * $After^3$	0.133	0.113*
	(1.64)	(1.80)
Observations	13,728	13,728
R-squared	0.408	0.694
Controls	Yes	Yes
Industry FE	Yes	No
Firm FE	No	Yes
Year FE	Yes	Yes

This table reports the results of the parallel trends assumption test controlling for multiple fixed effects using the One Belt One Road initiative (OBOR) unveiled in 2013 as the exogenous shock. The key independent variable and all control variables are lagged for one year. $Treat_i$ is a dummy variable equal to one for the treatment firms (firms engaged in GODI) and zero for the control firms. $Before^3$, $Before^2$, $Before^1$, *Current*, $After^1$, $After^2$, *and* $After^3$ are dummy variables that are equal to one if the year of the observation is from 2010, 2011, 2012, 2013, 2014, 2015, and 2016, respectively and zero otherwise. The definitions of all variables are presented in the Appendix Table A1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table A6
DiD estimation, SOE vs. non-SOE.

Variables	(1) Tobin's Q	(2) Tobin's Q
	Non-SOE	SOE
$Treat_i$ * T_i (DiD)	0.164**	0.023
	(2.05)	(0.33)
Observations	8109	5619
R-squared	0.405	0.447
Controls	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes

This table presents the DiD estimators to examine the impact of GODI on Tobin's Q employing the One Belt One Road initiative in 2013 as the exogenous shock. $Treat_i$ is a dummy variable equal to one for the treatment firms (firms engaged in GODI) and zero for the control firms. T_i is a dummy variable that is equal to one if the year of the observation is from 2013 to 2016 and zero otherwise. The table reports the subsample regression results by splitting the full sample into SOE and non-SOE subsamples controlling for industry and year fixed effects with robust standard errors clustered by firm. The definitions of all variables are presented in the Appendix Table A1. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

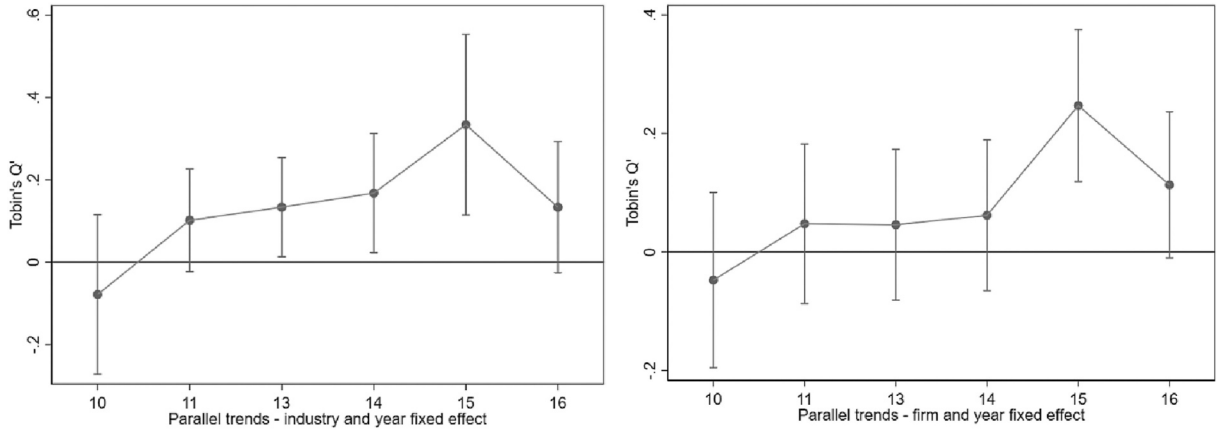

Fig. 1. Parallel trends controlling for industry and year fixed effects (left graph), as well as firm and year fixed effects (right graph).

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