The Valuation Effect and Consequences of Clawback Adoption in Real Estate Investment Trusts

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Abstract

This study explored the valuation effect of clawback adoption in the REIT market and identified possible channels through which clawback may generate benefits to REITs. We first found that the stock market reacts positively to the announcement of clawback adoption, and that market response is more pronounced when the clawback policy is strong, based on a sample of initial clawback adoptions in REITs between 2007 and 2018. The valuation effect of clawback adoption is stronger among those REITs with higher likelihood of restatements and greater disclosure opacity prior to adoption, suggesting that REIT investors anticipate that the adopted clawbacks will reduce financial restatement risks and improve disclosure quality. Our further analysis found that clawback adoption reduces the chance that REITs will receive comment letters from the regulator, improve financial reporting readability and decrease investment aggressiveness in REITs. Compared with weak clawback adopters, strong adopters have lower incidences of financial restatements in the post-adoption period. Our findings indicate that clawback is a value-relevant corporate governance mechanism in REITs.

Introduction

Clawback policy allows a firm, or a third party, to recoup incentive-based compensation from executives and other employees if there are errors in financial statements or if individuals engage in misconduct. Although the clawback rule has not been implemented by the Securities and Exchange Commission (SEC), many US-listed

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firms voluntarily adopted clawback provisions after the Dodd-Frank Act in 2010. The main purpose of clawback provisions is to penalize managers who fraudulently report accounting information that induces future restatements, as misreporting could boost performance-based compensation. While studies show that clawback adoption reduces financial restatements and earnings manipulations (Chan et al., 2012; deHaan et al., 2013), some unintended consequences also occur, e.g., managers tend to substitute accrual-based earnings management with real activities-based earnings management (Chan et al., 2015) or more opportunistic non-GAAP reporting (Kyung et al., 2019). Given the popularity of clawback provisions in Real Estate Investment Trusts (REITs),[1] this study examined the relevance of clawback provisions among REITs i.e., whether REIT investors welcome the adoption of a clawback policy in executive compensation, and whether clawback provisions in fact improve governance of REITs, as intended.

A few unique features give rise to the open empirical question, specifically for REITs, as to whether clawback provisions serve as an effective corporate governance mechanism. The REIT sector has an industry-specific operating environment and strict regulatory requirements, such as the conditions that more than 75% of income be derived from real estate assets, and at least 90% of net income be distributed as dividends to investors. The legal regulations could have limited the scope for managerial opportunism (Anglin et al., 2013; Bianco et al., 2007) and accordingly weaken the demand for internal governance control in REITs (Bauer et al., 2010; Durnev & Kim, 2005). Industry initiatives that discourage managerial manipulation (see, for example, Baik et al., 2011) may be strong enough to discipline managers and secure financial transparency. These factors together may suggest that additional regulatory initiatives on corporate governance may not incrementally matter to REITs. On the other hand, the lack of hostile takeovers in REITs (Campbell et al., 2011; Eichholtz & Kok, 2008) reduces the efficiency of external monitoring from the market and calls for an internal governance mechanism to align interests between managers and shareholders (Ghosh & Sirmans, 2003; Shivdasani, 1993). It is therefore not clear *ex-ante* whether a new internal governance mechanism such as a clawback policy can improve corporate governance performance and generate benefits to REIT shareholders as intended.

Three questions were addressed in this research. First, does clawback adoption yield positive value to REITs shareholders in terms of market response to the announcement of adopting clawback provisions? Second, which kind of REITs may benefit more from clawback provisions? Third, does adoption of clawbacks improve REITs' governance as intended? The first two questions were addressed by examining stock market reactions to the announcements of initial clawback adoptions in 152 listed REITs in the US from 2007 to 2018, and the third question by exploring the changes of firm performance due to clawback adoption in a REIT-year sample from 2001 to 2018. Based on the detailed descriptions of the clawback policy, a clawback index was constructed

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[1] The percentage of REITs that had adopted clawback policy is 60.65% in 2017. This adoption rate is similar to the percentage of 61% of firms in other industries (Babenko et al., 2019).

to measure the strength of the clawback provisions adopted in a REIT (Erkens et al., 2018). The results from standard event studies show that REIT market reactions are positive and highly significant to a strong clawback policy adoption announcements and minimal when the clawback strength is weak. The valuation effect of clawback adoption indicates that REIT investors view a strong clawback policy as effectively disciplining REIT managers through the threat of recouping compensations triggered by financial restatements such that they then align their interests with those of shareholders. This finding is consistent with the literature of corporate governance in the REIT market indicating that internal governance control can improve REIT firm performance and generate positive value to shareholders (e.g., Campbell et al., 2011; Hartzell et al., 2006; Hartzell et al., 2008).

Our analysis further explored the heterogeneity of the valuation effect of clawback adoption in REIT, finding that clawback adoption announcement effects are stronger for REITs with higher accounting manipulation risk and greater disclosure opacity prior to adoption. The findings indicate that shareholders in REITs anticipate that clawback provisions could effectively curb managerial misbehaviour and improve corporate governance.

A difference-in-differences (DID) analysis was applied to evaluate whether the adoption of clawback provisions can significantly enhance corporate governance in REITs. To address the endogeneity problem in the decision of clawback adoption, e.g., some unobservable factors could determine both clawback adoption decision and corporate governance quality in a REIT, the consequences of clawback adoptions were estimated using an instrumented difference-in-differences approach (IV-DID), following Babenko et al. (2019). Two instrumental variables were used. The first is a dummy variable indicating whether any director on the board has previously served on the boards of other firms with clawback provisions. The second is the number of directors that have had exposure to clawback adoption with other firms.

Our results show that relative to non-adopters, clawback adopters receive a significantly reduced number of comment letters from the SEC. The financial restatement and the manipulation in funds from operations (FFO) are also reduced by clawback adoption, although these effects are not statistically significant. The opacity in financial reports is significantly reduced among REITs adopters after their adoptions. The improvement in disclosure quality is also reflected in the reductions of abnormal auditing fees and audit reporting lag, which are considered as indicators of low audit risk in the financial statements, as perceived by auditors. We also find that relative to weak adopters, strong adopters in REITs are less likely to restate their financial statements and receive significantly fewer comment letters from SEC subsequent to the adoption. These findings are consistent with studies on clawback for other industries (Chan et al., 2012; deHaan et al., 2013) that the adoption of clawback provisions is associated with a lower probability of financial restatement and improvement in financial reporting quality. These findings, overall, suggest that clawback policy as a strategic governance mechanism can incentivize managers to improve transparency by reducing financial restatement risk and enhancing financial disclosure quality in the REIT sector.

Interestingly, it was also found, that in comparison with non-adopters, REIT adopters substantially reduce their levels of investment after clawback adoption. The results are consistent with findings reported in Babenko et al. (2019) for firms in other industries, that clawback provisions undermine managers' risk-taking incentives. However, the results also indicate that investors do not anticipate that this induced conservatism adds value to REITs.[2]

This study contributes to two streams of literature: the clawback adoption literature and the REIT corporate governance literature. This paper is the first to document the effects on investors' valuation of clawback adoption announcements in the REIT market and show that REIT investors can differentiate the strengths in the clawback policies.[3] Existing studies show that clawback adoptions lead to more credible earnings and fewer financial restatements (Chan et al., 2012; deHaan et al., 2013) as a consequence of improved financial reporting quality. Our findings show that this benefit in the REIT market could be associated with lower financial restatement risk and enhanced transparency in financial disclosure. The study adds evidence for the positive role of internal governance control in REITs and does not support the argument that corporate governance is irrelevant to REIT firm value (Bauer et al., 2010).

The paper is structured as follows. Background information is provided followed by a literature review, and hypotheses in the next section. Next come a discussion of the data and variables, and a description of the methodology used. The section entitled Empirical Results presents the main hypotheses test. Conclusions then follow as the last section.

Background, Literature Review, and Hypotheses Development

Institutional Background

The Sarbanes-Oxley Act of 2002 is the first law enacted by US Congress to allow a firm to recoup compensation from managers. Specifically, Section 304 - Forfeiture of Certain Bonuses and Profits (hereafter, SOX 304) requires CEOs and CFOs to reimburse incentive compensations within 12 months after a financial document is filed but restated later due to misconduct. However, SOX 304 presents some

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[2] Our further analysis (untabulated) suggested that although clawback adoption is positively associated with subsequent market performance and operating performance in a REIT (Cashman et al., 2016), clawback adoption does not significantly mitigate the negative relationship between aggressive investment and REIT performance (Ling et al., 2019; Xu & Ooi, 2018). In other words, the investment conservatism arising from clawback adoption does not enhance firm performance.

[3] Cashman et al. (2016) is the only paper that studies clawback adoption in the REIT market. They investigate the determinants of clawback adoption and firm performance after a REIT has adopted a clawback policy. This study differs from theirs in several aspects: first, we explored the valuation effect of clawback adoption from stock market reactions to the adoption announcements; second, we differentiated clawback policies into strong and weak adoptions by the strengths; and third, we investigated the consequences of clawback adoption which directly test whether clawback policy can be used for internal governance control to curb managerial opportunism.

limitations; e.g., it can only be enforced by the SEC, it is only triggered in the event of financial restatement due to intentional misconduct, and it covers only CEOs and CFOs. Due to these limitations, SEC has enforced SOX 304 in only a very few cases, which might not effectively curb managerial incentives to misstate financial reports (Chan et al., 2012; Iskandar-Datta & Jia, 2013).

The financial crisis of 2007–2008 revived the regulators' attention in improving the transparency of company information and revamping the financial regulatory system. Section 954 of Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010 (hereafter, DFA 954) mandates the recoupment of erroneously awarded executives' compensation related to financial restatement. DFA 954 differs from SOX 304 in that (1) a firm, instead of the SEC, is the enforcer of clawback provisions, and (2) the clawback of incentive-based compensation can be triggered by an accounting restatement, regardless of whether executives demonstrate misconduct or fraudulent behaviour. In 2015, SEC proposed a clawback rule that could be applied to all US stock exchange, but details on implementing the clawback rule have not been announced in the US.

Although DFA 954 has not been implemented, many listed firms have voluntarily adopted clawback provisions and require executives to repay excessive compensations in cases of accounting misstatements or executive fraudulent behaviour. A growing number of REITs have voluntarily adopted clawback provisions. By 2018, around 60% of listed REITs in the US market had adopted clawback provisions.

The clawback provisions that were initiated by REITs are heterogeneous. Following, are examples of two clawback policies from DEF-14A proxy statements filed by REITs, Avalonbay Communities Inc., in 2013:

The board has adopted a policy for recoupment of incentive compensation (i.e., a compensation clawback policy), which applies to senior officers (generally senior vice presidents and above). Pursuant to this policy, in the event the company is required to prepare an accounting restatement due to the material non-compliance of the company with any financial reporting requirement, then an independent committee of the board of directors may require any covered officer to repay to the company all or part of any "excess compensation" that such officer had previously received. Excess compensation is defined as that part of the incentive compensation received by a covered officer during the 3-year period preceding the publication of the restated financial statement that was in excess of the amount that such officer would have received had such incentive compensation been calculated based on the financial results reported in the restated financial statement.

The policy gives the scope of the compensation coverage ("*incentive compensation*"), the employee coverage ("*senior vice presidents and above*"), the trigger condition ("*an accounting restatement due to the material non-compliance*"), the enforcement of the clawback policy ("*the board of directors may require…*") and the specific time period ("*the 3-year period*"). The policy is comprehensive with some detail on how clawback policy can be implemented.

The second example is the clawback policy of Vornado Realty Trust in 2015. The firm simply stated that "*We can recover performance-based cash and equity*

incentive compensation paid to executives in various circumstances." Although the policy specifies the types of compensation ("*cash and equity incentive compensation*") and the discretion of enforcement ("*We can*"), it does not provide detailed information about the specific employee coverage, the trigger condition, and the time period of the clawback. The policy could be less likely of application in practice. These examples indicate that clawback policies cannot be treated equally (Erkens et al., 2018) and raise the question of whether investors can differentiate the strengths of different clawback policies.

Clawback provisions have been enforced by SEC, according to SOX304, since the first case in 2007. The former CEO William W. McGuire in UnitedHealth Group Inc. was alleged by SEC to have provided inaccurate documents about stock grant dates, which caused the company to understate CEO compensations from stock options in financial statements and finally led to financial restatements in March 2007. Approximately $600 million, including ill-gotten gains, cash bonus and profits from stock options, were clawed back from Mr. McGuire.[4] According to press releases, SEC had enforced 43 clawback cases against CEOs/CFOs by mid-2021. The average clawback amount was $24.34 million per executive. In addition to SEC enforcement, some companies themselves also enforced clawback provisions forcing senior executives to give back compensation resulting from misconduct. For instance, $41 million was clawed back from CEO John Stumpf by Wells Fargo & Co. after a sale scandal.[5] Although the number of clawback cases is not large, clawback provisions (and potential enforcement by SEC or firms) do influence managerial behaviour.[6]

Literature Review

With the increasing number of US-listed firms that have adopted clawback provisions after 2010, the literature on clawback adoption has grown accordingly. Early studies explored the determinants of clawback adoption in a firm. Brown et al. (2011) found that firm size is an important determinant of voluntary clawback adoption, and that the probability of clawback adoption is decreased by an influential CEO. Chen et al. (2015) show that a firm is more likely to adopt clawback provisions when its CEO is less risk-averse, and its earnings are less volatile. Cashman et al. (2016) explored the determinants of clawback provision in REITs and found that clawback adoption is associated with firm characteristics, such as the extent of previous financial restatements, external monitoring by analysts and institutional investors, and CEOs' performance-based executive compensation.

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[4] See the details in: https://www.sec.gov/news/press/2007/2007-255.htm.

[5] See: https://www.wsj.com/articles/wells-fargo-board-actively-considering-executive-clawbacks-1474985652.

[6] A report by Reuters showed that CEOs in the banking industry became more cautious about their businesses after the clawback was enforced in Wells Fargo & Co. See the details in: https://www.reuters.com/article/us-wells-fargo-accounts-clawbacks/wells-fargos-ceo-pay-clawback-puts-wall-street-executives-on-notice-idUKKCN11Y358.

Some studies have explored the consequences of clawback adoption among adopters, which focused on whether the quality of corporate governance improved, as clawback policies can penalize managers for their misconduct. Chan et al. (2012) and deHaan et al. (2013) found that clawback adoption reduces the likelihood of finance restatements and improves the perceived financial reporting quality by market participants such as investors, analysts, and auditors. Further studies by Chan et al. (2013) revealed that improvement in financial reporting quality reduces the interest rate of bank loan contracts among clawback adopting firms. Babenko et al. (2019) argued that clawback adoption is associated with the reduction of firm risk and corporate risk-taking behaviour in investment and financing policies. This stream of studies has documented that clawback provisions can benefit adopters and their shareholders.

Some studies have investigated the costs and unintentional consequences of clawback adoption. Chan et al. (2015) showed that, following adoption, firms substitute accrual-based earnings management with real activities-based earnings management. The increase of real earnings management after clawback provision was also found by Bao et al. (2018). Kyung et al. (2019) found that, although clawback adoption improves earnings quality under generally accepted accounting principles (GAAP), managers of adopter firms increase the opportunistic use of non-GAAP disclosure, as non-GAAP earning is not an item in financial statements, and its misreporting is less likely to trigger financial restatement and recoupment of executives' compensations. Bao et al. (2018) showed that the readability of financial reports (measured by file size) decreases after clawback provision adoption, which is inconsistent with previous studies showing that the quality of financial reporting is enhanced by clawback adoption. Through channels such as increasing real activities-based earnings management and decreasing financial report readability, managers of firms with clawback provisions tend to conceal bad news and hence increase the probability of a stock price crash (Bao et al., 2018). In sum, clawback adoption cannot completely curb managers' opportunistic behaviour, and hence its value to investors might not be warranted.

The valuation effect of clawback adoption through the stock market reactions to adoption announcements reflects whether shareholders benefit (perceived to benefit) from a firm's clawback adoption. Previous studies in the general stock market (Chen et al., 2015; Iskandar-Datta & Jia, 2013) show that the stock market reacts positively to the events of first clawback adoption, indicating that investors outweigh the potential benefits of clawback adoption over its potential costs. Babenko et al. (2019) found that the stock price reaction to the announcement of clawback adoption is significantly positive only when the clawback strength is high. Despite the growing number of REITs that announce policies to recoup erroneously awarded executives' compensation, the valuation effect of clawback adoption has not been investigated in the REIT market. It is also not clear whether and through which channels clawback adoption can convey benefits to REIT investors. This study aimed to fill that research gap.

Hypotheses Development

Regulations in the REIT market are strict, which arguably effectively limit the scope of managerial opportunism (Bianco et al., 2007), such as the compulsory requirement of 90% payout of net incomes. As such, evidence on whether corporate governance enhances REIT firm performance is mixed. Bauer et al. (2010) found that internal corporate governance is not significantly associated with REIT firm performance, consistent with the argument that the effect of corporate governance is weakened in highly regulated industries and a strong legal environment (Durnev & Kim, 2005). In this sense, clawback adoption, which is a new mechanism within REIT corporate governance, may not add value to REIT investors.

On the other hand, REIT investors may value clawback provisions that can serve as an effective internal control on misbehaviour among executives. Prior literature suggests that the opportunistic managerial behaviour within REITs include earnings management (Alcock et al., 2013; Anglin et al., 2013; Zhu et al., 2010), the concealment of bad news in the financial reports through opaque and strategic disclosure (Dempsey et al., 2012), and empire-building behaviour through which managers overinvest in some value-destroying projects to further their own interests (Ling et al., 2019; Xu & Ooi, 2018). REIT shareholders could benefit from clawback adoption if these provisions can serve as a new strategic governance mechanism that supplements external legal regulations (Cashman et al., 2016). If REIT shareholders view clawback provisions as effectively curbing opportunistic behaviour through the likely recoupment of executive compensations in case of financial misconduct, the adoption should lead to a positive market valuation.[7] Our first hypothesis is stated as follows:

H1: REITs that initially adopt clawback provisions experience positive market response.

Erkens et al. (2018) found that only firms with strong clawback provisions significantly improve financial reporting quality, while weak clawback provisions do not generate economic benefits for adopters. Babenko et al. (2019) found that stock market reaction to the adoption of strong clawback provisions is significant and positive in general firms, and yet the market reactions are negligible when clawback provisions are weak. In the REIT market, Hartzell et al. (2006) showed that REITs with strong corporate governance are more likely to invest in the interests of shareholders than those with weak corporate governance. If only strong clawback adoption can trigger clawback enforcement and impose a real threat on managerial misconduct, the stock market is likely to react positively only to the adoptions of strong clawback

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[7] The positive impacts of corporate governance structure of REITs are found in the IPO market and merge & acquisition market (Campbell et al., 2011; Hartzell et al., 2008). Baik et al. (2011) showed that an industry guidance to promote voluntary disclosure of funds from operations discourages the discretionary reporting of FFOs and the potential manipulations, which leads to incremental information content of FFOs to market investors.

provisions in REITs. The market reactions to the announcements of strong clawback provisions should be greater than those applying to weak clawback provisions.

H1a: The market response to strong clawback policy adoption among REITs is more pronounced than the response to weak clawback adoption.

The heterogeneity of the valuation effect of clawback provisions adoption within REITs was further explored in this study.[8] Stock investors value clawback adoption due to its expected benefit to adopters. If the adoption of clawback provisions is welcomed by REIT investors due to its improved governance role, the value of this adoption would be greater for firms with poor corporate governance characteristics prior to the adoption. In other words, for firms with strong governance prior to clawback adoption, the extra benefits accruing from clawback adoption are expected to be minimal.[9]

Following the literature, the corporate governance quality in REITs was captured in three ways in the study. The first, concerns the risk of financial restatements, including the actual financial restatements and events leading to financial restatements. Existing studies have shown that financial restatements and earnings management are associated with an increased cost of capital (Dechow et al., 1996; Graham et al., 2008; Lambert et al., 2007), suboptimal investment decisions (Kedia & Philippon, 2009; McNichols & Stubben, 2008), poor stock performance (Teoh et al., 1998a, b), and higher lawsuit risk, etc. Investors may perceive that REITs with high financial restatement risk can benefit more from clawback adoption.

The second, is related to factors affecting financial disclosure quality, including the quality of financial reporting and managerial representation. Managers are likely to downplay and even hide adverse information through complex or vague wordings to prevent the stock price from falling and the loss of their compensation values (Chakrabarty et al., 2018). A clawback policy is likely to improve the reporting quality, because it punishes executives for financial misreporting, e.g., misrepresentation, noncompliance with SEC's plain English disclosure rule, etc. (deHaan et al., 2013). The improvement of disclosure quality could result in a more transparent information environment to investors, through either more effective information communication of value-relevant information (Loughran & McDonald, 2014) or a lower chance of hiding bad news through opaque disclosure (Dempsey et al., 2012; Li, 2008). As REITs are repeat borrowers and securities issuers, high quality in financial disclosure could lead to a lower cost of external financing, which facilitates corporate investment and firm growth (An et al., 2011; Danielsen et al., 2014). The valuation effect would be more pronounced if a REIT is perceived with poor disclosure quality prior to the clawback adoption.

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[8] Previous studies (e.g., Babenko et al., 2019; Chen et al., 2015; Iskandar-Datta & Jia, 2013) have explored the valuation effect of clawback adoption in general firms; however, the heterogeneity of this effect across firms has not be investigated.

[9] Bauer et al. (2010) found that corporate governance enhances firm performance in REITs only when the dividend payout ratio is low (i.e., institutional constraint is weak).

Thirdly, the aggressiveness of a firm's investment decisions. Clawback adoption can discourage managers from making imprudent risky investment and financing decisions (Babenko et al., 2019; Lin, 2017), as executives could be penalized by intentional or unintentional misconducts caused by excessive risk-taking.[10] Studies on REITs indicate that REIT managers tend to involve themselves in empire building by investing in value-destroying projects (Xu & Ooi, 2018), because this can enhance a manager's compensation and reputation (Ghosh et al., 2011). If clawback adoption can effectively suppress the managerial incentive to overinvest in bad projects, REIT shareholders could benefit. We hypothesize that the benefit should be greater in the case of REITs with higher tendencies for aggressive investment.[11]

> **H2:** The market response to clawback adoption is more pronounced for those REITs with higher risk of restatements, greater disclosure opacity and imprudent investment practices prior to adoption.

The third hypothesis examined in this study relates to whether clawback provisions can improve REIT corporate governance after the adoption of a clawback policy. An investigation was made into whether the valuation effect (the benefit perceived by market participants) was affected by clawback adoption. The literature on corporate governance among REITs, provides mixed evidence on the effectiveness of governance mechanisms on the REIT market (e.g., Bauer et al., 2010; Campbell et al., 2011). The key in the debate is whether internal REIT corporate control can limit managerial opportunism, given that the institutional environment in the REIT market could have largely solved the agency problem (Hartzell et al., 2008). On the other hand, however, an internal governance mechanism which links executive compensation to executive misbehaviour, such as a clawback policy, could have a positive effect in enhancing governance quality.

Previous studies show that managerial opportunistic behaviour is still prevalent in the highly regulated REIT market, and governance does matter for REITs. Ghosh and Sirmans (2003) found that REIT CEOs can influence the structure of the board, which in turn leads to better compensation for CEOs. Xu and Ooi (2018) showed that REIT managers tend to make sub-optimal growth decisions, especially in large REITs with plentiful cash flows, and that this managerial opportunism can be effectively mitigated by external institutional investor monitoring but not through internal monitoring by independent directors. This finding is consistent with Feng

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[10] Babenko et al. (2019) showed that mitigating excessive risk-taking is ranked third by firms to justify the adoption of clawback provisions. They argue that if firms have aggressive investment and financing policies, employees may be encouraged to take inappropriate actions and trigger clawback by misconduct. Through risk reduction policies, the volatility of stock market and accounting performance in a firm would also be decreased, which in turn could lower the chance of the triggers of clawback.

[11] We used "aggressive investment" and "imprudent investment" interchangeably in this research to refer to large investment/asset growth in REITs, following Babenko et al. (2019). Ling et al. (2019) showed that large asset growth rate in the REITs is associated with poor subsequent firm performance in the REITs. Eichholtz and Yönder (2015) showed that corporate investments are larger in the REITs with overconfident CEO; and the investments are associated with poor returns.

et al. (2010) that institutional investors can discipline REIT CEOs through their influence on executive compensation structure with emphasis on performance-based compensation.

It can be argued that through the mechanism of recouping executive compensations due to managerial misbehaviour, clawback policy also influences managers and corporate governance quality. REIT managers could respond by reducing incidences of fraud, financial misstatements and other types of misconduct that can trigger a clawback. It is expected that after clawback adoption, REITs experience a decrease in financial restatement risk (Chan et al., 2012), an improvement of financial reporting quality (deHaan et al., 2013), and a reduction in instances of imprudent behaviour, such as aggressive investment decisions (Babenko et al., 2019). The benefits to governance quality from clawback adoption should be greater for those firms adopting clawback provisions of greater strength and more likely to be implemented when misconduct occurs (Erkens et al., 2018).

Our third set of hypotheses for the consequences of clawback adoption on the corporate governance quality in REITs are as follows:

H3: Relative to non-adopters, REIT adopters significantly reduce financial restatement risk, improve financial disclosure quality and decrease imprudent investment after adoption.

H3a: Relative to weak adopters, strong REIT adopters experience a greater reduction in financial restatement risk, more improvement of financial disclosure quality, and a larger decrease of imprudent investment after adoption.

Sample, Variables, and Research Methodology

Sample, Data, and Variables

Hypotheses were tested using two samples, a sample of initial adopters and a firm-year sample for both adopters and non-adopters in the REIT market. To construct samples, all available REITs from the CRSP/Ziman database were first extracted, consisting of all REITs traded on the three primary exchanges in the US (NYSE, AMX, and NASDAQ) since 2000.[12] Based on the Central Index Key (CIK) for each REIT, the available DEF 14A proxy statements were next retrieved, as well as the 10-K filings from the SEC EDGAR system. Following Babenko et al. (2019), a textual analysis was run to identify the REIT adopters of clawback policy and the detailed provisions by searching a series of keywords.[13] 802 filings were found containing the keywords related to clawback provisions. There were 179 unique

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[12] The Ziman database is widely used in REIT studies; see Ro and Ziobrowski (2011), Glascock and Lu-Andrews (2015). Ling and Naranjo (2015), Ling et al. (2020), Shen (2021), Shen et al. (2021a, 2021b), etc.

[13] Following Babenko et al. (2019), we search keywords in each DEF 14A proxy statement (and 10-K filing), including clawback, claw back, claw-back, compensation recover, compensation recoup, recoup provision, recoup policy, recoup award, and recover award.

clawback adopters between 2007 and 2018. For the sample of initial adopters, stock market data and financial statement data before clawback adoption was required for our analysis. The initial clawback adoption sample was thus restricted to 152 adopters.[14] The firm-year sample used to explore the consequences of clawback adoption contains both adopters and non-adopters. The sample spans the years 2001 to 2018. The numbers of adopters and non-adopters in the sample were are 167 and 233, respectively.

Table 1 reports the number of clawback adopters in the REIT market. Column (1) shows the overall number of REITs and Column (2) those with clawback provisions by year in our sample. 2007 was the first year when some REITs in our sample explicitly disclosed clawback policy in their SEC filings. The number of clawback adopting REITs surged after the Dodd-Frank Act. Column (3) shows that the ratio of clawback adopting REITs to the overall REIT number, increased from 10.26% in 2010 to 65.24% in 2018. Overall, 56.04% of REITs in the sample adopted a clawback policy over the range of years 2007 to 2018.

Columns (4)–(6) report the number of initial adopters in each year from 2007 to 2018 and also the numbers of strong adopters and weak adopters. Following Erkens et al. (2018), an index was first constructed to capture the strength of the clawback provisions adopted by a REIT. The strength of a clawback policy was evaluated using a comprehensive linguistic analysis with the following dimensions: (1) compensation coverage, (2) employee coverage, (3) enforcement provisions, (4) time period, and (5) the trigger criteria.[15] A sub-index was calculated in each of those five dimensions with each sub-index normalized within the range 0–1 (Erkens et al., 2018).[16] The clawback strength index is the sum of each sub-index. A clawback policy is considered to be strong (weak) if its strength index is above (below) the sample median.

Following previous studies (Babenko et al., 2019; Chen et al., 2015), we estimate the valuation effect of a clawback adoption was estimated based on stock market

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[14] The number of adopters (152) initial clawback adoptions is less than the number of adopters (167) in the panel data, because the cumulative abnormal returns requires at least 240 trading days before initial adoptions to estimate the market reactions to the announcements of clawback adoptions. The 15 REITs adopted clawback policies before IPOs or shortly after IPOs, and hence does not have sufficient trading data to calculate CARs for initial adoptions.

[15] A clawback policy is with more strengths if it covers different types of compensations (e.g., incentive compensation, stock-related compensation, cash compensation), if the employee coverage is comprehensive, if a REIT is obligated to recoup executives' compensation, if the look-back period that the policy pertains is long, and if both financial and non-financial events can trigger the recoupment. The detailed criteria to measure the strength in a clawback policy are shown in Appendix 1.

[16] The following method was used to normalize sub-index into the interval between 0 and 1:

$$norm\_subindex_{ij} = \frac{raw\_subindex_{ij} - \min\left(raw\_subindex_j\right)}{\max\left(raw\_subindex_j\right) - \min\left(raw\_subindex_j\right)}$$

where $raw\_subindex_{ij}$ is the raw value of clawback strength subindex j for REIT i; $\min(raw\_subindex_j)$ and $\max(raw\_subindex_j)$ are the minimum value and maximum value for the sub-index j in the sample respectively, and $norm\_subindex_{ij}$ is the value of clawback strength subindex j for REIT i after normalization.

cumulative abnormal returns (CARs) when a REIT announces its first clawback policy. CARs were estimated using the market model and the Fama-French three-factor model, with an estimation window 240 trading days to 41 trading days before the adoption date. Cumulative abnormal returns from the models were calculated for several event windows, including a two-day window [−1, 0], a three-day window [−1, +1] and a five-day window [−2, +2]. The daily stock returns data was obtained from CRSP, and the market returns data and the Fama-French factor returns were retrieved from Kenneth French's website.

Variables were constructed to measure the financial restatement risk, financial disclosure quality and imprudent investment in the REITs. The financial restatement risk of a REIT is captured by three variables: the restatement dummy (*RESTATE*), the number of SEC comment letters (*COMNUM*) and discretionary funds from operation (*DFFO*). Financial restatement is a major financial event that could trigger a clawback. The financial restatement dummy (*RESTATE*) is a dummy variable equal to 1 if a REIT has financial restatement in that year and 0 otherwise (Chan et al., 2012). Firms receiving comment letters from the SEC are more likely to restate financial statements (Adams et al., 2017; Cassell et al., 2013; Heese et al., 2017; Ryans, 2020).[17] The number of SEC comment letters a REIT receives in a year was counted (*COMNUM*) (Gietzmann & Isidro, 2013). The data was obtained from are from Audit Analytics. Earnings manipulation is one of the causes of financial restatements (Chan et al., 2012; Ettredge et al., 2010). Following the REIT literature (e.g., Anglin et al., 2013), the degree of earnings manipulation among REITs was measured by the use of discretionary funds from operation (*DFFO*), calculated as the absolute difference between reported FFO and normal FFO (Zhu et al., 2010).[18] A composite variable (*RSTATERISK*) was then created to measure financial restatement risk. First, a score point is given if a REIT has financial restatement in the year, another score if the number of comment letters is above the sample average, and again if the value of discretionary funds from operation is above the sample average. The sum of the three scores is the measure of financial restatement risk; the higher the score in the composite variable, the larger the REIT's financial restatement risk.

The financial disclosure quality is estimated by the four variables, readability of financial reports (*FOG*), the internal control weakness (*ICWNUM*), the abnormal audit fees (*AUDFEE*), and the audit report lag (*AUDLAG*). A REIT's 10-K filing

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[17] Section 408 of the Sarbanes-Oxley Act (SOX408) requires the SEC to review the financial reports of public firms no less than every three years. If there are any questions raised by the SEC, it will issue a comment letter to express concern about financial reporting practices. If the responses of a firm are satisfactory, there is no further action by SEC. However, if the questions are substantial and cannot be answered appropriately, firms may be required to restate their financial reports (SEC, 2019).

[18] Normal FFO in a REIT is calculated using income before extraordinary items, minority interest, the depreciation and amortization of real estate property, and the gain or loss on sales of real estate property. Normal FFO was calculated from relevant Compustat items (Zhu et al., 2010). The data of reported FFO in a REIT were extracted from IBES, supplemented by data from annual reports. In the unreported analysis, we also measured the earnings management in the REITs by discretionary accruals (Jones, 1991; Dechow et al., 1995). The results remain similar.

Table 1 Number of REITs with clawback provisions

Year	Percentage of clawback adopters			Initial clawback adoption		
	(1)	(2)	(3)	(4)	(5)	(6)
	All REITs	Clawback adopters	% of adopters	First-time adopters	Strong adopters	Weak adopters
2007	152	4	2.63%	4	3	1
2008	142	5	3.52%	1	0	1
2009	140	4	2.86%	0	0	0
2010	156	16	10.26%	10	6	4
2011	161	36	22.36%	21	6	15
2012	167	48	28.74%	13	7	6
2013	192	73	38.02%	25	10	15
2014	206	93	45.15%	19	13	6
2015	213	108	50.70%	20	11	9
2016	215	123	57.21%	14	5	9
2017	216	131	60.65%	12	7	5
2018	210	137	65.24%	13	8	5
Total	298	167	56.04%	152	76	76

This table presents the number of REITs that adopted clawback provision by year from 2007 to 2018. Column (1) shows the number of REITs in our sample. Columns (2) and (3) show the number of REITs with clawback provisions and the percentage of adopters in all REITs. Column (4) presents the number of first-time adopters in our sample. Columns (5) and (6) present the number of strong adopters and weak adopters in each year

(i.e., annual report) is used to calculate its financial reporting readability. The readability is based on text complexity, a function of the number of words per sentence and the number of syllables per word. Following Li (2008) and Dempsey et al. (2012), the Gunning Fog index[19] (*FOG*) was measured to capture the readability of REIT annual reports. This measure indicates the number of years of education required of a reader to understand the text on the first reading; i.e., the larger the index, the more the number of years of education required. The Fog Index formula is as follows:

$$FOG = \left(\frac{Total\ words}{Total\ sentences} + 100 * \frac{Total\ complex\ words}{Total\ words} \right) * 0.4 \qquad (1)$$

where complex words are defined as words with three syllables or more, as multisyllable words are assumed more difficult to understand (Klare, 1974).

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[19] The Fog index is developed by Gunning (1952) and is widely used when evaluating the reading capacity of high school seniors. Gunning Fog index is also applied to measure financial reporting quality (Biddle et al., 2009; Lawrence, 2013; Li, 2008; Li, 2010; Loughran & McDonald, 2014). In the unreported analysis, we also calculated financial reporting readability by the Flesch–Kincaid Grade Level index (Dempsey et al., 2012; Kincaid et al., 1975; Subramanian et al., 1993). The results are similar.

Section 404 of the Sarbanes-Oxley Act requires a public company to report the effectiveness of internal control on their financial reporting. The auditors must also express an opinion on the internal control exercised over financial reporting (SEC, 2003).[20] Previous studies found that material weakness in internal control is a signal of poor financial disclosure quality by a firm (Ashbaugh-Skaife et al., 2007; Doyle et al., 2007). In our study, the internal control of financial reporting in a REIT in a year was assessed by the number of material weaknesses (*ICWNUM*) reported by auditors (Chen & Keung, 2018; Lu et al., 2011). The data were taken from Audit Analytics.

Financial disclosure quality can also be reflected in auditor behaviour (Chan et al., 2012). Auditors must work for more hours when tackling those financial reports with lower disclosure quality (Bell et al., 2001). The audit fees and audit report lag are negatively associated with financial disclosure quality (Ettredge et al., 2006; Hogan & Wilkins, 2008; Hribar et al., 2014). Following Whisenant et al. (2003), a variable was constructed for this study that measures abnormal audit fees (*AUDFEE*) for a REIT in a year.[21] Audit report lag (*AUDLAG*) is defined as the percentage change in the number of days between the fiscal year-end of a REIT and its auditor report date in the previous year (Masli et al., 2010). A composite variable to measure overall disclosure quality (*DISCLOSURE*) was constructed with the three dimensions, the opacity in financial statement, the material weakness in financial reporting, and the auditor perceived financial disclosure quality. One score point is given to a REIT if it has a Fog index higher than sample average, one more if the number of material weakness is above the sample average, and a further point if the abnormal audit fee or audit report lag is above the sample average. A higher score for the variable *FDQ* indicates greater disclosure opacity.

Firm investment in a REIT is measured by total asset growth (*AG*) and investment (*INV*), the financing amount, following Ott et al. (2005) and Ling et al. (2019). Asset growth (*AG*) is calculated as the total assets in a year minus the total assets in the previous year, expressed as a proportion of the previous year total assets. Firm investment (*INV*) in the REIT should be financed by retained earnings and new equity and debt issues. Firm investment in a REIT is calculated as the sum of retained earnings, net issuance of equity, and net issuance of short-term and long-term debt.. The variable *INV* is the investment expressed as a proportion of total assets. Appendix 2 provides details for calculating the earnings management variables and the firm investment variable using financing amounts.

Control variables are constructed that can affect the valuation effect and consequences of clawback adoption in REITs, including financial statement variables, stock market variables, and corporate governance variables. Following Cashman

[20] According to PCAOB, a material weakness is "a deficiency, or a combination of deficiencies, in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of the company's annual or interim financial statements will not be prevented or detected on a timely basis" (PCAOB, 2004).

[21] Audit fee is a function of firm characteristics of REITs, property type and REIT type (Danielsen et al., 2009). The abnormal audit fee is the residual from the regression. Appendix 2 provides the details to calculate this variable.

et al. (2016), our financial statement variables include the log of total assets (*LNAT*), the Tobin's Q ratio (*TOBINQ*), returns on equity (*ROE*), and leverage ratio (*LEV*). Stock market variables include momentum (*MOM*, the cumulative returns over the past three months) and risk (*RISK*, the volatility of the daily returns over the past three months) for analysis of the valuation effect. For the tests of the consequences of clawback adoption, stock returns (*RET*) and standard deviation of daily returns (*STD*) over a fiscal year are used as control variables.[22] Corporate governance variables include CEO tenure (*CEOTENURE*), CEO age (*CEOAGE*), the duality of CEO as a board director (*DUALITY*) and the proportion of independent directors on the board (*BINDEPT*). The CEO and director data were obtained from the Compustat Execucomp and MSCI Directorships databases. The detailed definitions of variables are given in Appendix Table 8. All continuous variables were winsorized at the 1% and 99% percentiles to remove outliers.

Table 2 gives summary statistics of our samples. Panel A shows the statistics for the first-time adoption sample of 152 REITs between 2007 and 2018. The average CARs on the adoption are generally positive. The average clawback strength (*STRENGTH*) is 1.99 for the initial adopters, which is slightly higher than the average value of 1.85 for firms in general (Erkens et al., 2018). The average momentum return is 8.864%, and the volatility of daily stock returns is 1.417%. The median value of the composite variable measuring financial restatement risk is 1, indicating that 50% of firms in the sample were exposed to at least one dimension of risk that can likely trigger financial restatement. The median value of the composite variable capturing financial disclosure opacity is also 1. Panel B provides the statistics of variables in the panel sample. About 13.3% of REITs restate their financial statement, and the average number of SEC comment letters was 0.571 per year. The absolute value of discretionary FFO is 1.280. The mean of the Fog index is 17.93, which is slightly lower than the 19.39 reported in Li (2008) for a sample of firms in general. The average number of internal control weaknesses in a REIT reported by auditors was 0.049 per year.[23] The average abnormal audit fees were −0.011, and the percentage change of the days of audit report delay on average was 5.5% in the sample. The mean investment to asset ratio and asset growth rate were 0.229 and 0.226, respectively. The statistics of control variables are also reported. For instance, the average log of total assets, Tobin's Q ratio, returns on equity ratio, and leverage ratio were 7.594, 1.176, 0.043, and 0.463, respectively. The average log values of CEO tenure and CEO age are 1.913 and 4.003, corresponding to 6.77 and 54.76 years. The numbers are similar to the statistics of Campbell et al. (2011). Among the REITs in our sample, 12% appointed the CEO as Chair of the board of directors and 59.6% of directors were outside (or independent) directors.

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[22] We require at least 90 days to calculate the cumulative returns (*RET*) and standard deviation of daily returns (*STD*) over a fiscal year.

[23] The average number of internal control weakness in REITs is much smaller than 0.49 in common stocks (Lu et al., 2011). This is consistent to Chen and Keung (2018) which find that the disclosure of internal control weakness varies extremely across different industries. For instance, there are 64.29% of firms in electrical industry with internal control weakness while only 4.87% of firms in building material and construction industries are reported with internal control weakness.

Empirical Results

Valuation Effect of Clawback Adoption in the REITs

The valuation effect of clawback adoption was tested using the standard event studies approach. Table 3 reports the results. Market reaction to initial clawback adoptions is generally positive, ranging from 0.157% to 0.436%. CARs are only marginally significant based on the market model and the Fama-French model, with a 5-day event window. The magnitudes of CARs in the REITs are similar to those for firms in general documented in previous studies (Babenko et al., 2019; Chen et al., 2015).[24] The average CARs for strong clawback adoptions are all positive and significant at least at the 5% level. The magnitudes are also larger than the mean CARs of the overall REITs sample as well as for those firms in general with high clawback strength in Babenko et al. (2019).[25] In contrast, CARs to weak adoptions are all insignificant. The differences among CARs between strong and weak adoptions are positive and significant.

To control for the impact of firm characteristics on the valuation effect, an OLS regression was run of CARs on clawback strength with control variables from the stock market, financial statement, and corporate governance. The regression can be specified as follows (Campbell et al., 2011; Iskandar-Datta & Jia, 2013):

$$CAR_{i,t} = \alpha + \beta_1 STRENGTH_{i,t} + Control_{i,t-1} + Property\ Type_i + Year_t + \varepsilon_{it} \quad (3)$$

The dependent variable is the CAR surrounding the dates of initial clawback adoptions in a three-day window.[26] The key independent variable is the clawback strength score (*STRENGTH*). Control variables from the financial statement and corporate governance were calculated for the fiscal year previous to the adoption year. Two stock market variables, i.e., stock momentum return and stock risk, were estimated for the month prior to the adoption. Property-type-fixed effect and year-fixed effect are included in the model to control for factors common to a property type or a time period.

Table 4 reports the results of the impacts of clawback strength on the CARs to clawback adoption using Eq. (3). The clawback strength coefficients are positive and significant in the tests based on CARs from both the market model and the Fama-French three-factor model. A score increase of 1 in the strength index leads to an increase of 0.460% (0.531%) in CARs from the market model (the Fama-French model). The magnitudes of the coefficients are economically significant, as the average three-day CAR in the sample is only 0.226% (0.277%) based on the market model (the Fama-French Model). The results confirmed Hypothesis 1a that REIT

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[24] Chen et al. (2015) showed that the average cumulative abnormal return from the market model in a three-day event window in 388 new clawback adoptions by general firms is 0.36%.

[25] Babenko et al. (2019) showed that the mean CARs in firms with high clawback strength are 0.297% and 0.259% in three-day and seven-day event windows.

[26] The results are similar if two-day and five-day CARs are used.

Table 2 Summary statistics

	Count	Mean	Median	SD	Min	Max
Panel A. CAR Sample						
MM (0,+1)	152	0.157	0.316	1.670	−3.973	4.002
MM (−1,+1)	152	0.226	0.313	1.926	−4.001	5.432
MM (−2, +2)	152	0.350	0.377	2.416	−4.481	6.268
FF (0,+1)	152	0.155	0.305	1.683	−3.97	3.934
FF (−1,+1)	152	0.277	0.314	1.898	−4.024	5.185
FF (−2, +2)	152	0.436	0.336	2.395	−4.232	5.469
STRENGTH	152	1.993	2.033	0.766	0.292	3.800
MOM	152	8.864	8.476	15.094	17.776	78.235
RISK	152	1.417	1.293	0.603	0.637	4.430
RSTATERISK	152	1.414	1.000	0.645	0.000	3.000
DISCLOSURE	152	1.283	1.000	0. 665	0.000	3.000
Panel B. Panel Sample						
RESTATE	3170	0.133	0.000	0.340	0.000	1.000
COMNUM	3259	0.571	0.000	0.898	0.000	5.000
DFFO	2141	1.280	0.654	1.930	0.007	12.455
FOG	2945	17.930	17.889	1.104	15.194	20.606
ICWNUM	3259	0.049	0.000	0.510	0.000	20.000
AUDFEE	2729	−0.011	0.000	0.426	−1.071	1.155
AUDLAG	3131	0.055	−0.016	0.367	−0.569	2.378
INV	3026	0.229	0.082	0.637	−0.567	5.103
AG	3237	0.226	0.058	0.680	−0.452	5.581
LNAT	3259	7.594	7.763	1.470	3.034	10.390
TOBINQ	3259	1.176	1.088	0.366	0.518	2.524
ROE	3259	0.043	0.053	0.150	−0.820	0.528
LEV	3259	0.463	0.489	0.204	0.000	0.947
RET	3259	0.120	0.113	0.302	−0.758	1.235
STD	3259	0.019	0.015	0.013	0.008	0.085
CEOTENURE	3259	1.913	1.946	0.585	0.000	3.178
CEOAGE	3259	4.003	4.007	0.092	3.664	4.290
DUALITY	3259	0.120	0.000	0.325	0.000	1.000
BINDEPT	3259	0.596	0.591	0.121	0.250	1.000
DIRDUM	3259	0.375	0.000	0.484	0.000	1.000
DIRNUM	3259	1.132	0.000	2.001	0.000	10.000

This table presents the summary statistics. The variable definitions are provided in Appendix 1

investors perceive more benefits to adopters from strong clawback adoption policies than those from weak adoptions.

Table 4 shows that stock market variables, such as stock momentum and risk, do not significantly affect CARs on initial clawback adoptions. The CARs around clawback adoption are significantly higher for REITs with higher returns on equity ratios. The coefficients on other corporate governance variables are generally insignificant.

Table 3 Cumulative abnormal returns (CARs) surrounding the announcement dates of the first-time adoption of clawback provisions

Event Window	Model	CAR	CAR (Strong)	CAR (Weak)	Difference
(−1,0)	Market Model	0.157	0.436**	−0.122	0.558**
		(1.16)	(2.44)	(−0.61)	(2.08)
(−1,+1)	Market Model	0.226	0.591**	−0.140	0.730**
		(1.44)	(2.60)	(−0.67)	(2.37)
(−2,+2)	Market Model	0.35*	0.805***	−0.104	0.909**
		(1.79)	(2.78)	(−0.41)	(2.35)
(−1,0)	Fama-French Model	0.155	0.449**	−0.139	0.588**
		(1.14)	(2.53)	(−0.68)	(2.18)
(−1,+1)	Fama-French Model	0.277*	0.649***	−0.094	0.743**
		(1.80)	(2.99)	(−0.45)	(2.45)
(−2,+2)	Fama-French Model	0.436**	0.852***	0.019	0.833**
		(2.24)	(3.03)	(0.07)	(2.17)

This table presents the cumulative abnormal returns (CARs) on the first clawback adoptions in the REITs from 2007 to 2018. CARs are calculated from the market model and the Fama-French three-factor model in different event windows. The differences of CARs between strong adoptions and weak adoptions are shown. The *t-statistics* are reported in parentheses. ***1%, **5%, and *10%

In sum, the findings support our first hypothesis that even though REITs are relatively transparent and subject to more stringent regulations, an extra corporate governance mechanism that tends to curb managerial opportunism still adds value to shareholders, especially when the mechanism is a strong one. This result challenges the argument that corporate governance might not play an important role in highly regulated industries such as REITs (Bauer et al., 2010; Bianco et al., 2007), and is consistent with the notion that corporate governance standards can enhance REIT firm values (Campbell et al., 2011; Hartzell et al., 2008). REIT investors anticipate that clawback adoption could be an effective corporate governance mechanism in REITs to curb managerial opportunism, but only if the strength of those clawback provisions is strong (Erkens et al., 2018).

Managerial Opportunism Prior to Adoptions and Cross-Sectional Variations in the Valuation Effect

After documenting the positive stock market reactions to clawback adoption in the REIT market, the heterogeneity of the valuation effect was investigated. The second hypothesis is that if clawback represents a new and effective corporate governance mechanism, its value should be higher for REITs with weak governance performance in the pre-adoption period and where more managerial opportunistic behaviour takes place, as reflected by restatements and earnings manipulation, low financial disclosure quality, and aggressive investment in a REIT.

Predictions were tested with the following model (Campbell et al., 2011):

Table 4 Clawback strength and CARs

Dep. Var. = CAR	(1)	(2)
	MM (−1,+1)	FF (−1,+1)
STRENGTH	0.460*	0.531**
	(1.97)	(2.47)
LNAT	−0.039	−0.100
	(−0.24)	(−0.62)
TOBINQ	0.181	0.143
	(0.37)	(0.28)
ROE	2.213*	2.601**
	(1.90)	(2.18)
LEV	0.854	0.867
	(1.01)	(1.06)
MOM	0.002	−0.007
	(0.15)	(−0.51)
RISK	0.136	−0.019
	(0.44)	(−0.05)
CEOTENTURE	0.342	0.320
	(1.33)	(1.28)
CEOAGE	0.326	1.283
	(0.20)	(0.78)
DUALITY	0.614	0.014
	(1.31)	(0.03)
BINDEPT	−0.149	0.392
	(−0.13)	(0.34)
Intercept	−3.170	−6.465
	(−0.48)	(−0.97)
Property type dummies	Yes	Yes
Year dummies	Yes	Yes
R2	0.220	0.229
N of obs.	152	152

This table presents the results of OLS regressions using Eq. (3) based on 152 initial clawback adoptions in the REITs from 2007 to 2018. The dependent variable is the cumulative abnormal returns estimated in a three-day window. The key independent variable is the strength of clawback adoption provisions (*STRENGTH*). Control variables at the firm level include the log value of total assets (*LNAT*), Tobin's Q (*TOBINQ*), returns on equity ratio (*ROE*), leverage (*LEV*), stock momentum return (*MOM*) and stock risk (*RISK*). Corporate governance variables including CEO tenure (*CEOTENURE*), CEO age (*CEOAGE*), CEO duality (*DUALITY*) and the ratio of independent directors of the board (*BINDEPT*) have been added to the model. The control variables are from the previous fiscal year before clawback adoptions. Property type and year-fixed effects are included in the regressions. The *t-statistics* calculated from robust standard errors are reported in parentheses. ***1%, **5%, and *10%

$$CAR_{i,t} = \alpha + \beta_1 RESTATERISK / DISCLOSURE / INVEST_{i,t-1} + \beta_2 Control_{i,t-1} + Property\ Type_i + Year_t + \varepsilon_{it}$$
(4)

Restatement and earnings management quality in a REIT is captured by prior restatement experience (*RESTATE*), the number of SEC comment letters received in the previous year (*COMNUM*), and earnings manipulations as calculated by the use of discretionary funds from operations (*DFFO*). The variable *RESTATERISK* is a composite variable capturing financial restatement risk. The variable *DISCLOSURE* indicates financial disclosure quality, which is measured by the Fog index (*FOG*), the number of internal control weaknesses reported by auditors (*ICWNUM*), abnormal audit fees (*AUDFEE*) and by change in audit report lag (*AUDLAG*). Aggressive investment (*INVEST*) in a REIT is captured by total asset growth ratio (*AG*) and investment to asset ratio (*INV*). These variables are calculated relative to the year previous to the initial clawback adoption,[27] except that prior restatement experience relates to a three-year window (Chan et al., 2012). Firm-level control variables, property-type-fixed effect and year-fixed effect are also included in the models. Positive coefficients on the key independent variables (*RSTATERISK, DISCLOSURE* or *INVEST*) confirm Hypotheses H2, indicating that market investors anticipate more benefits arising from clawback adoption for REITs with poor corporate governance in the pre-adoption period. For the sake of brevity, only the results from CARs from market model for a three-day event window are reported.[28]

Table 5 reports the results from Eq. (4). Panel A shows that the coefficients on prior to adoption restatement, the number of SEC comment letters received in the previous year and earnings manipulations are generally positive. Column (1) shows that the CAR for initial adoptions with a prior financial restatement record is 0.552% higher than for those adopters with no previous restatement record, although the coefficient is not statistically significant. Column (2) shows that one extra comment letter received in the prior fiscal year results in a significant 0.203% increase in abnormal returns surrounding the adoption date. The result indicates that investors anticipate that clawback adoption can mitigate the subsequent risk of financial restatement. The coefficient on the variable discretionary funds from operations, is not significant. The result is consistent with the findings of Anglin et al. (2013) that strict regulations in the REIT market prevent managers from manipulating earnings, and hence internal corporate governance improvements may not help to reduce FFO manipulation.[29] Column (4) shows that the overall financial restatement risk is positively and significantly associated with market reactions to clawback announcements. An increase of one score point in the composite variable, financial

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[27] The results remain similar if these variables are constructed by three-year average values before first clawback adoptions in the REITs.

[28] The findings remain robust in the tests based on CARs from the Fama-French model or from two-day/five-day CARs. All control variables are included in the regressions. The coefficients on control variables and their t-statistics are also unreported. These results are available upon request.

[29] Anglin et al. (2013) showed that internal corporate governance through director board and auditing can effectively reduce real activities-based earnings manipulation in REITs. In our unreported results, we found that the valuation effect of clawback adoption is also unrelated to prior real activity manipulation in the REIT market.

restatement risk, leads to a 0.507% increase in the cumulative abnormal returns to clawback adoption announcement. Overall, our findings show that REITs are similar to firms in general (e.g.,Chan et al., 2012 ; deHaan et al., 2013), in that investors react more to clawback adoption in those REITs with the higher risk of financial restatement.

Panel B presents the impacts of financial disclosure quality on market reactions to clawback adoption. The coefficients of financial readability (the Fog index) and the number of internal control weaknesses are positive and significant, indicating that clawback adoption is more valuable to shareholders if REITs have higher disclosure opacity standards (lower readability or more internal control weaknesses in their annual reports) in the pre-adoption period. A one-standard-deviation increase in the Fog index leads to an increase in CARs based on the market model to clawback adoption, of 0.401%.[30] A unit increase in internal control weakness results in an increase of CARs following clawback adoption of 0.591%. The coefficients of abnormal audit fees and audit report lag are also positive, although not statistically significant. The coefficient of the composite variable measuring financial disclosure quality is positive and significant at the 5% level. A unit score increase in the composite variable of financial disclosure opacity is associated with a 0.613% increase in CARs. In sum, the results indicate that market reaction to a clawback adoption announcement is stronger if a REIT has greater financial disclosure opacity prior to adoption.

Panel C reports whether the levels of REIT firm investment affect CARs following clawback adoption. It was found that the coefficients of investment variables are not significant in the regressions. This indicates that the stock market does not perceive that clawback adoption can benefit REITs by depressing managerial incentives to make risky investments. The robustness tests showed that market reaction to clawback adoption is not related to the level of firm risk (measured by the standard deviation of daily stock returns) for REITs. The study results do not support the argument by Babenko et al. (2019) that firms can benefit from clawback adoption because it leads to more prudent investment decisions.

Overall, our results generally support Hypothesis H2 in that clawback adoption has a more pronounced valuation effect for those REITs with higher financial restatement risk and greater financial disclosure opacity in the pre-adoption period. Shareholders anticipate more benefits from clawback adoption in these REITs as they expect that clawback policy can effectively reduce the possibility of financial restatement and improve financial disclosure quality (Chan et al., 2012; deHaan et al., 2013). The consequent improvement in financial disclosure quality can positively affect access to the capital market (Devos et al., 2019) and the cost of capital (Danielsen et al., 2014; Dempsey et al., 2012; Deng et al., 2017). As REITs rely heavily on external debt and equity financing, clawback adoption can benefit them because of the enhanced financial disclosure quality.

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[30] The magnitudes are calculated using standard deviations of Fog index and its coefficients, i.e., 0.363% * 1.104 = 0.403%.

Table 5 Cumulative abnormal returns (CARs) surrounding the announcement dates of the first-time adoption of clawback provisions: Cross-sectional variations

Panel A: Restatement and earnings management				
Dep. Var. = CAR	(1)	(2)	(3)	(4)
	MM(−1,+1)	MM(−1,+1)	MM(−1,+1)	MM(−1,+1)
RESTATE	0.552			
	(1.26)			
COMNUM		0.203*		
		(1.83)		
DFFO			0.117	
			(0.77)	
RESTATERISK				0.507*
				(1.95)
Control Variables	Yes	Yes	Yes	Yes
Property type dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
R2	0.203	0.206	0.208	0.179
N of obs.	152	152	110	152
Panel B: Financial disclosure quality					
Dep. Var. = CAR	(1)	(2)	(3)	(4)	(4)
	MM(−1,+1)	MM(−1,+1)	MM(−1,+1)	MM(−1,+1)	MM(−1,+1)
FOG	0.363*				
	(1.91)				
ICWNUM		0.591***			
		(4.28)			
AUDFEE			0.239		
			(0.64)		
AUDLAG				0.159	
				(1.18)	
DISCLOSURE					0.613**
					(2.45)
Control variables	Yes	Yes	Yes	Yes	Yes
Property type dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
R2	0.211	0.211	0.199	0.203	0.224
N of obs.	152	152	135	147	152
Panel C: Imprudent investment			
Dep. Var. = CAR		(1)		(2)
		MM(−1,+1)		MM(−1,+1)
INV		0.233		
		(0.61)		
AG				0.173
				(0.58)
Control variables		Yes		Yes
Property type dummies		Yes		Yes

Table 5 (continued)

Year dummies	Yes	Yes
R2	0.197	0.193
N of obs.	139	151

This table presents the results of OLS regressions using Eq. (4) based on 152 initial clawback adoptions in the REITs from 2007 to 2018. Dependent variables are CARs in a three-day window around the first adoption date by the market model. The key independent variables in Panel A are the measures of restatement and earnings management including the dummy variable equal to one if a REIT is restated its financial state in the previous three fiscal years and zero otherwise (*RESTATE*), the number of SEC comment letters received (*COMNUM*) and discretionary FFO (*DFFO*) in a REIT during the previous fiscal year. A composite variable to capture financial restatement risk (*RESTATERISK*) is created from the three variables. The key variables in Panel B are the measures of financial disclosure quality including the Fog index (*FOG*), the number of internal control weaknesses reported by auditors required by SOX404 (*ICWNUM*), the abnormal audit fees (*AUDFEE*), the change in audit delay (*AUDLAG*) and a composite variable (*DISCLOSURE*) in the previous fiscal year. The key independent variables in Panel C are the measures of imprudent investments using the investment (*INV*) and total asset growth (*AG*) in a REIT during the previous fiscal year. Control variables are the same for Table 4. To conserve space, the coefficients on control variables are not reported. Property type and year-fixed effects are included in the regressions. The *t-statistics* calculated from robust standard errors are reported in parentheses. ***1%, **5%, and *10%

The Consequences of Clawback Adoption for REITs

It has been shown that shareholders respond positively to a REIT's initial clawback adoption and that the perceived benefit is larger for REITs with more opaque financial disclosure quality standards and higher accounting restatement risk in the pre-adoption period. Whether adopting clawback policies can improve financial disclosure quality or curb other forms of opportunistic behaviour in the REIT market, was also explored. Panel D1 of Appendix Table 9 shows that the frequency of financial restatement, the number of internal control material weaknesses over financial reporting, abnormal auditing fees and auditing lags, as well as the investments made in the REIT adopters are significantly lower after adoption of a clawback policy. On the other hand, adopters receive significantly more comment letters from SEC and there is a decrease in financial reporting readability after the adoption. Although we do observe changes in relevant corporate behaviour in the post-adoption period, it is necessary to be cautious about interpreting these changes and attributing them to clawback adoption as other factors and events may be occurring concurrently.[31]

To identify a causal effect of clawback adoption on subsequent corporate governance quality in the REITs, a difference-in-differences (DID) analysis was conducted by comparing the changes in relevant corporate outcomes for a treatment group (adopters) and a control group (non-adopters) before and after the adoption (deHaan

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[31] Schrand et al. (2021) show that the number of SEC comment letters received by REITs increase significantly from 164 in 2006 to 559 in 2010, and then decrease subsequently. So the increase of SEC comment letters in the post-adoption period may be coincident with the overall trend of SEC comment letters received in the REIT market.

et al., 2013). The regression model for the analysis is given as follows (Bao et al., 2018; Chan et al., 2012):

$$Outcome_{i,t+1} = \alpha + \beta_1 ADOPTED_{i,t} + \beta_2 Control_{i,t} + Firm_i + Year_t + \varepsilon_{it} \quad (5)$$

The dependent variables are the measures of restatement and earnings management, financial report quality and firm investment in a REIT in year $t+1$. The key independent variable *ADOPTED* is a dummy variable equal to 1 if a REIT adopts a clawback policy in year t and zero otherwise. The coefficient of this variable captures the changes in financial restatement risk, financial disclosure quality and investment after clawback adoption in the adopters, relative to the non-adopters. Firm control variables as well as firm-fixed effect and year-fixed effect are allowed for in the model.

An analysis was then run based on the sample of adopters only, following Erkens et al. (2018), to explore whether strong clawback adoptions induce adopting REITs to reduce financial restatement risk, improve financial disclosure and reduce aggressive investment. The regression model is similar to Eq. (5) except that the key variable *ADOPTED* is replaced by *ADOPTED (Strong)*. The variable *ADOPTED (Strong)* is a dummy variable equal to 1 if a REIT adopts a strong clawback policy in year t and zero otherwise.

The validity of the difference-in-differences setting relies on the assumption that in the absence of clawback adoption, the differences in corporate behaviour between adopters (strong adopters) and non-adopters (weak adopters) are constant over time. This assumption may be violated as clawback adoption is not equally likely for all REITs. Panel D2 of Appendix Table 9 shows that REIT adopters are significantly larger firms and have a higher Tobin's Q, larger ROE and greater leverage ratio than non-adopters, and slightly lower levels of stock return standard deviation. CEOs in the adopters also have longer tenure, are older and more likely to be board chairs than CEOs in the non-adopters. The proportion of independent directors to total directors is also higher among the adopters. Panel D3 of Appendix Table 9 shows that strong adopters in the REIT market have larger firm size but lower ROE and leverage ratio than weak adopters. There are substantial differences between adopters (strong adopters) and non-adopters (weak adopters) in the REIT market.

An instrumental variable approach (IV) was applied to mitigate endogeneity concerns in relation to clawback adoption.[32] A valid instrument variable should be strongly correlated with the decision to adopt a clawback policy in a firm and the corporate outcome we are interested in, not affected by channels other than clawback

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[32] We appreciate the recommendation of instrumental variable approach from a referee. Previous studies also apply a propensity score matching approach to mitigate the endogeneity concern (e.g., Chan et al., 2015). Due to the small size of REIT sample, a sufficient number of REIT adopters and matched non-adopter cannot be obtained after the matching for regression analysis. As an alternative option, an entropy balancing approach was used following previous studies (Chapman et al., 2019; Hainmueller, 2012; McMullin et al., 2019). The entropy approach assigns weights to observations in the control group in a continuous scale and achieves almost identical covariate balance between treated observations and weighted control observations. This approach is similar to a matching approach but allows to preserve the full sample. The results show that the inferences are similar to the findings from IV approach.

adoption. Following Babenko et al. (2019), instrumental variables for adoption decisions and strong adoption decisions were constructed based on the prior exposure of REIT directors to clawback adoptions in other firms (including other REITs and general firms). A dummy variable is set equal to 1 if any director on the board of a REIT in a year had also served on the boards of other firms that had adopted clawback policies in earlier years (*DIRDUM*).[33] Such prior exposure to clawback provisions among the board members could be related to the clawback adoption decision and affect corporate behaviour only, such as improving financial disclosure quality through the clawback adoption. The instrumental variable for a strong clawback adoption decision is the presence of a number of directors with prior exposure to clawback policies in other firms (*DIRNUM*), as more directors with clawback adoption experience could lead to strong strength of clawback provisions. The first stage regression in the instrumental variable approach is a linear probability model given as (Babenko et al., 2019):

$$ADOPTED/ADOPTED(Strong)_{i,t} = \alpha + \beta_1 DIRDUM/DIRNUM_{i,t} + \beta_2 Control_{i,t} + Firm_i + Year_t + \varepsilon_{it} \quad (6)$$

All the control variables in the second stage regression, i.e., Eq. (5), were also included in the first stage regression.

Table 6 shows the results from the IV-DID approach based on a full REIT-year sample following analysis of an overall clawback adoption effect. Panel A reports the results of the first-stage regression for the clawback adoption decision. The coefficient of the instrument variable *DIRDUM* is 0.144 with *t-statistics* of 6.63, which is significant at the 1% level. The result indicates that the prior exposure to clawback provisions by directors is positively associated with the decision of clawback adoption in REITs. The statistics from under-identification and weak identification tests also indicate that the instrumental variable is valid; e.g., the Cragg-Donald F-statistic is much higher than the Stock and Yogo (2005) critical value of 16.38. Consistent with Cashman et al. (2016), REITs with higher total assets and Tobin's Q ratios are more likely to adopt a clawback policy. REITs with lower ROE and leverage ratios are also more likely to adopt a clawback policy. It was also found that older CEOs and boards with more independent directors are more willing to support a clawback policy in a REIT.

Panels B-D report the results of second-stage regressions from Eq. (5). For the sake of brevity, only reported are the coefficients of the key independent variable *ADOPTED*.[34] Panel B reports the results of the impacts of clawback adoption on a REIT's subsequent financial restatement risk and earnings management. The coefficients of the variable *ADOPTED* are all negative, indicating that after clawback adoption, the frequency of financial restatements and the number of comment letters

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[33] The director network data of the REITs and Russell 3000 stocks were collected from BoardEx database.

[34] In the results of second stage regressions, the financial restatement and earnings manipulation variables in the Panel B are negatively associated with returns on equity and the volatility of stock returns. The financial readability variable in the Panel C is negatively associated total assets, Tobin's Q ratio, returns on equity and the volatility of stock returns. Two investment variables in the Panel D are negatively related to the Tobin's Q ratio, returns on equity, leverage ratio and the volatility of stock returns.

from SEC are reduced, and so is the amount of earnings management activity. The coefficient, however, is only significant in the case of the number of comment letters. Relative to non-adopters, adopters receive 1.12 comment letters fewer after they adopt clawback policies. This reduction is also economically significant as the average number of comment letters received by REITs per year in our sample was only 0.57. The findings are consistent with the results in Panel A of Table 5, in that clawback adoption generates benefits to REITs through a reduction of SEC comment letters.

Panel C reports the impacts of clawback adoption on financial disclosure quality. The coefficients of *ADOPTED* are generally negative except for the number of internal control weaknesses. The readability of financial reports significantly improves after clawback adoption, as indicated by the decrease of the FOG index in Column (1). Clawback adoption also leads to a reduction of audit report lag by a significant 32.7%, as shown in Column (4). The auditing fee is also reduced following clawback adoption, although the coefficient is not significant. In sum, the study findings indicate that REIT adopters improve their financial disclosure quality in the post-adoption period, resulting in less opacity (better readability) in annual reports and lower audit risk in the financial reports perceived by auditors. The findings are consistent with previous findings that due to the improvement of financial disclosure quality, auditors make less effort in auditing the annual reports from clawback adopting firms (Chan et al., 2012; deHaan et al., 2013).

Panel D shows that imprudent investment significantly decreases after the implementation of clawback policies in REITs In comparison with non-adopters, REIT adopters reduce the investment ratio and asset growth ratio by 1.361 and 1.470 per year in the post-adoption period. These magnitudes are also economically significant as the average investment and asset growth ratios are only 0.229 and 0.226. The finding is consistent with Babenko et al. (2019) that clawback induces more conservative firm investment and financing policies. In the next section whether this conservatism benefits REITs is explored and why investors do not anticipate the potential benefits from investment conservatism (if they exist) in response to the announcement of clawback adoption.

The impacts of the strength of clawback policies on corporate behaviour were then examined and the results reported in Table 7. Panel A gives the results from the first stage regression. The number of directors with prior exposure to clawback adoption in other firms is positively and significantly associated with the probability of adopting a strong clawback policy among REIT adopters. This confirms the argument that if a firm has more directors with prior exposure to clawback adoption, the clawback policy is more confidently and strongly adopted. The tests for under-identification and weak identification indicate that the instrumental variable is valid. Panels B-D report the results from the second stage regressions.

Panel B of Table 7 shows that strong clawback adoption reduces the probable incidence of financial report restatements by 54.3%, which is consistent with Erkens et al. (2018) that firms with strong clawback provisions have fewer restatements than firms with weak clawback policies. In addition, strong adopters significantly see a reduction by 1.366 in the number of comment letters from SEC after adoption, in comparison with weak adopters. These results indicate that a strong clawback policy

Table 6 The impacts of clawback adoption: IV-DID analysis

Panel A: The determinants of clawback adoption decision (first stage regression)

	(1)
Dep. Var. =	ADOPTED
DIRDUM	0.144***
	(6.63)
LNAT	0.021*
	(1.71)
TOBINQ	0.130***
	(5.15)
ROE	−0.076**
	(−2.05)
LEV	−0.087**
	(−2.00)
RET	−0.003
	(−0.14)
STD	−0.292
	(−0.44)
CEOTENTURE	0.017
	(1.57)
CEOAGE	0.199***
	(2.60)
DUALITY	0.009
	(0.48)
BINDEPT	0.237***
	(3.65)
Intercept	−1.052***
	(−3.28)
Firm dummies	Yes
Year dummies	Yes
R2	0.688
N of obs.	3259
Underidentification test	
Kleibergen–Paap Wald F-statistic	44.39***
Weak identification test	
Cragg–Donald Wald F-statistic	62.57**

Panel B: The impacts of clawback adoption on subsequent restatement and earnings management (second stage regressions)

	(1)	(2)	(3)
Dep. Var. =	RESTATE	COMNUM	DFFO
ADOPTED	−0.191	−1.117**	−1.404
	(−1.12)	(−2.21)	(−0.76)
Control variables	Yes	Yes	Yes
Firm dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes

Table 6 (continued)

N of obs.	3144	3259	2105	

Panel C: The impacts of clawback adoption on subsequent financial disclosure quality (second stage regressions)

	(1)	(2)	(3)	(4)
Dep. Var. =	FOG	ICWNUM	AUDFEE	AUDLAG
ADOPTED	−0.752*	0.039	−0.198	−0.327*
	(−1.95)	(0.21)	(−1.44)	(−1.72)
Control variables	Yes	Yes	Yes	Yes
Firm dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
N of obs.	2917	3259	2700	3104

Panel D: The impacts of clawback adoption on imprudent investment (second stage regressions)

	(1)	(2)
Dep. Var. =	INV	AG
ADOPTED	−1.361***	−1.470***
	(−3.33)	(−3.48)
Control variables	Yes	Yes
Firm dummies	Yes	Yes
Year dummies	Yes	Yes
N of obs.	2991	3205

This table presents the results of IV-DID regressions based on a firm-year sample in the REITs from 2001 to 2018. The sample contains all REIT-year observations from both adopters and non-adopters. Panel A shows the result of the first stage regression. The dependent variable *ADOPTED* is a dummy variable equal to one if a REIT has adopted a clawback policy in year t and zero otherwise. The instrumental variable *DIRDUM* is a dummy variable equal to one if at least one director on the board with clawback adoption experience on the boards of other firms in earlier years. Panel B-D shows the result of the second-stage regression. The dependent variables are the measures of restatement and earnings management, financial disclosure quality and imprudent investment of a REIT in the year $t + 1$. Control variables are measured in year t. Firm and year-fixed effects are included in the regressions. The *t-statistics* calculated from robust standard errors are reported in parentheses. ***1%, **5%, and *10%

is a greater threat to executives' compensation, inducing greater effort by managers to reduce incidences of financial restatement and SEC investigations. Column (3) shows that earnings management in REITs is not significantly affected by a strong adoption decision. Panels C and D show the consequences of strong clawback adoption on financial disclosure quality and investment aggressiveness. The results are not statistically significant, indicating that strong clawback adoption is not significantly associated with improvement of financial report readability, a reduction in audit risk as perceived by auditors or an increase of investment conservatism.

Overall, the study has found that clawback adopting REITs significantly reduce financial restatement risk, financial disclosure opacity and audit risk after the adoption. Investors anticipate these improvements and give more positive responses to firms with prior poor quality in those respects (see the results in Table 5). Strong clawback adoption leads to significant reductions in subsequent financial restatement activity and in the number of SEC comment letters. These extra benefits are

Table 7 The impacts of strong clawback adoption: IV-DID analysis

Panel A: The determinants of strong clawback adoption decision (first stage regression)

	(1)
Dep. Var. =	ADOPTED (Strong)
DIRNUM	0.028***
	(5.56)
Control variables	Yes
Firm dummies	Yes
Year dummies	Yes
R2	0.573
N of obs.	1972
Underidentification test	
Kleibergen–Paap Wald F-statistic	30.92***
Weak identification test	
Cragg–Donald Wald F-statistic	40.04***

Panel B: The impacts of strong clawback adoption on subsequent restatement and earnings management (second stage regressions)

	(1)	(2)	(3)
Dep. Var. =	RESTATE	COMNUM	DFFO
ADOPTED (Strong)	−0.543***	−1.366**	−1.142
	(−2.85)	(−2.26)	(−1.52)
Control variables	Yes	Yes	Yes
Firm dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
N of obs.	1962	1972	1471

Panel C: The impacts of strong clawback adoption on subsequent financial disclosure quality (second stage regressions)

	(1)	(2)	(3)	(4)
Dep. Var. =	FOG	ICWNUM	AUDFEE	AUDLAG
ADOPTED (Strong)	−0.485	0.008	0.120	−0.328
	(−1.26)	(0.05)	(0.69)	(−1.12)
Control variables	Yes	Yes	Yes	Yes
Firm dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
N of obs.	1813	1972	1705	1939

Panel D: The impacts of strong clawback adoption on imprudent investment (second stage regressions)

	(1)	(2)
Dep. Var. =	INV	AG
ADOPTED (Strong)	0.074	0.027
	(0.33)	(0.11)
Control variables	Yes	Yes
Firm dummies	Yes	Yes
Year dummies	Yes	Yes
N of obs.	1807	1966

anticipated by investors which explains why market response to the announcement of initial clawback adoption is much stronger in the case of strong policy adopters as opposed to weak adoptions. In sum, clawback adoption, as is the intention, improves the quality of corporate governance.

Additional Analysis

The results in Panel D of Table 6 show that investment ratios are significantly reduced in the case of clawback adopting REITs following the adoption. It is puzzling that the market response to initial clawback announcements is not significantly associated with the investment behaviour of REITs prior to the adoption (see the results in Panel C of Table 5). This suggests that: (1) REIT investors may not realise that clawback adoptions reduce aggressive investments as investment decisions (including, for example, empire-building behaviors) by managers may not link directly with more financial restatements and/or cases of misconduct; and/or (2) REIT investors may anticipate that managers will become more conservative, but these investors do not consistently welcome investment conservatism, as conservative investment policies may forgo risky but profitable opportunities, detracting from a REIT's performance. Thus extra analyses were made to differentiate between these alternative explanations.

The firm performance in year $t+1$ was regressed on the clawback adoption dummy, the investment variables and the interaction variables between them in year t. If conservatism benefits adopters, the coefficients of the interaction terms should be negative, i.e., the reduction of investments after clawback adoption increases firm values. If this benefit is significantly shown in the subsequent performance but is not reflected in the clawback announcement effect, it can be argued that REIT investors are not aware of the benefits of clawback provisions in curbing managerial incentive towards aggressive investment. If the conservatism induced by clawback adoption cannot benefit REITs, the coefficients of the interaction terms should be not significant or positive, indicating that conservatism does not improve a REIT's performance (or even be value-destroying if the coefficient is significantly positive).

Results, not tabulated here, showed that the performance (market performance measured by Tobin's Q or operating performance measured by the profitability FFO/

total assets) of REIT adopters significantly increases after clawback adoption, consistent with the findings in Cashman et al. (2016). REITs with large investments do not have significantly higher Tobin's Q ratio in the subsequent year and they even demonstrate significantly lower FFO profitability. This finding is consistent with Xu and Ooi (2018) that REIT managers can make bad asset growth decisions. The primary concern is the coefficient estimates of the interaction terms. These coefficients were found to be not statistically significant in any of the regressions. The findings suggest that clawback adoption leads to more conservative REIT investment policies, but this conservatism does not enhance a REIT's performance (i.e., decreasing investment after clawback adoption does not enhance firm performance). These results support the second explanation, that more conservative investment due to the clawback adoption does not generate significant benefit to REITs and their shareholders.[35]

Conclusions

Despite the growing number of REITs which have voluntarily adopted policies of executives' compensation clawback if necessary, few studies have investigated the effects of clawback policy adoption on the governance of REITs, especially whether clawback can be a mechanism curbing managerial opportunism in the REIT market. Based on a sample of 152 newly implemented clawback adoptions among REITs, this research has shown that stock markets react positively to announcements of the introduction of clawback policies, but the market response is only positive, in the statistically significant sense, when clawback adoption policies are made stroingly enforceable within the REIT firm concerned.. The positive market reaction to clawback adoptions indicates that shareholders perceive clawback adoption as an effective corporate governance mechanism, even though such strict regulations as mandatory dividend payouts by REITs, have already constrained some types of managerial misbehaviour. Further analysis suggested that the market response to clawback adoption is greater in the cases of REITs at higher risk of financial restatement, with greater disclosure opacity and possessing more internal control weaknesses prior to adoption. The response however is not related to practices of investment aggressiveness. These findings indicate that REIT investors expect to benefit from the introduction of clawback policies by reducing the instances of financial restatement and improving the adopters' quality of financial disclosure practices.

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[35] We also test whether the reduction in the financial restatement risk and the improvement in financial disclosure quality are associated with enhanced performance after clawback adoption based on a similar model. The results show that the coefficients on the interaction term of clawback adoption dummy and restatement dummy, clawback adoption dummy and the number of SEC comment letters, clawback adoption dummy and Fog index, and clawback adoption dummy and abnormal auditing fee are all significantly negative in the regressions of Tobin's Q in the year $t+1$, indicating that clawback provisions benefit REITs through the channels of the reductions of financial restatement risk, disclosure opacity and audit risk in financial reports. For the sake of brevity, these results are not reported but available upon the request.

An instrumental difference-in-differences approach was applied to investigate the consequences of clawback adoption in the REIT market. Clawback adoption leads to a significant reduction in the number of SEC comment letters and an improvement in financial disclosure quality by increasing readability and decreasing audit risk in the financial statements. Moreover, strong clawback adopters show significantly reduced incidences of financial restatement following adoption, in comparison with weak enforcement practice adopters. The study findings reveal that clawback adoption is a strategic governing mechanism that supplements current legal regulations and internal governance controls within REITs (Cashman et al., 2016).

Documented above, is an unintended consequence of clawback adoption in the REIT market. REIT adopters significantly reduce aggressiveness in their investment policies. Further analysis suggests that clawback adoption is associated with subsequent improvement in the market for the REIT concerned and in its accounting performance (Cashman et al., 2016). These improvements, however, run in parallel with a depressing effect on the overall investment portfolio. A comprehensive study of the impact of clawback policy adoption on investment policy (e.g., property acquisitions) and financing policy (e.g., debt and equity issuances) is left for future research.

Appendix 1: Clawback strength index construction

We construct the clawback strength index following Erkens et al. (2018). We perform linguistic analysis on clawback provisions in the definitive proxy statements (Form DEF 14A) filed by REITs in the US from 2007 to 2018. The strength of clawback provisions is evaluated based on five dimensions: (1) compensation coverage, (2) employee coverage, (3) enforcement, (4) time period, and (5) trigger. For each dimension, we construct a sub-index to quantify the strength of a clawback policy.

Compensation coverage

The sub-index of compensation coverage is calculated based on the types of compensation that are subject to forfeiture, including incentive compensation, indirect profits such as stock sale gains, deferred compensation, stock and option compensation, cash compensation and other compensation. One point is awarded for each of the compensation categories if it is explicitly stated in the clawback provisions. The sub-index is the sum of the points.

Employee coverage

The sub-index of employee coverage is constructed based on employees covered in the clawback provisions. If the provision mentions CEO/CFO or chief officers of other functions explicitly, 0.2 points are awarded. One point is added for the clawback policy that explicitly mentions executives and NEOs (named executive officers). Two points are added if the provisions cover employees in general. One further

point is added if the provisions cover all employees/executives and former employees/executives respectively.

Enforcement

The enforcement sub-index measures the level of discretion that a REIT can activate a clawback adoption. A higher score is assigned in the enforcement sub-index if clawback provisions contain less discretion. One point is awarded if the provisions explicitly state that the board has an obligation to claw back excess compensations. If the provisions state that the board has the right or option to claw back excess compensations, 0,75 points are added. If the provisions state that the board has the discretion to claw back excess compensations, 0.25 points are subtracted. If the provision mentions that additional actions (e.g. termination of employment) will be taken, 0.25 points are added.

Time Period

The time period sub-index is constructed based on the look-back period of clawback provisions. The longer the look-back period, the higher the score assigned in the time period sub-index. One point is awarded if the look-back period is equal to or shorter than six months. An extra point is added if the period is increased by six months until the look-back period is longer than 36 months.

Trigger

The trigger sub-index captures financial and non-financial events that can trigger a clawback adoption. The trigger events are categorized into financial triggers (including financial restatement, misstatement, poor performance, etc.) and non-financial triggers (including violating employment agreements, criminal behaviours, early departure, etc.). One point is added if clawback provisions mention any financial trigger event, and one point is added for any non-financial trigger event. 0.25 points are subtracted if clawback provisions set some hurdles for a clawback, including materiality hurdle, misbehavior hurdle, and deliberateness hurdle.

The strength of clawback provisions

The sub-index of each dimension is standardized within a range of [0–1] interval using the following algorithm:

$$\text{norm\_subindex}_{ij} = \frac{raw\_subindex_{ij} - \min\left(raw\_subindex_j\right)}{\max\left(raw\_subindex_j\right) - \min\left(raw\_subindex_j\right)}$$

where $raw\_subindex_{ij}$ is the raw value of clawback strength subindex j for REIT i, $\min(raw\_subindex_j)$ and $\max(raw\_subindex_j)$ are the minimum value and maximum value for the sub-index j in the sample, respectively, and $norm\_subindex_{ij}$ is the value of clawback strength subindex j for REIT i after normalization.

The sum of all standardized sub-indexes gives the strength of a clawback provision.

Appendix 2: Estimating variables on managerial opportunistic behaviors

The absolute value of discretionary funds from operations

The measure of discretionary funds from operations (DFFO) is estimated using the absolute value of the difference between reported FFO and normal FFO. Following Zhu et al. (2010), normal FFO is calculated with the following equation:

$$FFO_{i,t} = IB_{i,t} + MII_{i,t} + DPRET_{i,t} - SRET_{i,t}$$

where $IB_{i,t}$ is income before extraordinary items, $MII_{i,t}$ is minority interest, $DPRET_{i,t}$ is depreciation and amortization of real estate property, and $SRET_{i,t}$ is the gain or loss on sales of real estate property.

The difference between the reported FFO and the normal FFO is scaled by total assets in a REIT in the previous year. As Anglin et al. (2013) argue that managers have an incentive to manipulate the FFOs upwards and downwards to fulfill financial targets, we use the absolute value of the difference (DFFO) as the performance manipulation proxy. For ease of interpretation, we multiply the final value by 100.

Abnormal audit fees

Abnormal audit fees are estimated following the approach of Whisenant et al. (2003) and Danielsen et al. (2009). The audit fees can be estimated from the following equation in each fiscal year:

$$\begin{aligned}
\ln\left[AUDITFEE_i\right] = {} & \beta_0 + \beta_1 \ln\left[ASSETS_i\right] + \beta_2 \ln\left[EMPLOYEE_i\right] \\
& + \beta_3 LEV_i + \beta_4 LIQID_i + \beta_5 INVREC_i + \beta_6 ROA_i \\
& + \beta_7 INITIAL_i + \beta_8 FOROPS_i + \beta_9 LOSS_i \\
& + \beta_{10} SALEGROW_i + \beta_{11} OPINION_i \\
& + \beta_{12} EMPLOYPLAN_i + \beta_{13} BM_i + \beta_{14} DISCOP_i \\
& + \beta_{15} RESTATE_i + PropertyType_i + ReitType_i + \varepsilon_i
\end{aligned}$$

where $AUDITFEE_i$ is the audit fees paid by REIT i in the current fiscal year; $ASSETS$ is the total assets; $EMPLOYEE$ is the number of employees; LEV is the leverage ratio which is calculated by the total debt divided by total asset; $LIQID$ is

the liquidity ratio which is calculated by current assets divided by current liability; *INVREC* is the inventory plus account receivable divided by total asset; *ROA* is the returns on asset ratio; *INITIAL* is a dummy variable equal to one if auditor is in the first or second year of the audit engagement of a REIT and zero otherwise; *FOROPS* is a dummy variable equal to one if a REIT has foreign operations and zero otherwise; *LOSS* is a dummy variable equal to one if a REIT earns a negative income in either of the prior two years and zero otherwise; *SALEGROW* is the sales growth ratio over the previous year; *OPINION* is a dummy variable equal to one if a REIT does not receive a unqualified opinion in the current or prior fiscal year, and zero otherwise; *EMPLOYPLAN* is a dummy variable equal to one if a REIT has a pension or post-retirement plan, and zero otherwise; *BM* is the book-to-market ratio; *DISCOP* is a dummy variable equal to one if a REIT has extraordinary items or discontinued operations, and zero otherwise; *RESTATE* is a dummy variable equal to one if a REIT restates its financial statement and zero otherwise; *PropertyType* is the property type fixed effect; and *ReitType* is the REIT type fixed effect.

The abnormal audit fees is of REIT i is ε_i, which is the residual from the regression.

Investment

Investment is measured by the amounts financed by REIT i in year t. Following Fama and French (1999) and Ott et al. (2005), the components of investment can be expressed as:

$$INVESTMENT_{i,t} = REC_{i,t} + \triangle S_{i,t} + \triangle LTD_{i,t} + \triangle STD_{i,t}$$

where $REC_{i,\,t}$ is retained capital earnings, $\Delta S_{i,\,t}$ is the net issuance of equity, $\triangle LTD_{i,\,t}$ is the change in long-term debt, and $\triangle STD_{i,\,t}$ is the change in short-term debt.

Specifically, retained capital earnings $REC_{i,\,t}$ can be estimated as:

$$REC_{i,t} = IB_{i,t} + XIDO_{i,t} + DP_{i,t} + TXDI_{i,t} - \left(DVC_{i,t} + DVP_{i,t}\right)$$

where $IB_{i,\,t}$ is the income before extraordinary items, $XIDO_{i,\,t}$ is the extraordinary items and discontinued operations, $DP_{i,\,t}$ is the depreciation expense, $TXDI_{i,\,t}$ is the deferred taxes, $DVC_{i,\,t}$ and $DVP_{i,\,t}$ are the dividends paid on common stocks and preferred stocks, respectively.

The variable INV is calculated using the investment amount scaled by total assets in the previous year.

Appendix 3

Table 8 Variables definitions

Variable	Definition
ADOPTED	A dummy variable equal to one if a REIT adopts a clawback policy in a year and zero otherwise.
ADOPTED (Strong)	A dummy variable equal to one if a REIT adopts a strong clawback policy in a year and zero for strong adopters in the pre-adoption period or weak adopters.
AG	Asset growth of a REIT in a year, calculated by total assets in a year minus total assets in last year and then scaled by total asset in last year.
AUDFEE	Abnormal audit fees. See Appendix 2 for the construction method.
AUDLAG	Following Masli et al. (2010), the audit lag is calculated as the percentage change of the number of days between the fiscal year-end of a REIT and its auditor report date from the previous fiscal year.
BINDEP	The ratio of independent directors to total directors of a REIT in a year.
CAR	Cumulative abnormal returns (in percentage) on the initial clawback adoptions.
CEOAGE	The log of the CEO age in a REIT in a year.
CEOTENURE	The log of the number of years since CEO took the position in a REIT in a year.
COMNUM	The number of SEC comment letters received by a REIT in a year.
DFFO	The absolute value of discretionary funds from operations in a REIT in a year. See Appendix 2 for the construction method.
DISCLOSURE	An overall score of financial disclosure quality; calculated from Fog Index of annual report, the number of internal control weakness, and the auditor-perceived auditing risk (abnormal audit fees and audit report lag).
DUALITY	Dummy variable equal to one if a CEO is also a director board chair in a REIT and zero otherwise.
FOG	Gunning's Fog Index of annual report in a REIT, which is calculated as (total number of words/total number of sentences +100 * total number of words with or above three syllables/total number of words) * 0.4.
ICWNUM	The number of internal control weakness of a REIT in a year identified by its auditors under the SOX404 requirement.
INV	Investment calculated by the financing amounts in a REIT in a year. See Appendix 2 for the construction method.
LEV	Leverage ratio of a REIT in a year; calculated by total debt divided by total assets in a year.
LNAT	The log value of total assets of a REIT in a year.
MOM	Stock momentum return of a REIT; the cumulative returns (in percentage) of a REIT over the last three months before the clawback adoption.
RESTATERISK	A overall score of financial restatement risk; calculated from financial restatement dummy, the number of comment letters and the discretionary funds from operation.
RESTATE	A dummy variable equal to one if a REIT restates its financial statement in a year and zero otherwise.
RET	The stock return of a REIT over a fiscal year.
RISK	Standard deviation (in percentage) of daily returns of a REIT in the last three months before the clawback adoption.
ROE	Returns on equity ratio of a REIT in a year.
STD	Standard deviation of daily stock returns of a REIT over a fiscal year.
STRENGTH	Clawback strength index. See Appendix 1 for the construction method.
TOBINQ	Tobin's Q ratio, which is calculated by the sum of total debt and market capitalization of a REIT in a year, divided by total assets.

Appendix 4

Table 9 Additional results

Panel D1. Corporate behaviours in the adopters before and after clawback adoption

	Before adoption		After adoption		Difference (After - Before)	
Variable	N of obs.	Mean	N of obs.	Mean	Difference	t-statistics
RESTATE	1189	0.149	775	0.098	−0.051***	(−3.29)
COMNUM	1194	0.551	778	0.679	0.128***	(3.23)
DFFO	856	1.193	622	1.288	0.094	(0.99)
FOG	1175	17.751	643	18.247	0.495***	(9.95)
ICWNUM	1194	0.050	778	0.014	−0.036***	(−2.61)
AUDFEE	1005	−0.004	703	0.002	0.006	(0.29)
AUDLAG	1167	0.072	775	0.000	−0.072***	(−4.56)
INV	1094	0.255	715	0.122	−0.132***	(−5.44)
AG	1189	0.246	778	0.102	−0.144***	(−5.85)

Panel D2. The differences of firm characteristics between adopters and non-adopters

	Adopter		Non-adopter		Difference (Adopter – Non-adopter)	
Variable	N of obs.	Mean	N of obs.	Mean	Difference	t-statistics
LNAT	1972	8.010	1287	6.956	1.054***	(21.35)
TOBINQ	1972	1.226	1287	1.100	0.126***	(9.77)
ROE	1972	0.055	1287	0.025	0.030***	(5.62)
LEV	1972	0.482	1287	0.434	0.048***	(6.56)
RET	1972	0.125	1287	0.114	0.011	(0.98)
STD	1972	0.019	1287	0.020	−0.001***	(−2.99)
CEOTENURE	1972	1.936	1287	1.877	0.059***	(2.81)
CEOAGE	1972	4.007	1287	3.996	0.011***	(3.41)
DUALITY	1972	0.142	1287	0.086	0.056***	(4.84)
BINDEPT	1972	0.606	1287	0.580	0.025***	(5.89)

Panel D3. The differences of firm characteristics between strong adopters and weak adopters

	Strong adopter		Weak adopter		Difference (Strong - Weak)	
Variable	N of obs.	Mean	N of obs.	Mean	Difference	t-statistics
LNAT	922	8.145	1050	7.891	0.253***	(5.04)
TOBINQ	922	1.226	1050	1.226	0.000	(0.02)
ROE	922	0.046	1050	0.063	−0.018***	(−3.19)
LEV	922	0.473	1050	0.490	−0.016**	(−1.98)
RET	922	0.122	1050	0.127	−0.006	(−0.46)
STD	922	0.019	1050	0.019	0.000	(0.37)
CEOTENURE	922	1.881	1050	1.984	−0.103***	(−3.49)
CEOAGE	922	4.005	1050	4.009	−0.004	(−0.83)
DUALITY	922	0.132	1050	0.151	−0.019	(−1.21)
BINDEPT	922	0.610	1050	0.602	0.008	(1.30)

The *t-statistics* are reported in parentheses. ***1%, **5%, and *10%

Declarations

Competing Interests The authors have no competing interests to declare that are relevant to the content of this article.

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