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A cross-national analysis on the impact of enforcement on impairments of tangible assets under IFRS

Nikolaos I. Karampinis*

Abstract

This study evaluates the potential indicators of tangible asset impairments (TAI) and their interaction with legal enforcement, using an international sample of 38 countries that follow International Financial Reporting Standards. Consistent with expectations, specific economic and opportunistic indicators demonstrate a significant relationship with TAI, and these are further affected by legal enforcement. In particular, empirical findings suggest that in weak enforcement countries, besides economic indicators, the opportunistic indicators of earnings smoothing and debt pressure are significantly related to TAI. In strong enforcement countries, the importance of economic indicators increases substantially, while the effect of the opportunistic debt-related indicator attenuates and the indicator of earnings smoothing is immaterial. This evidence suggests that legal enforcement constitutes a beneficial institutional attribute, but does not restrain all aspects of managerial opportunism.

Keywords: International Financial Reporting Standards; Tangible Asset Impairments; Enforcement; Incentives

JEL Classifications: M41; G15; K20

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1. Asset impairments have been of particular interest to practitioners, regulators, and accounting researchers for decades. This is not surprising for several reasons. First, asset impairments often constitute material amounts in financial statements that signal managers' perceptions about the future performance of assets.² There is ample empirical evidence suggesting that investors incorporate this information into security prices (Bartov, Lindahl & Ricks, 1998). Second, asset impairments represent a formal manifestation of conditional conservatism (Ryan, 2006; André, Filip, & Paugam, 2015).³ Conditional conservatism is generally perceived as a salient attribute of accounting quality because it enhances stakeholders' monitoring and facilitates efficient contracting (Watts, 2003). Finally, although there are clearly prescribed impairment guidelines in the sets of accounting standards that currently prevail, (i.e. United States Generally Accepted Accounting Principles [US GAAP] and International Financial Reporting Standards [IFRS]), evidence of flexibility in the magnitude and timing of asset impairments recognition still exists. For example, several studies find that asset impairments recognized under US GAAP are significantly related to opportunistic indicators (Hong, Paik, & Smith, 2018). Therefore, there is justifiable interest in examining the potential causes of asset impairments, and their interaction with other factors that affect the managers' reporting behaviors.

This study explores the role of legal enforcement in the recognition of tangible asset impairments (TAI) under the IFRS regime. Notwithstanding the aforementioned reasons for studying asset impairments, this study is motivated by two additional interrelated facts. First, there is still a dearth of empirical evidence concerning TAI in the IFRS setting and the effect of legal enforcement. Most extant studies evaluate the interaction of legal enforcement with amounts reported under IFRS using broad

² Unsurprisingly, the reported amounts of asset impairments increased substantially during the 2007–2008 financial crisis. For example, Gunn et al. (2018) report that US firms recorded over \$742 billion in asset impairments between 2007 and 2008. Even earlier evidence suggests that asset impairments represent a significant percentage of total asset over time (e.g., Strong & Meyer, 1987; Alciatore et al., 1998).

³ Conditional conservatism is defined as the more timely recognition of contemporaneous economic losses versus economic gains (Ball & Shivakumar, 2005). Conditional conservatism is distinct from unconditional conservatism. The latter is defined as a news-independent bias toward reporting low book values. Examples of unconditional conservatism include immediate expensing of specific intangibles and depreciation rates above of economic rates. Conversely, conditional conservatism is a news-dependent bias toward reporting economic losses, rather than economic gains, in a more timely fashion. Examples of conditional conservatism include asset impairments and the lower of cost or market accounting for inventory.

measures, such as the cost of capital (Li, 2010), abnormal return volatility (Landsman, Maydew, & Thornock, 2012), analysts' forecast errors (Horton & Serafeim, 2008), investment efficiency (Biddle, Callahan, Hong, & Knowles, 2013), investment-cash flow sensitivity (Schleicher, Tahoun, & Walker, 2010), market liquidity (Daske, Hail, Leuz, & Verdi, 2008), earnings management (Jeanjean & Stolowy, 2008; Ahmed, Neel, & Wang, 2013), earnings persistence (Atwood, Drake, Myers, & Myers, 2011), and conditional conservatism (André et al., 2015).

Broad measures have both pros and cons; although they convey a general perception of the overall impact of IFRS implementation, they offer few insights about the application of specific accounting standards. This study fills a part of this gap by focusing on TAI and examining their relationship with indicators proposed in theory and those based on prior empirical evidence. Focusing on the outcomes of specific accounting standards provides additional insights because it enables researchers to develop refined empirical models for the variables used. For example, in the case of TAI, we have a well-established theory regarding the economic indicators that should signal the economic deterioration of the assets. Although there are other driving forces, such as managerial opportunism, TAI still constitute a more refined variable compared to accounting earnings or market returns, which are influenced by several other factors countervailing each other. Therefore, empirical findings from the examination of specific standards are likely to yield more robust inferences.

Second, the effect of enforcement after the adoption of IFRS is still controversial. Notwithstanding the numerous studies that assess the role of institutional factors under the IFRS regime, results concerning enforcement are generally mixed. Daske et al. (2008), Li (2010), and Landsman et al. (2012) find that strong enforcement in a country adopting IFRS is a prerequisite for material IFRS benefits, whereas Jeanjean and Stolowy (2008), Schleicher et al. (2010), Ahmed et al. (2013), Biddle et al. (2013), and Ball, Li, and Shivakumar (2015) report contradictory evidence. One potential explanation of the mixed results may be the aforementioned research practice of using broad accounting or market-based measures and trying to link them *directly* to IFRS indicators and several enforcement indices. However, this approach may provide biased estimates about the relationship of enforcement with each measure's underlying

determinants, as the latter are usually not included in the models employed. Collectively, the effect of enforcement on several measures remains debatable, and research on specific reporting standards may provide more conclusive inferences.⁴

This study focuses on TAI instead of other asset write-downs, such as inventory losses or goodwill impairments, for several reasons. First, empirical data for inventory losses are generally not provided in large databases, such as Worldscope. Hand-collection is also not feasible because inventory write-down is not reported frequently as a separate item in the income statement or even in the accompanying notes.⁵ Second, some empirical evidence concerning goodwill impairments under IFRS already exists in Avallone and Quagli (2015), Glaum, Landsman, and Wyrwa (2018), and André, Filip, and Paugam (2016). Third, goodwill impairments require the pre-existence of goodwill in financial statements. However, goodwill is recognized for accounting purposes only in cases of mergers and acquisitions, thereby restricting the research sample and causing survivorship bias. Finally, contrary to goodwill impairments, TAI can be reversed in subsequent periods. The reversal option renders TAI as a more convenient vehicle for earnings management compared to goodwill impairments in cases of earnings smoothing, debt pressure, or big bath incentives.⁶ Therefore, potential opportunistic behavior may be more pronounced in the case of TAI, and more easily detected empirically.

Legal enforcement may benefit TAI. Specifically, strong legal enforcement increases stakeholders' confidence that lawsuits for insufficient loss recognition and artificially overstated earnings will be certified in court, and severe sanctions will be imposed (Bushman & Piotroski, 2006; Watts, 2003). Therefore, users of financial statements will demand asset impairments of higher quality and will scrutinize them when reported. Moreover, preparers of financial statements will have enhanced incentives to report asset impairments that reflect assets' economic performance instead of displaying opportunistic

⁴ For example, Banker, Basu, Byzalov, and Chen (2016) find that asymmetric timeliness earnings models used in conditional conservatism research are also affected by cost stickiness (i.e. the asymmetric response of costs to sales increases and not decreases). This is not surprising, considering the aggregate nature of accounting earnings. Therefore, the predictions about the interaction effects of institutional factors with different causal mechanisms, such as conditional conservatism and cost stickiness, may be substantially different. Conversely, specific accounting items, such as asset impairments, are less susceptible to alternative explanations and confounding effects. Moreover, Byzalov and Basu (2016) point out that conservatism is associated with a vector of news indicators rather than with a scalar aggregate news proxy. This suggests that using aggregate figures as dependent or independent variables results in model misspecification.

⁵ Most firms that experience inventory write-down include it in cost of goods sold (Lawrence, Sloan, & Sun, 2012).

⁶ Reversals of goodwill impairments are not allowed under IFRS.

behavior. In the case of misreporting, preparers will confront adverse consequences, such as stock price collapse, lower credit-worthiness, lawsuits, and reputational costs.

On the other hand, legal enforcement may have immaterial effects on TAI. This is not unlikely if the accounting standards that stipulate TAI are restrictive enough, offer clear implementation guidance, and provide little latitude for subjective judgment. In this case, the association of asset impairments with economic and opportunistic indicators will be invariant across different levels of legal enforcement. Moreover, legal costs are generally higher for overstated than understated earnings (Kellogg, 1984). Therefore, the relationship of legal enforcement with specific opportunistic incentives that overstate asset impairments (i.e. earnings smoothing and big bath behavior), and subsequently understate accounting earnings is less obvious. Collectively, opposing arguments about the relationship of legal enforcement with the various indicators of asset impairments suggest the necessity of empirical investigation.

To evaluate the effect of legal enforcement on TAI, this study examines 38 countries that follow IFRS and report TAI under the International Accounting Standard 36 (IAS36): *Impairment of Assets*. The sample covers the period 2005 to 2017. The Rule of Law (*RL*) index from the World Bank's Worldwide Governance Indicators (WGI) research project is used as a proxy for legal enforcement⁷ and the sample is partitioned into two groups: weak and strong enforcement countries. The empirical model employed relates TAI to economic and opportunistic indicators separately for each group. Economic indicators include measures of economic performance at the country-, industry-, and firm-level. Opportunistic indicators include measures of earnings smoothing, big bath behavior, and debt pressure. The empirical results indicate that specific economic and opportunistic indicators are significantly related to TAI. More importantly, strong legal enforcement significantly enhances the relationship of TAI with firm-specific economic indicators and attenuates the effect of the indicator for debt pressure incentives. However, there is little evidence that enforcement materially restrains earnings smoothing incentives. These results appear robust to several sensitivity tests.

⁷ The WGI dataset is available at: <https://info.worldbank.org/governance/wgi/#home>. Studies in accounting research that employ *RL* (e.g., Ahmed et al., 2013; Daske et al., 2008) cite governance indicators reports by Kaufman, Kraay, and Mastruzzi (2008, 2009). The *RL* data from the above website are used because they are more up to date.

This study contributes to the existing literature in a twofold manner. First, it provides international evidence on the role of TAI indicators under IFRS. Notwithstanding the ample empirical evidence for asset impairments under US GAAP (Alciatore, Dee, Easton, & Spear, 1998; Francis, Hanna, & Vincent, 1996; Riedl, 2004; Strong & Meyer, 1987; Zucca & Campbell, 1992), the application of IAS36 in an international setting remains relatively unexplored. Second, most empirical studies evaluate the impact of legal enforcement using broad measures that are affected by the overall set of IFRS. The potential countervailing effects of different standards that are examined as a whole and their complex interaction may lead to confounding results. In sharp contrast, this study examines the impact of legal enforcement on the underlying incentives of a measure mainly prescribed in a specific accounting standard. This research approach likely provides results that are less susceptible to the above concerns and yields more robust inferences.

The rest of this study proceeds as follows: Section 2 reviews the relevant literature, Section 3 develops the main hypotheses, and Section 4 delineates the research design. Sections 5 and 6 report descriptive statistics and estimation results, respectively. Section 7 addresses robustness tests. Finally, Section 8 summarizes the research.

2. Literature review

This study relates to two streams of research discussed in this section. The first one examines the effect of institutional factors, such as law tradition, investor protection, auditing professionalism, sources of finance, book-tax conformity, and enforcement, on reporting outcomes and market measures. The second one investigates asset impairments.

2.1 Institutional factors

International accounting literature provides compelling empirical evidence that institutional characteristics cause heterogeneity in accounting properties worldwide. Earnings timeliness (Ball, Kothari, & Robin, 2000), the value relevance of accounting earnings (Alford, Jones, Leftwich, & Zmijewski, 1993), conditional conservatism (Ball, Robin & Wu, 2003; Bushman & Piotroski, 2006), and forecast accuracy (Hope, 2003) are documented to differ across different institutional settings. However,

the research challenge in these studies is that they have to control for varying institutional characteristics along with different national accounting standards. As the development of accounting standards is an endogenous process affected by the economic environment, it is hard to disentangle the impact of institutional characteristics from the impact of indigenous accounting standards.

The mandatory implementation of IFRS across European Union member states (EC Regulation No. 1606/2002) provides a unique opportunity to examine the effects of different enforcement regimes while retaining a single set of accounting standards. Relevant studies report that accounting enforcement or equivalent institutional characteristics still influence IFRS outcomes, although the type and the significance of these effects remain debatable. For instance, several studies find that material benefits from IFRS adoption are realized mainly in countries characterized by strong legal enforcement (André et al., 2015; Byard, Li & Yu, 2011; Daske et al., 2008; Houqe, 2010; Isidro & Raonic, 2012; Li, 2010). However, there is also contradictory evidence that questions the beneficial role of legal enforcement (Ahmed et al., 2013; Ball et al., 2015; Biddle et al., 2013; Jeanjean & Stolowy, 2008; Schleicher et al., 2010). So, the importance of legal enforcement in financial reporting is still worthy of further empirical research.

Moreover, past literature typically provides evidence on broad accounting measures, such as accounting earnings and accruals, that are affected by several underlying forces. For example, research suggests that the increased sensitivity of earnings to negative returns, a property long considered as a manifestation of conditional conservatism, may also be attributed to cost stickiness (Banker, Basu, Byzalov, & Chen, 2016). Surprisingly, there is still limited international evidence concerning the outcomes of the application of specific accounting standards and the impact of enforcement on their underlying mechanisms.⁸ However, this research approach likely captures economic relations more efficiently and illuminates the effects of legal enforcement that would be otherwise missed.

2.2 Asset impairments

⁸ Existing examples include Hamberg, Paananen, and Novak (2011), Glaum, Schmidt, and Street (2013), and Nichols, Street, and Cereola (2012).

This study explores the impact of accounting enforcement on TAI required by IAS36, which specifies the procedures that an entity follows to test for asset impairments and recognize a potential impairment loss.⁹ More specifically, IAS36 requires that an entity should assess at the end of each reporting period whether there are internal or external indicators that an asset is impaired. In case of impairment indications, the recoverable amount of the asset should be estimated, and if it is lower than the corresponding carrying amount, an impairment loss should be directly recognized. Subsequent loss reversals are permitted for all assets except goodwill.

Asset impairments were of particular interest to past research because of the potential managerial discretion concerning their magnitude and timing (Alciatore et al., 1998; Elliott & Shaw, 1988). Prior studies in the US setting generally confirm the coexistence of both economic and opportunistic indicators related to asset impairments (Francis et al., 1996; Riedl, 2004; Spear & Taylor, 2011; Zucca & Campbell, 1992).¹⁰ Economic indicators are prescribed by accounting standards and signal economic declines in the value of assets because of negative macroeconomic changes, deteriorating industry prospects, poor firm performance, or adverse changes in management strategies (Francis et al., 1996). On the other hand, opportunistic indicators signal managerial intentions to recognize (or not recognize) asset impairments for opportunistic purposes, such as earnings smoothing, big baths, and avoidance of debt covenant violation.

In countries following IFRS, empirical evidence is limited. Using an international sample, Glaum et al. (2018) find that goodwill impairments under IFRS are linked to measures of performance as well as earnings smoothing. For future cash flows, Gordon and Hsu (2018) find that asset impairment reported under IFRS have higher predictive ability than under US GAAP. Finally, Hong et al. (2018) compare TAI reported under US GAAP versus IFRS from firms listed in the US market in order to keep the institutional setting constant. They find that earnings smoothing and big bath behavior are more related to US GAAP than IFRS, suggesting that the former offer greater latitude for opportunistic behavior.

⁹ Until the adoption of IAS36, there was a wide diversity of asset impairment practices worldwide and several domestic accounting standards did not cover this issue at all (Nobes, 2001). In robustness tests, the sensitivity of the main results is evaluated regarding the impact of the pre-IFRS impairment regime. Although there is some evidence that the pre-IFRS impairment rules do play a role, their effect is generally insignificant.

¹⁰ The term “opportunistic” in this study refers to the misleading purpose of earnings management, as defined by Healy and Whalen (1999).

Collectively, prior evidence suggests that both economic and opportunistic indicators are linked to asset impairments in the US setting. In addition, some empirical evidence in the IFRS setting supports these expectations, although it is still limited and covers mostly goodwill impairments. Section 3 considers these inferences to develop the main hypotheses.

3. Hypotheses development

In line with prior studies reviewed in Section 2, it is expected that both economic and opportunistic indicators may be related to TAI in the study sample. On the one hand, TAI constitute a formal manifestation of conditional conservatism that attempts to capture negative economic news promptly. If this holds, the reduced economic performance captured by economic indicators will result in larger TAI, and vice versa. On the other hand, prior evidence suggests that TAI are also used as a convenient vehicle for earnings management. Therefore, opportunistic indicators of earnings smoothing, big bath, and debt pressure are also considered. The first hypothesis (in the alternative form) states the following:

H1: *TAI are related to indicators of both economic performance and managerial opportunism.*

Further, it is considered whether the relative roles of economic and opportunistic indicators vary across different levels of legal enforcement. Manifestations of loss recognition, such as asset impairments, constitute an efficient contracting mechanism that mitigates agency problems and aligns the incentives of contracting parties (Ahmed, Billings, Morton, & Stanford-Harris, 2002). Theory and empirical evidence suggest that legal enforcement likely plays a significant role in the timeliness and quality of adverse news recognition (e.g., Watts, 2003; Bushman & Piotroski, 2006).

In particular, legal enforcement may benefit the underlying determinants of asset impairments through two interrelated channels. First, strong legal enforcement ex-ante increases the confidence of a firm's stakeholders in the efficiency of the court system to impose sanctions for fraudulent reporting. This enhances the importance of asset impairments in financial statements because stakeholders consider them as a valuable monitoring mechanism. The improved diligence of stakeholders induces preparers of

financial statements to report asset impairments of higher quality, and to avoid severe negative consequences, such as stock price collapse, lawsuits, and reputational costs.

Second, strong enforcement ex-post increases litigation costs because it increases the probability that lawsuits will be certified in court, thereby resulting in significant cash outlays. This risk favors the timeliness and magnitude of asset impairments because firms and auditors are more likely to be sued for overstatements than understatements of economic performance (Kellogg, 1984). Furthermore, when a lawsuit is certified, adverse news recognition can significantly reduce plaintiffs' awards (Qiang, 2007). Collectively, strong legal enforcement probably benefits the economic role of asset impairments and restricts the opportunistic one. These arguments imply a positive relationship of legal enforcement with economic indicators and a negative relationship with opportunistic indicators.

In contrast, there are at least two reasons why the above expectations about the beneficial role of legal enforcement may not be borne out. First, guidance in IAS36 may be restrictive enough with a clear and easily verifiable implementation procedure, thereby providing little latitude for subjective judgment. In this case, the association of TAI with economic or opportunistic indicators will exhibit little variance across different levels of legal enforcement. The invariant relationship of TAI with economic and opportunistic indicators across different legal regimes will yield insignificant differences in estimated associations. Moreover, prior literature suggests that asset impairments are frequently overstated for earnings smoothing (i.e. artificial decrease in a firm's over-performance) or for big bath purposes (i.e. presenting large losses in years of negative earnings). However, legal mechanisms rarely impose penalties for earnings decreases and losses (Kellogg, 1984). Therefore, the relationship of legal enforcement with specific opportunistic incentives that overstate asset impairments, and subsequently, decrease accounting earnings (i.e. earnings smoothing and big bath behavior) is probably weaker.^{11, 12}

¹¹ Leuz, Nanda, and Wysocki (2003) find that earnings management is lower in countries with strong legal enforcement, developed equity markets, and dispersed ownership structures. However, this effect may be due to complementarities of these institutional attributes instead of legal enforcement per se. Moreover, their measures of earnings management do not distinguish between upward and downward earnings manipulation. This distinction is important because the sensitivity of preparers and users of financial statements varies considerably depending on the sign of discretionary items. For example, auditors are more likely to detect and disapprove positive rather than negative discretionary accruals (Caramanis & Lennox, 2008).

The interaction of legal enforcement with the economic and opportunistic indicators of TAI is ultimately an empirical matter. Therefore, the second and the third hypotheses (in alternative forms) are the following:

H2: *Legal enforcement enhances the importance of economic indicators for TAI recognition purposes.*

H3: *Legal enforcement attenuates the importance of opportunistic indicators for TAI recognition purposes.*

4. Research design

An international sample of 38 IFRS countries is used to evaluate the impact of enforcement on indicators of TAI. The level of enforcement is approximated using *RL* from the World Bank's WGI research project, which defines *RL* as an index that "*reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.*" Therefore, *RL* is assumed to capture the perception of contracting parties regarding the efficiency of courts, the legal strength of contract enforcement, and expected litigation costs.

From an empirical perspective, *RL* provides comparable results to other studies in the accounting field (e.g., Daske et al., 2008; Ahmed et al., 2013) and is available for each country and year in my sample.¹³ I follow Anagnostopoulou (2017) and use the value of 1.3 as the cut-off point; countries that score above (below) 1.3 in a particular year are coded as strong (weak) enforcement regimes. This cut-off

¹² An additional concern is that legal costs outside the US are minimal. Although the US is a much more litigious setting, international evidence indicates that legal costs are material in other countries too (Anagnostopoulou, 2017; Bushman & Piotroski, 2006; Choi, Kim, Liu, & Simunic, 2008; Daske et al., 2008).

¹³ Some criticize the *RL* index as too broad to efficiently capture legal implications for financial reporting (e.g., Brown et al., 2014). This issue is discussed in the Robustness Tests Section.

Both economic and opportunistic indicators are considered empirically. Moreover, Banker, Basu, and Byzalov (2017) argue that, in line with conditional conservatism research, impairments models can be substantially improved by incorporating the asymmetric economic loss recognition property of accounting earnings. Their empirical results confirm this proposition and suggest that economic indicators may have a different slope coefficient when they indicate economic losses.¹⁵ The following empirical model (firm and year subscripts are suppressed for convenience) is separately estimated for strong and weak enforcement regimes:

$$\begin{aligned}
 TAI = a_0 + \sum \beta_i \text{Economic Indicators} + \sum \beta_j D + \sum \beta_k D \times \text{Economic Indicators} \\
 + \sum \beta_l \text{Opportunistic Indicators} + \sum \beta_q \text{Controls} \\
 + \text{Country Fixed Effects} + \text{Year Fixed Effects} + \text{Industry Fixed Effects} + u
 \end{aligned} \tag{1}$$

where TAI is tangible asset impairments in fiscal year t scaled by lagged total assets. See Appendix A for variable definitions.

Economic Indicators is a vector of variables that represent indicators of economic performance and includes ΔGDP , $\Delta INDROA$, $\Delta SALES$, ΔCFO , and RET . ΔGDP is the percentage change in the Gross Domestic Product (GDP) from period $t-1$ to t of the country of the firm's domicile. $\Delta INDROA$ is the median change in the firm's industry return on assets from period $t-1$ to t in the country of the firm's domicile. $\Delta SALES$ is the change in the firm's sales from period $t-1$ to t , scaled by lagged total assets. ΔCFO is the change in the firm's operating cash flows from period $t-1$ to t , scaled by lagged total assets. RET is the firm's stock return for the 12-month period of fiscal year t .

¹⁴ The sensitivity of the empirical results is tested to this decision; the yearly median of the index is used as cut-off point instead of the fixed value 1.3. Results remain qualitatively similar.

¹⁵ Except Banker et. al. (2017), no empirical asset impairment studies thus far incorporate asymmetric loss recognition in the empirical models estimated. This is surprising because asset impairments are a typical example of conditional conservatism. I thank an anonymous referee for bringing this fact to my attention.

D is a vector of dummy variables defined as follows: $D_{\Delta GDP}$ takes the value 1 if ΔGDP is negative and zero otherwise; $D_{\Delta INDRQA}$ takes the value 1 if $\Delta INDRQA$ is negative and zero otherwise; $D_{\Delta SALES}$ takes the value 1 if $\Delta SALES$ is negative and zero otherwise; $D_{\Delta CFO}$ takes the value 1 if ΔCFO is negative and zero otherwise; and D_{RET} takes the value 1 if RET is negative and zero otherwise. Each one is further multiplied by its corresponding economic indicator to capture potential asymmetries.¹⁶

Opportunistic Indicators is a vector of variables including *SMOOTH*, *BATH*, and *DEBT* as indicators for earnings smoothing, big bath, and debt-related opportunistic incentives, respectively. *SMOOTH* is the change in the firm's pre-impairment earnings from period $t-1$ to t , scaled by lagged total assets when this change is above the median of non-zero positive values of this variable for the particular country and industry-year that the firm operates, and 0 otherwise.¹⁷ *BATH* is the change in the firm's pre-impairment earnings from period $t-1$ to t , scaled by lagged total assets when this change is below the median of non-zero negative values of this variable for the particular country and industry-year that the firm operates and 0 otherwise. *DEBT* is the ratio of the firm's total debt to earnings before interest, tax, depreciation, and amortization.

Finally, *Controls* is a vector of control variables including *AUD*, *LMB*, and *LGWPPE*. *AUD* is a dummy variable taking the value of 1 if the firm is audited by a Big 4 firm and 0 otherwise. *LMB* is the firm's market-to-book ratio with a one-year lag. *LGWPPE* is the firm's goodwill scaled by net property plant and equipment with a one-year lag. As *TAI* is right-censored to zero, Eq. (1) is estimated as a Tobit

¹⁶ Banker et al. (2017) also examine the interaction effects between the economic indicators. This approach is not followed here because the scope of my study is to examine the impact of legal enforcement, not the incremental information content of interacted indicators. Therefore, a parsimonious model is preferred for expositional convenience.

¹⁷ There is empirical evidence suggesting that income smoothing may also be used by managers to convey their private information for investors' sake. Kirschenheiter and Melumad (2002) study a model that earnings smoothing is part of a managerial disclosure strategy intending to increase earnings precision when earnings are favorable and maximize the firm value. Tucker and Zarowin (2006) provide empirical evidence that income smoothing is a vehicle for managers to communicate their assessment of future earnings, thereby increasing earnings informativeness and conveying the true value of the firm. However, this role of income smoothing is mostly captured with a firm-specific time-series model. The proxy employed here assumes earnings smoothing indications when a firm outperforms its peers. If income smoothing takes place in this case, managerial opportunism is a more plausible explanation.

The variables ΔGDP , $\Delta INDROA$, $\Delta SALES$, ΔCFO , and RET are included because prior literature suggests that they represent faithful indicators for economic performance (Basu, 1997; Francis, Hanna, & Vincent, 1996; Gordon & Hsu, 2018; Hong et al., 2018; Riedl, 2004; Strong & Meyer, 1987). ΔGDP indicates economic performance at the macroeconomic level. Positive (negative) changes in the GDP are expected to reflect economic expansion (downturn). $\Delta INDROA$ reflects economic performance at the industry level with positive (negative) changes indicating industries with growing (declining) prospects. Finally, $\Delta SALES$, ΔCFO , and RET indicate economic performance at the firm-level; $\Delta SALES$ is a gross measure of economic performance, whereas ΔCFO and RET represent net measures of economic performance. It is not expected that each economic indicator is of equal importance because they reflect different time-horizons. For example, stock returns capture changes in investors' perception of a firm's prosperity to an infinite time-horizon. Conversely, $\Delta SALES$ is a short term indicator that is closer to the finite-lived tangible assets (Banker et al., 2017).

H1 predicts significantly positive coefficients of the economic indicators in Eq. (1).²⁰ However, Eq. (1) separately models the effect of positive and negative economic indicators on TAI . This is consistent with Banker et al. (2017) that there is an incremental response of asset impairments to adverse news. If this also holds in my sample, significantly positive coefficients of $D \times EconomicIndicators$ (i.e. significantly positive β_k) should be observed. Note also that empirical findings for coefficients of economic indicators of good news are often mixed. For example, several conditional conservatism studies find a negative coefficient of positive returns with earnings used as a dependent variable. This is not surprising because items such as research expenditures are immediately expensed but investors may perceive them as value-increasing in the long term (Roychowdhury & Watts, 2007). Another example is a negative sign of positive cash flows which is attributed to the noise-reduction role of accruals (Dechow,

¹⁸ Clustering by country is probably a conservative option (Daske et al., 2008). However, when country-level dependence is the primary concern, clustering by country provides the most reliable inferences (Barth & Israeli, 2013; Christensen, Hail, & Leuz, 2013).

¹⁹ Eq. (1) is also estimated using Ordinary Least Squares with qualitatively similar results.

²⁰ Because TAI reduce earnings, they are coded as negative values.

1994). Although *TAI* is a more refined variable compared to total earnings or total accruals, it represents only a part of the information set that the independent variables convey. Therefore, stronger predictions can be made for the coefficients on the interacted indicators with the dummy variables. In these respects, H1 may be supported by positive and significant coefficients of economic indicators of good news (i.e. β_i) but is most likely to be supported by a positive and significant overall effect of economic indicators of adverse news (i.e. $[\beta_i + \beta_k]$).

For opportunistic indicators, H1 predicts significant coefficients of *SMOOTH*, *BATH*, and *DEBT*. Regarding earnings smoothing, prior evidence suggests that managers avoid reporting unexpected large earnings increases to create cookie-jar reserves (Levitt, 1998). Riedl (2004) and Hong et al. (2018) find that firms tend to smooth earnings using asset impairments. As higher values of *SMOOTH* indicate firms with higher incentives to smooth earnings, a significantly negative coefficient is predicted. *BATH* is included to control for big bath behavior (Francis et al., 1996; Levitt, 1998; Riedl, 2004). By definition, *BATH* takes negative values, and therefore, a significantly positive coefficient is predicted. Finally, *DEBT* is included to control for debt pressure to avoid earnings decreases. Dichev, Beatty, and Weber (2005) find that debt to earnings before interest, taxes, depreciation, and amortization is by far the most popular ratio of accounting-based debt pricing and stands as a complement to debt covenants. Therefore, a significantly positive coefficient is expected, so higher values of *DEBT* indicate stronger incentives to avoid impairment recognition.²¹

H2 predicts that legal enforcement enhances the relationship of *TAI* with economic indicators, while H3 predicts that legal enforcement attenuates the relationship of *TAI* with opportunistic indicators. To test these predictions, I estimate Eq. (1) separately for weak and strong enforcement countries and evaluate potential differences in coefficients of economic and opportunistic indicators. H2 implies that the difference in the coefficients of economic indicators is positive and significant (i.e. the coefficients of economic indicators are higher in strong enforcement countries). In a similar vein, H3 predicts that the

²¹ Instead of *DEBT*, prior impairment studies use a dummy variable that equals 1 in case of private debt. This is based on Dichev et al. (2005) who argue that private debt has tighter maintenance covenants, thereby providing incentives to avoid asset impairments. I do not use this proxy because many countries in the sample have underdeveloped public debt markets, thereby inducing most firms to borrow from private debt sources.

difference in coefficients of *SMOOTH* is significantly positive, while the differences in the coefficients of both *DAIT* and *DEBT* are significantly negative. As an additional test, the incremental explanatory power of each set of indicators is also estimated. According to H2 and H3, the incremental explanatory power of economic indicators versus that of opportunistic indicators should be enhanced in strong enforcement countries.

Finally, turning to control variables, *AUD* is included because empirical evidence suggests that Big 4 audit firms provide audit services of higher quality (DeAngelo, 1981; Becker, DeFond, Jiambalvo, & Subramanyam, 1998; Francis, Maydew & Sparks, 1999) and increase timely loss recognition (Basu, Hwang, & Jan, 2001; Kim, Chung, & Firth, 2003). *LMB* is included as a measure of unconditional conservatism (i.e. higher values of *LMB* indicate higher unconditional conservatism). Prior literature suggests that unconditional conservatism preempts and attenuates conditional conservatism (Beaver & Ryan, 2005). Therefore, a positive sign is expected; firms with higher unconditional conservatism demonstrate lower conditional conservatism and recognize lower impairment losses. *LGWPPE* is included for two reasons that yield opposite sign predictions. On the one hand, high values of *LGWPPE* indicate firms that have a substantial intangible buffer over their book value, which lowers the likelihood of TAI. Moreover, IAS36 requires that the first asset to be impaired is goodwill. Therefore, the impairment loss should be high enough to overcome the buffer of goodwill and cause a TAI. This yields a positive sign prediction. On the other hand, IAS36 stipulates that firms with goodwill on their balance-sheet shall perform impairment tests on an annual basis. This requirement perhaps increases the likelihood that a firm will also detect and report impairments for tangible assets, besides goodwill. In that case, *LGWPPE* is predicted to load with a negative sign. *LMB* and *LGWPPE* are included with a one-year lag to address potential simultaneity and multicollinearity concerns.

The sample includes all firms from countries that follow IFRS where the necessary data are available.²² Following Christensen, Hail, and Leuz (2013) and De George, Li, and Shivakumar (2016), information about the use of IFRS (or standards equivalent to IFRS) in each country is obtained from PWC IFRS adoption reports, the Deloitte IASPlus website, and the IFRS official website.²³ Other data were obtained from the Worldscope database. Firms eventually delisted were included to avoid any survivorship bias.²⁴ The final sample comprises 38 countries from 2005 to 2017.^{25, 26} All continuous variables used in the empirical analysis are truncated at the 1st and the 99th percentile. This procedure yields 7,382 firms and 76,990 firm-year observations comprising 17,052 (59,938) observations with non-zero (zero) *TAI*.

Table 1, Panel A, presents the sample distribution by country. As expected, most firms and observations are from large stock exchanges, such as those in Australia, France, Germany, Hong Kong, and the United Kingdom (Columns [1] to [4]). In addition, many firms reporting non-zero *TAI* are from Australia and Hong Kong (Columns [5] and [6]). However, Italy, Singapore, Slovenia, and Spain exhibit a higher relative frequency of *TAI* within the country level (Column [9]). It is notable that Italy, Slovenia, and Spain are consistently considered as low enforcement regimes because their *RL* scores are lower than 1.3 in all sample-years (see, Appendix B, Panel A).

²² While Hong Kong is a Special Administrative Region of the People's Republic of China rather than a country, for simplicity I refer to Hong Kong as a country.

²³ These resources are available at:

<https://www.pwc.ru/ru/ifrs/ifrs-17-hub-int/pwc-ifrs-by-country-2016.pdf>

<https://www.iasplus.com/en/jurisdictions>

<https://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/>

²⁴ Financial firms are retained as they follow the same rules for *TAI* as non-financial firms. The empirical results are robust if financial firms are excluded (see Section 7).

²⁵ Technically, some countries in the sample follow local standards that are equivalent to IFRS, rather than IFRS per se. For example, in Australia, IFRS are issued as "Australian Accounting Standards" because they have to be incorporated into Australian law. Other countries following similar implementation procedures are Hong Kong, New Zealand, Pakistan, the Philippines, and Singapore. Following Brown et al. (2014), Christensen et al. (2013), Daske et al. (2008), and Glaum et al. (2018), I retain these countries in my sample. Results remain qualitatively similar if they are excluded.

²⁶ My sample period starts in 2005 because IFRS became mandatory for many countries in that year. Israel, New Zealand, Pakistan and Ukraine adopted IFRS in 2008, 2007, 2009, and 2012, respectively (see Appendix B, Panel A). For Pakistan and Ukraine, observations before the respective adoption dates are excluded from the sample. However, Israel and New Zealand allowed voluntary reporting with IFRS since Jan 1, 2006 and Jan 1, 2005, respectively. I include these voluntary adopters in my sample, but results remain unchanged if they are excluded. Voluntary adopters are identified by the "accounting standards followed" field in Worldscope (field WC07536).

Panel B provides an industry breakdown of my sample. As reported, there is sufficient dispersion of the observations across industries (Columns [1] to [8]). From specified industries, the oil, gas, and coal sector illustrates the highest number of *TAI*, followed by the financial sector and the electronics sector (Column [5]). Column (9) presents the percentage of *TAI* in each industry, with tobacco being the sector with the highest relative frequency of impairments.

<INSERT TABLE 1 ABOUT HERE>

Table 2, Panel A, reports descriptive statistics for variables partitioned by weak and strong enforcement countries. Mean *TAI* equals -0.002 and -0.005 in weak and strong enforcement countries, respectively. This indicates that companies in strong enforcement countries tend to report larger impairments. Moreover, differences in mean values for most economic and opportunistic indicators appear significant, suggesting that the inclusion of these variables in impairment models is important when evaluating different legal regimes. As indicated by dummy variables, there are high percentages of adverse news in either group. For example, 39.9% (36.2%) of sales changes are negative in weak (strong) enforcement countries. Similar results are reported for changes in operating cash flows and returns. These results are generally comparable to prior studies that use similar variables, such as Banker et al. (2017) and Lawrence et al. (2012)

Panel B presents descriptive statistics for observations with non-zero *TAI* separately for weak and strong countries. Except for $D_ΔINDROA \times ΔINDROA$, all mean values of negative economic indicators are significantly lower in weak enforcement countries, indicating that these firms require worse economic performance to recognize *TAI*. Similarly, *SMOOTH* and *BATH* are lower (in absolute values) in weak enforcement countries. This indicates a more intense reaction to those opportunistic indicators for *TAI* recognition in weak enforcement countries.

<INSERT TABLE 2 ABOUT HERE>

Table 3 tabulates pairwise correlations across variables separately for weak (Panel A) and strong (Panel B) enforcement countries. Although reported correlations represent univariate associations, they are consistent with expectations. In particular, *TAI* demonstrates a positive correlation with economic

indicators, so better performance leads to lower impairment losses. This result holds in both weak and strong enforcement countries. Moreover, TAI is negatively related to dummy variables that indicate negative economic performance. Consistent with Banker et al. (2017), in strong enforcement countries negative economic indicators demonstrate a positive correlation with TAI , which is generally higher compared to that with positive economic indicators. For example, the correlation between TAI and $D_{\Delta CFO} \times \Delta CFO$ is 0.024, whereas that of TAI and ΔCFO is 0.018. This suggests that empirical models that do not incorporate the asymmetric response of TAI to negative news are probably misspecified. Finally, TAI is significantly related to opportunistic indicators. For example, in both weak and strong enforcement regimes, TAI exhibits a significantly negative relationship with $SMOOTH$ (-0.031 and -0.036 in weak and strong enforcement countries, respectively), suggesting that asset impairments are a convenient vehicle for earnings smoothing. After these initial results, multivariate analysis addresses whether enforcement has any impact on these associations.

<INSERT TABLE 3 ABOUT HERE>

6. Multivariate results

Table 4 reports multivariate results for Eq. (1). Empirical results are presented separately for weak and strong enforcement regimes. Columns (1) and (2) present the coefficients and the t-statistics, respectively, for weak enforcement countries. The coefficients of ΔGDP , $\Delta INDROA$, $\Delta SALES$, and ΔCFO load with positive signs, and except for the coefficient of $\Delta SALES$ (t-stat. = 3.20), are not generally significant. The coefficient of RET is negative but not significant. Consistent with an asymmetric response of TAI to negative economic indicators, the coefficients of the interacted terms load with positive signs. Additionally, three of them are statistically significant at 1% level, which is consistent with H1. Specifically, the coefficient of $D_{\Delta SALES} \times \Delta SALES$ equals 0.0086 (t-stat. = 2.97), the coefficient of $D_{\Delta CFO} \times \Delta CFO$ equals 0.0346 (t-stat. = 2.93), and the coefficient on $D_{RET} \times RET$ is equal to 0.0171 (t-stat. = 5.40). This evidence corroborates that TAI exhibits an incremental reaction to negative news, and is consistent with Banker et al. (2017). For example, while a € 1 of positive $\Delta SALES$ reduces asset impairments by approximately 0.7 cents, on average, a € 1 of negative $\Delta SALES$ increases asset

impairments by approximately 1.52 cents, on average ($= 0.0066 + 0.0086$), indicating a non-linear response of *TAI* to favorable and adverse news. Accordingly, the overall effect of € 1 decrease in cash flows and returns equals to 4.3 cents, on average ($= 0.0084 + 0.0346$) and 1.58 cents, on average ($= -0.0013 + 0.0171$), respectively. In sum, even in weak enforcement countries, *TAI* demonstrates a significant relation with firm-specific economic indicators (albeit in a non-linear fashion) as predicted in H1.²⁷

Columns (3) and (4) present multivariate results relating to strong enforcement countries. Economic indicators, such as ΔGDP , $\Delta SALES$, and ΔCFO , load with positive signs and are statistically significant. However, coefficients of $\Delta INDROA$ and RET are not significant. Consistent with previous results, *TAI* demonstrates an incremental response to negative news; coefficients of $D_{\Delta SALES} \times \Delta SALES$, $D_{\Delta CFO} \times \Delta CFO$, and $D_{RET} \times RET$ are positive and statistically significant (t-stat. = 5.84, 6.65, and 5.42, respectively). Therefore, a € 1 of negative $\Delta SALES$, ΔCFO , and RET increases, on average, asset impairments by 2.9 ($= 0.0119 + 0.0171$), 9.57 ($= 0.0302 + 0.0655$), and 3.17 ($= -0.0015 + 0.0332$) cents, respectively. Moreover, compared to their counterpart in weak enforcement countries, these responses appear much higher. Therefore, consistent with H2, the response of asset impairments to economic indicators is more intense in strong enforcement countries, although this seems to hold only for firm-specific variables.

Columns (5) and (6) present and evaluate the difference in coefficients between the two subsamples. The difference in coefficients of $D_{\Delta SALES} \times \Delta SALES$, $D_{\Delta CFO} \times \Delta CFO$, and $D_{RET} \times RET$ are all statistically significant. Collectively, the above results suggest that firm-specific economic indicators are significantly related to asset impairments (as predicted in H1) and that they are significantly enhanced under strong legal enforcement regimes (as predicted in H2).

²⁷ The statistical significance of the overall effect of negative $\Delta SALES$, ΔCFO , and RET is also confirmed with a stacked regression (results available on request). In the stacked regression, the interaction variable *POS* takes a value of 1 for positive values of the economic indicator under scrutiny and 0 otherwise, and the interaction variable *NEG* takes a value of 1 for negative values and 0 otherwise. For example, with $\Delta SALES$ the stacked regression includes $POS \times \Delta SALES$ and $NEG \times \Delta SALES$ and drops $D_{\Delta SALES}$ and $D_{\Delta SALES} \times \Delta SALES$. The t-stat. on the coefficient of $NEG \times \Delta SALES$ indicates the statistical significance of negative changes in sales. For a discussion on stacked regressions, see Maddala (2001).

Turning to opportunistic indicators in weak enforcement countries, the coefficient of *SMOOTH* is significantly negative (-0.0151 , t-stat. = -2.51). This indicates that *TAI* is also related to opportunistic indicators, suggesting that impairments are probably used for income smoothing purposes. To assess the economic significance of *SMOOTH*, I examine the effect on *TAI* when moving from the 75th to the 90th percentile of its distribution, with the other variables at their mean values.²⁸ The result is an increase (in absolute terms) in *TAI* of 1.82%.²⁹ Moreover, the coefficient of *DEBT* loads positive and significant (0.0030, t-stat. = 3.00), indicating that debt pressure is an important deterring factor to *TAI*. Contrary to expectations, the coefficient of *BATH* is not statistically significant.

At the bottom of Table 1, the incremental pseudo-R² of economic and opportunistic indicators is reported. The results suggest that opportunistic indicators contribute almost equally to economic indicators regarding the explanatory power of the model (3.7% and 3.5% for economic and opportunistic indicators, respectively). Collectively, except for *BATH*, these results support H1 that *TAI* is related to opportunistic indicators and that both economic and opportunistic indicators play a significant role in weak enforcement countries.

Contrary to H3, the coefficient of *SMOOTH* remains significant (t-stat. = -4.36) and increased slightly (in absolute terms) in strong enforcement countries. Evaluation of its economic importance suggests that moving from the 75th to the 90th percentile of *SMOOTH* distribution results in an increase (in absolute terms) in *TAI* of 1.77%.³⁰ This indicates that earnings smoothing remains an important opportunistic factor and that legal enforcement provides loose incentives to deter overstatement of *TAI*. Consistent with H3, the coefficient of *DEBT* is no longer significant (t-stat. = 0.10), while the coefficient of *BATH* remains not significant (t-stat. = -0.83). Moreover, the results relating to differences in coefficients indicate that the attenuation effect on *DEBT* is statistically significant (t-stat = -2.05). This suggests that legal enforcement deters debt-related incentives for non-recognition of impairments.

²⁸ These percentiles are used to obtain non-zero values of *SMOOTH*.

²⁹ *TAI* are scaled by lagged total assets (*LTA*) Mean *LTA* equals to € 5.2 billion in weak enforcement countries. Therefore, the above increase in *SMOOTH* implies the recognition of € 94.64 million as asset impairment for the average firm.

³⁰ Mean *LTA* equals to € 9.6 billion in strong enforcement countries. Therefore, the above increase in *SMOOTH* implies the recognition of € 169.92 million as asset impairment for the average firm.

Results relating to incremental pseudo- R^2 in strong enforcement countries support an enhanced role of economic versus opportunistic indicators. Specifically, the ratio of incremental pseudo- R^2 of economic to opportunistic indicators increased to 1.47 ($= 7.5 \div 5.1$), which is much higher than its counterpart of 1.06 ($= 3.7 \div 3.5$) in weak enforcement countries. Collectively, empirical results indicate that legal enforcement enhances the role of economic indicators. In addition, *TAI* is also related to opportunistic indicators. I find evidence that legal enforcement attenuates debt-related *TAI* understatement and upward earnings management. However, I find no evidence that legal enforcement deters the over-recognition of impairments for earnings smoothing purposes. This is consistent with theoretical expectations because the demand for conservative figures is higher and legal sanctions are more frequent for overstated than understated earnings.

<INSERT TABLE 4 ABOUT HERE>

7. Robustness tests

This section presents robustness tests for the sample composition, the enforcement proxy, and the proxy for big bath incentives. Results are also assessed for cost stickiness, different asset classes, and asset revaluations concerns.

7.1 Sample composition

First, the sensitivity of the results is evaluated regarding the inclusion of the years 2005–2006 in the sample period. These years are considered as early IFRS adoption period for most countries in the sample, with potential transition effects. Such transition effects constitute a potential concern for two reasons. First, they raise concerns about noise in *TAI* in early years because of the inexperience of first-time IFRS adopters with the new standards applied. Second, several institutional changes in enforcement occurred in 2005, bundled with IFRS adoption (Christensen et al., 2013). This perhaps caused material changes in the enforcement status for many countries that may not be captured in a timely fashion by the

RL index. Therefore, observations from the years 2005 and 2006 are excluded. This reduces the total sample to 71,161 observations.

Related results are presented in Table 5. The pattern of the estimated coefficients remains similar to the main analysis and lends support to my initial inferences. Specifically, the coefficients of $D_ΔSALES × ΔSALES$, $D_ΔCFO × ΔCFO$, and $D_RET × RET$ are of the expected sign and statistically significant at the 1% level (Columns [1] to [4]) consistent with H1. More importantly, each of them is enhanced materially under a strong enforcement regime (Columns [5] and [6]) consistent with H2. Moreover, the coefficients of *SMOOTH* and *DEBT* are statistically significant in weak enforcement settings as predicted in H1 (Columns [1] and [2]). Strong enforcement has a significant attenuating effect on *DEBT* consistent with H3 but an immaterial effect on *SMOOTH* (Columns [5] and [6]).

Next, I drop firms that belong to the financial sector. While accounting rules for TAI is the same for those firms, most empirical studies exclude them because they have a different business model (Penman, 2007). Estimated results excluding financial firms (not tabulated for brevity) demonstrate a similar pattern to the main results for the coefficients of economic and opportunistic variables. So, the inclusion of financial firms leaves prior inferences unaffected.

<INSERT TABLE 5 ABOUT HERE>

7.2 Alternative proxy for enforcement

In the main analysis, *RL* is used as a proxy for legal enforcement. However, some claim that *RL* constitutes a broad measure of enforcement and does not focus explicitly on particular factors that affect the enforcement of accounting standards *per se* (Brown, Preiato, & Tarca, 2014). To test the sensitivity of the results, instead of *RL* I use the *TOTAL* index proposed by Brown et al. (2014), which is the sum of two separate indices, namely *AUDIT* and *ENFORCE*. *AUDIT* and *ENFORCE* are supposed to capture the auditors' and enforcement bodies' effectiveness, respectively, in ensuring rigorous compliance with accounting standards.^{32, 33} However, the *TOTAL* index is available only for the years 2005 and 2008.

³¹ Some countries adopted IFRS latter than 2005 (see Appendix B, Panel A). Although they represent a small fraction of my sample, in robustness tests, the first two years of those countries were also excluded. Results remain qualitatively similar.

³² *AUDIT* is the sum of scores on separate items regarding audit quality attributes, such as license requirements, audit rotation, and ongoing professional development. *ENFORCE* is the sum of scores on separate items regarding the quality of regulatory

Therefore, the median of *TOTAL* in 2008 is used to partition the sample into weak and strong enforcement countries.³³ Moreover, *TOTAL* is not available for all countries in my sample (see Appendix B, Panel A), thereby reducing the number of observations to 66,652.

Results are reported in Table 6. As illustrated, the magnitude and the significance of the coefficients present some differences, but the general tenor remains unchanged. In particular, in both weak and strong enforcement countries, coefficients on $D_ΔSALES×ΔSALES$, $D_ΔCFO×ΔCFO$, and $D_RET×RET$ are positive and statistically significant. Moreover, coefficients on *SMOOTH* and *DEBT* are of the predicted sign and statistically significant in weak enforcement countries (t-stat. = -6.12 and 5.27, respectively). According to the results relating to differences in coefficients, strong enforcement has a significantly positive effect on $D_ΔSALES×ΔSALES$ and $D_RET×RET$, and a positive effect on $D_ΔCFO×ΔCFO$ significant at the 10%. In addition, strong enforcement attenuates significantly the relationship between *TAI* and *DEBT*, but its effect on *SMOOTH* appears immaterial. To summarize, with the exception of $D_ΔCFO×ΔCFO$, the tenor of the main analysis remains unchanged and appears robust regarding the choice between *RL* and *TOTAL*.

<INSERT TABLE 6 ABOUT HERE>

7.3 Big bath proxy

In the main analysis, the coefficient of *BATH* is never statistically significant. These results are in contrast to US evidence, which indicates that asset impairments are used for big bath purposes. Therefore, the sensitivity of the results is tested using a different proxy for big bath indications, namely *BATH2*. *BATH2* is defined as the pre-impairment earnings in year *t*, scaled by lagged total assets, when it is lower than -20%, and 0 otherwise, because news-independent large losses are indicative of big bath behavior

bodies, such as their power to set accounting and auditing standards, their initiatives to enforce compliance with official standards, and the number of staff employed.

³³ According to Brown et al. (2014), *ENFORCE* captures the quality of enforcement bodies and not the overall quality of accounting enforcement. The latter is presumably captured by the *TOTAL* index.

³⁴ Median *TOTAL* in 2008 equals 33 (Appendix B, Panel A). Therefore, countries with *TOTAL* score lower than 33 are considered as low enforcement regimes, and countries with *TOTAL* score equal or higher than 33 are considered as high enforcement regimes.

³⁵ André et al. (2015) also use the values of *TOTAL* in 2008 for later years. However, this implies that the enforcement quality remained unchanged since 2008, which is inconsistent with the dynamic nature of the enforcement bodies around the world (Christensen et al., 2013). Therefore, the results relating to this test should be interpreted with caution.

(Levitt, 1998). The results (not tabulated for brevity) indicate that the coefficient of *BATH2* remains insignificant in both groups, while other coefficients are quantitatively similar.

7.4 Cost stickiness as an alternative explanation

Prior research finds that costs are sticky; they rise more for sales increases than they fall for equivalent sales decreases (Anderson, Banker, & Janakiraman, 2003). Cost stickiness arises because of deliberate decisions by managers to adjust resources. Adjustment costs, such as installation and disposal costs of equipment or hiring and firing costs of labor, drive managers to retain slack resources in sales decreases with the premise that sales will rebound. Cost stickiness implies that earnings respond more to sales decreases, in a similar manner under conditional conservatism. Therefore, asymmetric timeliness with respect to sales changes may emanate either from cost stickiness or conditional conservatism (Banker et al., 2016).

Asset impairments are not immune to cost stickiness effects. For example, in periods with sales decreases, cost stickiness results in accentuated negative earnings response, which may cause asset impairments. If there is a positive correlation between legal enforcement and cost stickiness determinants, the incremental coefficient of sales changes in the main results may be biased upward.

To evaluate the sensitivity of my results to this concern, I follow Banker, Byzalov, and Tony (2013) and consider employment protection legislation as a potential determinant of cost stickiness. In particular, two employment protection legislation indices provided by the Organization for Economic Co-operation and Development (OECD). Their index of protection of permanent workers against individual dismissal and index of regulation on temporary forms of employment³⁶ are averaged to a summary employment protection legislation index (*EPL*).³⁷ *EPL* is included in the analysis to capture potential cost stickiness effects. However, *EPL* is not available for all countries included in my sample, thereby reducing the number of observations to 58,419.³⁸

³⁶ Available at: <https://www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm>

³⁷ See Appendix B, Panel B, for a detailed breakdown of these indices.

³⁸ The OECD employment protection indices are generally not available after 2013. Therefore, 2013 scores are used in this analysis for subsequent sample years (i.e. 2014–2017). Results remain qualitatively similar if years 2014–2017 are dropped from the sample. Nevertheless, results regarding this analysis should be interpreted with caution.

Table 7, Panel A reports that the pairwise correlation of *EPL* and *RL* exhibits a significantly *negative* correlation. This suggests that cost stickiness would cause the incremental coefficient of sales changes to be biased downward and not upward. Nevertheless, all observations are pooled and the following model is estimated:

$$\begin{aligned}
TAI = & a_0 + a_1 DENF + \sum \beta_i Economic\ Indicators + \sum \beta_j D + \sum \beta_k D \times Economic\ Indicators \\
& + \sum \beta_l Opportunistic\ Indicators + \sum \beta_m DENF \times Economic\ Indicators \\
& + \sum \beta_n DENF \times D \times Economic\ Indicators + \sum \beta_p DENF \times Opportunistic\ Indicators \quad (2) \\
& + \beta_q EPL + \beta_r EPL \times \Delta SALES + \beta_s EPL \times D_{\Delta SALES} + \beta_t EPL \times D_{\Delta SALES} \times \Delta SALES \\
& + \sum \beta_v Controls + Year\ Fixed\ Effects + Industry\ Fixed\ Effects + u
\end{aligned}$$

where *DENF* is a dummy variable taking the value of 1 for strong enforcement countries (i.e. if *RL* for a country is equal or higher than 1.3 in year *t*) and 0 otherwise. *EPL* is the summary employment protection legislation index, and the remaining variables are as previously defined.

Eq. (2) is estimated as a Tobit regression with robust standard errors clustered by country for the pooled sample (i.e. weak and strong enforcement countries are pooled together). The coefficient under scrutiny is β_i ; if cost stickiness increases incrementally the sensitivity of asset impairments to sales decreases, β_i is expected to be positive. For brevity, Table 8, Panel B reports only the results regarding the interaction of $D_{\Delta SALES} \times \Delta SALES$ with *DENF* and *EPL*, respectively.

Consistent with prior results, the coefficient of $DENF \times D_{\Delta SALES} \times \Delta SALES$ is positive and statistically significant. This supports prior inferences that the incremental reaction of *TAI* to negative sales changes is due to legal enforcement. In contrast, the coefficient of $EPL \times D_{\Delta SALES} \times \Delta SALES$ loads with a significant but *negative* sign. If *EPL* is a determinant of cost stickiness, this result suggests that cost stickiness decreases the reaction of asset impairments to negative sales changes. This makes sense because cost stickiness theory suggests that managers retain slack resources in the anticipation that revenues will rebound next year. However, asset impairments are triggered when deterioration in

<INSERT TABLE 7 ABOUT HERE>

7.5 Asset classes and revaluations

Byzalov and Basu (2016) underline that accountants evaluate separately different asset classes, such as tangible assets, inventory, and receivables. Moreover, they argue that these asset classes may be further divided into smaller pools, such as when inventory can be tested on a total basis or separately for each inventory item. Therefore, the composition of these pools inherently affects impairment amounts.

The above arguments may hold for the tangible asset class, especially given the option of cash-generating units in IAS36. For example, suppose that a firm owns two tangible assets, X and Y, and that X has an unrealized loss of € 100 whereas Y has an unrealized gain of € 10. If they are evaluated separately, the firm has to recognize an impairment loss of € 100. Contrarily, if X and Y are aggregated in a total cash-generating unit, the impairment loss will be only € 90. Similar arguments can be made for a firm's allocation policy of corporate assets to cash-generating units.

To some extent, the above concerns are mitigated by using a logit model because the dependent variable takes discrete values of 1 and 0 and is unaffected by the amount of *TAI*. Therefore, a logit model is estimated using *DTAI* as dependent variable, defined as a dummy variable taking the value of 1 if *TAI* is negative and 0 otherwise. Interaction effects are evaluated using the marginal effect of each economic variable with the other variables at their mean values (Norton, Wang, & Ai, 2004). Estimated results (available on request) are in line with those reported in the main analysis. These results corroborate the beneficial role of enforcement on firm-specific economic incentives and debt-related opportunism, but its effect on earnings smoothing appears immaterial.

An additional concern is that *TAI* may be measured with an error if a firm follows the revaluation model instead of the cost model. Specifically, IAS16: *Property, Plant and Equipment* allows the revaluation of tangible assets provided that their fair value can be measured reliably (IAS16, par. 31). However, an initial upward revaluation shall be recognized in other comprehensive income and

accumulated in equity as an asset revaluation surplus.³⁹ A subsequent downward revaluation first zeroes-out the asset revaluation surplus and any remaining amount is recognized in net income. In that case, *TAI* is understated.

To mitigate concerns about revaluations, an approach similar to Gordon and Hsu (2018) is followed. First, observations for firms with asset revaluation reserves are obtained. In my sample, 2,671 (6,870) observations have a non-zero asset revaluation reserve in weak (strong) enforcement countries. Next, the change in the asset revaluation reserve is added to *TAI* when this change is negative, and the sum of the two items is used as a dependent variable in Eq. (1).

The results are reported in Table 8. Panel A reports descriptive statistics for asset revaluation reserves (*REVRES*), changes in asset revaluation reserves (Δ *REVRES*), and negative changes in asset revaluation reserves (*NEG* Δ *REVRES*). As illustrated, the mean value of *REVRES* equals 3.1% (2.8%) of lagged total assets in weak (strong) enforcement countries. Mean Δ *REVRES* hovers around -0.001 in both types of legal regimes while mean *NEG* Δ *REVRES* equals -0.008 (-0.007) in weak (strong) enforcement countries. Moreover, 1,199 (3,045) changes in asset revaluation reserves are negative in weak (strong) enforcement countries. Panel B presents multivariate results, and the estimated coefficients present some slight differences compared to their counterparts in the main analysis. Except for the coefficient of *D_RET* \times *RET*, other coefficients of the interaction variables appear higher and more significant. This may indicate that the inclusion of negative changes in asset revaluation reserves in *TAI* improves measurement accuracy.

Nevertheless, the coefficients demonstrate a pattern similar to the primary results. The incremental response of *TAI* to firm-specific economic adverse indicators appears statistically significant in both weak and strong enforcement countries. Moreover, strong enforcement has a significantly positive impact on this incremental reaction. However, the coefficient of *SMOOTH* is negative and significant in both strong and weak enforcement countries. The difference between the two subsamples is not significant. This

³⁹ If the initial revaluation is downward, it is recognized in net income. Therefore, it is captured by *TAI*.

<INSERT TABLE 8 ABOUT HERE>

8. Summary and conclusions

Accounting research suggests that IFRS are not applied uniformly across countries. Attempting to explore the role of institutional factors, prior literature examines links between institutional attributes and aggregate measures, such as net income or total accruals. However, these measures represent an overall outcome of the application of accounting standards and preparers' incentives that shape financial statements. Unsurprisingly, empirical results regarding the impact of institutional factors, such as legal enforcement, are often mixed. Focusing on specific outcomes of individual accounting standards may provide additional inferences that mitigate concerns about the aggregate nature of the above measures. Therefore, using an international sample of 38 IFRS countries, this study focuses on the effect of legal enforcement on TAI.

Using piecewise linear models, I find that firm-specific economic indicators play a significant role for TAI recognition in both weak and strong enforcement countries. Furthermore, in weak enforcement countries TAI are related to opportunistic indicators of earnings smoothing and debt pressure. More importantly, my findings reveal that legal enforcement has different effects across indicators. First, legal enforcement appears to have a beneficial effect on firm-specific economic indicators. Under strong enforcement regimes, the role of firm-specific economic indicators, such as changes in sales, changes in operating cash flows, and market returns, is enhanced materially. Second, regarding managerial opportunism, enforcement has an attenuating effect on a debt pressure indicator to understate TAI. However, the empirical results suggest that legal enforcement has immaterial effects on indications of earnings smoothing incentives that intend to overstate TAI. This evidence is consistent with the argument that legal enforcement improves TAI recognition, especially when earnings are artificially overstated rather than understated. Thus, legal enforcement has beneficial effects on the association of TAI with firm-specific economic incentives and restricts incentives of upward earnings management (i.e. TAI

avoidance). Conversely, the effect of legal enforcement on incentives of downward earnings management and TAI over-recognition is not significant. These results appear robust to a battery of sensitivity tests.

My study is still subject to caveats. First, the partition of the sample is based on legal enforcement as measured by the *RL* index. Potential omitted variables at the jurisdiction level that are correlated with enforcement may also be another explanation for my results. However, robustness tests that employ a different enforcement index support my main inferences. Second, the research design should ideally include direct causal factors, such as managerial expectations about assets' recoverable amounts, managerial intentions to take big baths, and linkages of TAI with legal enforcement mechanisms. Unfortunately, these factors are generally unobservable. So, despite the effort to capture the underlying mechanisms that determine asset impairments, some coefficients may still reflect empirical associations to some extent.

Nevertheless, my study provides additional evidence on TAI in an international IFRS setting with different enforcement regimes. It provides more refined inferences about the effects of legal enforcement on economic and opportunistic incentives of TAI. Empirical results support the positive influence of legal enforcement on firm-specific economic indicators of adverse news and debt-related opportunistic understatement of asset impairments. However, the effect of legal enforcement on overstatements of asset impairments triggered by earnings smoothing incentives is not significant.

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Panel A. Sample composition by country

Country	Total Sample				TAI<0		TAI=0		Relative Frequency of TAI<0 within a country (9)
	Unique Firms (1)	Relative frequency (2)	Firm-Years (3)	Relative Frequency (4)	Firm-Years (5)	Relative Frequency (6)	Firm-Years (7)	Relative Frequency (8)	
1. Australia	663	9.0%	7,639	9.9%	2,124	12.5%	5,515	9.2%	27.8%
2. Austria	45	0.6%	559	0.7%	202	1.2%	357	0.6%	36.1%
3. Belgium	72	1.0%	825	1.0%	250	1.5%	575	1.0%	30.3%
4. Bulgaria	48	0.7%	622	0.8%	100	0.6%	522	0.9%	16.1%
5. Croatia	48	0.7%	546	0.7%	178	1.0%	368	0.6%	32.6%
6. Cyprus	11	0.2%	163	0.2%	4	0.0%	159	0.3%	2.5%
7. Czech Republic	11	0.2%	85	0.1%	23	0.1%	62	0.1%	27.1%
8. Denmark	103	1.4%	1,154	1.5%	230	1.4%	924	1.5%	19.9%
9. Finland	95	1.3%	1,161	1.5%	331	1.9%	830	1.4%	28.5%
10. France	477	6.5%	5,023	6.5%	1,004	5.9%	4,019	6.7%	20.0%
11. Germany	630	8.6%	6,150	8.0%	1,377	8.1%	4,773	8.0%	22.4%
12. Greece	28	0.4%	369	0.5%	58	0.3%	311	0.5%	15.7%
13. Hong Kong	819	11.12%	9,066	11.8%	2,073	12.2%	6,993	11.7%	22.9%
14. Hungary	29	0.39%	275	0.4%	68	0.4%	207	0.4%	24.7%
15. Iceland	14	0.19%	101	0.1%	4	0.0%	97	0.2%	4.0%
16. Ireland	38	0.52%	361	0.5%	63	0.4%	298	0.5%	17.5%
17. Israel	161	2.19%	2,099	2.7%	142	0.8%	1,957	3.3%	6.8%
18. Italy	197	2.68%	2,168	2.8%	871	5.1%	1,297	2.2%	40.2%
19. Lithuania	6	0.08%	68	0.1%	9	0.1%	59	0.1%	13.2%
20. Luxemburg	8	0.11%	78	0.1%	9	0.1%	69	0.1%	11.5%
21. Netherlands	93	1.26%	973	1.3%	319	1.9%	654	1.2%	32.8%
22. New Zealand	102	1.39%	997	1.3%	155	0.9%	842	1.4%	15.6%
23. Norway	152	2.06%	1,634	2.1%	482	2.8%	1,152	1.9%	29.5%
24. Pakistan	167	2.27%	1,859	2.4%	193	1.1%	1,666	2.8%	10.4%
25. Philippines	152	2.06%	1,671	2.2%	175	1.0%	1,496	2.5%	10.5%
26. Poland	299	4.06%	3,180	4.1%	701	4.1%	2,479	4.1%	22.0%
27. Portugal	28	0.38%	361	0.5%	97	0.6%	264	0.4%	26.9%
28. Romania	17	0.23%	125	0.2%	14	0.1%	111	0.2%	11.2%
29. Singapore	415	5.64%	4,313	5.6%	1,831	10.7%	2,482	4.1%	42.4%
30. Slovenia	9	0.12%	78	0.1%	36	0.2%	42	0.1%	46.2%
31. South Africa	258	3.50%	2,483	3.2%	653	3.8%	1,830	3.1%	26.3%
32. Spain	88	1.20%	917	1.3%	428	2.5%	489	0.8%	46.7%
33. Sweden	319	4.33%	3,204	4.3%	481	2.8%	2,723	4.5%	15.0%
34. Switzerland	161	2.19%	1,824	2.4%	480	2.8%	1,344	2.2%	26.3%
35. Turkey	200	2.72%	2,219	2.9%	160	0.9%	2,059	3.4%	7.2%
36. Ukraine	58	0.52%	291	0.4%	55	0.3%	236	0.4%	18.9%
37. United Arab Emirates	31	0.42%	383	0.5%	41	0.2%	342	0.6%	10.7%
38. United Kingdom	<u>1,330</u>	<u>18.07%</u>	<u>11,966</u>	<u>15.5%</u>	<u>1,631</u>	<u>9.6%</u>	<u>10,335</u>	<u>17.2%</u>	13.6%
Total	7,382	100.00%	76,990	100.0%	17,052	100.0%	59,938	100.0%	

(continued on next page)

Panel B. Sample composition by industry

	Total Sample				$TAI < 0$		$TAI = 0$		Relative Frequency of $TAI < 0$ within an industry
	Unique Firms	Relative Frequency	Firm-Years	Relative Frequency	Firm-Years	Relative Frequency	Firm-Years	Relative Frequency	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Aerospace	24	0.33%	260	0.34%	49	0.29%	211	0.35%	18.85%
Apparel	93	1.26%	970	1.26%	235	1.38%	735	1.23%	24.23%
Automotive	89	1.21%	924	1.20%	201	1.18%	723	1.21%	21.75%
Beverages	70	0.95%	691	0.90%	229	1.34%	462	0.77%	33.14%
Chemicals	204	2.77%	2,327	3.02%	660	3.87%	1,667	2.78%	28.36%
Construction	527	7.16%	5,579	7.25%	1,205	7.07%	4,374	7.30%	21.60%
Diversified	100	1.36%	1,241	1.61%	538	3.16%	703	1.17%	43.35%
Drugs and Health Care	294	3.99%	3,139	4.08%	534	3.13%	2,605	4.35%	17.01%
Electrical	148	2.01%	1,689	2.19%	348	2.04%	1,341	2.24%	20.60%
Electronics	775	10.53%	8,354	10.85%	1,245	7.30%	7,109	11.86%	14.90%
Financial	928	12.33%	9,497	12.34%	1,273	7.47%	8,224	13.72%	13.40%
Food	278	3.78%	3,019	3.92%	852	5.00%	2,167	3.62%	28.22%
Machinery and Equipment	282	3.83%	3,006	3.90%	700	4.11%	2,306	3.85%	23.29%
Metal Producers	280	3.80%	2,844	3.69%	965	5.66%	1,879	3.13%	33.93%
Metal Product Manufacturers	102	1.39%	1,013	1.32%	304	1.78%	709	1.18%	30.01%
Oil, Gas and Coal	433	5.88%	4,373	5.68%	1,537	9.01%	2,836	4.73%	35.15%
Paper	108	1.47%	1,156	1.50%	347	2.03%	809	1.35%	30.02%
Printing and Publishing	95	1.29%	1,002	1.30%	225	1.32%	777	1.30%	22.46%
Recreation	269	3.65%	2,691	3.50%	693	4.06%	1,998	3.33%	25.75%
Retailers	240	3.26%	2,431	3.16%	812	4.76%	1,619	2.70%	33.40%
Textiles	120	1.63%	1,198	1.56%	172	1.01%	1,026	1.71%	14.36%
Tobacco	5	0.07%	63	0.08%	36	0.21%	27	0.05%	57.14%
Transportation	196	2.66%	1,988	2.58%	562	3.30%	1,426	2.38%	28.27%
Utilities	330	4.48%	3,304	4.29%	1,018	5.97%	2,286	3.81%	30.81%
Miscellaneous	<u>1,392</u>	<u>18.91%</u>	<u>14,231</u>	<u>18.48%</u>	<u>2,312</u>	<u>13.56%</u>	<u>11,919</u>	<u>19.89%</u>	16.25%
Total	7,382	100.00%	76,990	100.00%	17,052	100.00%	59,938	100.00%	

Notes: See Appendix A for variable definitions.

TABLE 2. Descriptive Statistics for Variables used in Regression Analysis

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Variable	Weak enforcement countries N = 20,244			Strong enforcement countries N = 56,746			Difference in Means
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	
<i>TAI</i>	-0.002	0.000	0.012	-0.005	0.000	0.022	0.003***
<i>ΔGDP</i>	0.041	0.048	0.104	0.042	0.050	0.093	0.000
<i>ΔINDROA</i>	-0.379	-0.160	3.057	-0.379	-0.210	2.386	0.001
<i>ΔSALES</i>	0.050	0.015	0.266	0.063	0.023	0.264	-0.014***
<i>ΔCFO</i>	0.003	0.000	0.112	0.005	0.003	0.128	-0.002*
<i>RET</i>	0.129	0.038	0.577	0.108	0.032	0.581	0.021***
<i>D_ΔGDP</i>	0.321	0.000	0.467	0.272	0.000	0.445	0.049***
<i>D_ΔINDROA</i>	0.564	1.000	0.496	0.583	1.000	0.493	-0.019***
<i>D_ΔSALES</i>	0.399	0.000	0.490	0.362	0.000	0.481	0.037***
<i>D_ΔCFO</i>	0.478	0.000	0.500	0.469	0.000	0.499	0.009**
<i>D_RET</i>	0.444	0.000	0.497	0.455	0.000	0.498	-0.012***
<i>D_ΔGDP×ΔGDP</i>	-0.025	0.000	0.049	-0.021	0.000	0.044	-0.004***
<i>D_ΔINDROA×ΔINDROA</i>	-0.964	-0.160	2.174	-0.835	-0.210	1.797	-0.129***
<i>D_ΔSALES×ΔSALES</i>	-0.052	0.000	0.127	-0.047	0.000	0.121	-0.005***
<i>D_ΔCFO×ΔCFO</i>	-0.031	0.000	0.072	-0.030	0.000	0.084	-0.001
<i>D_RET×RET</i>	-0.134	0.000	0.210	-0.149	0.000	0.226	0.015***
<i>SMOOTH</i>	0.022	0.000	0.079	0.032	0.000	0.104	-0.010***
<i>BATH</i>	-0.019	0.000	0.066	-0.029	0.000	0.093	0.010***
<i>DEBT</i>	2.706	1.627	7.266	1.993	0.892	6.058	0.713***
<i>AUD</i>	0.580	1.000	0.494	0.675	1.000	0.468	-0.095***
<i>LMB</i>	1.878	1.230	2.366	2.238	1.480	2.644	-0.360***
<i>LGWPPE</i>	0.934	0.006	4.095	2.899	0.129	7.907	-1.965***

(continued on next page)

TABLE 2. Descriptive Statistics for Variables used in Regression Analysis - Continued

Pa	Journal Pre-proofs						
	<i>TAI<0</i> <i>Weak enforcement countries</i> <i>N = 4,403</i>			<i>TAI<0</i> <i>Strong enforcement countries</i> <i>N = 12,649</i>			Difference in Means
	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.	
<i>TAI</i>	-0.009	-0.002	0.025	-0.020	-0.003	0.043	0.010***
ΔGDP	0.024	0.035	0.101	0.044	0.049	0.095	-0.020***
$\Delta INDROA$	-0.419	-0.190	3.001	-0.462	-0.290	2.594	0.044
$\Delta SALES$	0.029	0.009	0.230	0.037	0.012	0.233	-0.008*
ΔCFO	0.004	0.001	0.091	0.005	0.002	0.107	-0.001
<i>RET</i>	0.084	0.014	0.527	0.085	0.009	0.586	-0.001
<i>D_ΔGDP</i>	0.364	0.000	0.481	0.265	0.000	0.441	0.100***
<i>D_ΔINDROA</i>	0.564	1.000	0.496	0.605	1.000	0.489	-0.041***
<i>D_ΔSALES</i>	0.430	0.000	0.495	0.411	0.000	0.492	0.019**
<i>D_ΔCFO</i>	0.476	0.000	0.499	0.480	0.000	0.500	-0.004
<i>D_RET</i>	0.468	0.000	0.499	0.475	0.000	0.499	-0.007
<i>D_ΔGDP×ΔGDP</i>	-0.030	0.000	0.050	-0.021	0.000	0.044	-0.010***
<i>D_ΔINDROA×ΔINDROA</i>	-0.985	-0.190	2.026	-0.957	-0.290	1.934	-0.029
<i>D_ΔSALES×ΔSALES</i>	-0.055	0.000	0.123	-0.049	0.000	0.118	-0.006***
<i>D_ΔCFO×ΔCFO</i>	-0.026	0.000	0.056	-0.023	0.000	0.068	-0.003**
<i>D_RET×RET</i>	-0.141	0.000	0.211	-0.132	0.000	0.236	-0.009**
<i>SMOOTH</i>	0.019	0.000	0.071	0.029	0.000	0.102	-0.010***
<i>BATH</i>	-0.015	0.000	0.054	-0.025	0.000	0.079	0.010***
<i>DEBT</i>	3.128	2.084	8.312	2.103	1.179	6.701	1.025***
<i>AUD</i>	0.729	1.000	0.444	0.732	1.000	0.443	-0.003
<i>LMB</i>	1.840	1.250	2.255	1.926	1.330	2.273	-0.086**
<i>LGWPPE</i>	0.875	0.073	2.913	1.381	0.089	5.034	-0.506***

Notes: ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively. See Appendix A for variable definitions.

TABLE 3. Correlation Matrix

Panel A: Pairwise correlations in weak enforcement countries

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.
1. <i>TAI</i>																					
2. ΔGDP	0.041																				
3. $\Delta INDROA$	0.034	-0.022																			
4. $\Delta SALES$	0.041	0.135	0.065																		
5. ΔCFO	0.009	-0.021	0.036	0.120																	
6. <i>RET</i>	0.047	-0.109	0.135	0.128	0.072																
7. <i>D</i> ΔGDP	-0.031	-0.792	0.014	-0.083	0.026	0.079															
8. <i>D</i> $\Delta INDROA$	-0.023	-0.035	-0.495	-0.059	-0.019	-0.153	0.024														
9. <i>D</i> $\Delta SALES$	-0.053	-0.126	-0.080	-0.556	-0.088	-0.125	0.081	0.105													
10. <i>D</i> ΔCFO	-0.006	0.016	-0.046	-0.106	-0.580	-0.095	-0.026	0.060	0.137												
11. <i>D</i> <i>RET</i>	-0.054	0.079	-0.110	-0.111	-0.062	-0.667	-0.053	0.137	0.127	0.084											
12. <i>D</i> $\Delta GDP \times \Delta GDP$	0.029	0.798	0.019	0.107	-0.028	-0.127	-0.754	-0.034	-0.102	0.031	0.074										
13. <i>D</i> $\Delta INDROA \times \Delta INDR$	0.042	-0.024	0.796	0.056	0.033	0.120	0.016	-0.390	-0.089	-0.045	-0.112	0.044									
14. $\hat{D} \Delta SALES \times \Delta SALES$	0.037	0.108	0.100	0.636	0.085	0.083	-0.088	-0.092	-0.509	-0.079	-0.091	0.128	0.133								
15. <i>D</i> $\Delta CFO \times \Delta CFO$	0.006	-0.040	0.042	0.039	0.771	0.046	0.024	-0.020	-0.075	-0.451	-0.060	-0.020	0.073	0.145							
16. <i>D</i> <i>RET</i> \times <i>RET</i>	0.069	-0.126	0.162	0.116	0.057	0.655	0.082	-0.174	-0.136	-0.075	-0.715	-0.085	0.188	0.124	0.075						
17. <i>SMOOTH</i>	-0.031	0.015	0.092	0.083	0.058	0.080	-0.004	-0.060	-0.035	-0.075	-0.031	0.004	0.048	-0.033	-0.052	0.009					
18. <i>BATH</i>	0.032	0.011	0.124	0.138	0.106	0.104	-0.020	-0.103	-0.134	-0.099	-0.110	0.035	0.135	0.191	0.158	0.172	0.083				
19. <i>DEBT</i>	0.063	-0.016	0.034	0.004	0.002	0.004	0.001	-0.025	-0.029	-0.006	-0.013	0.006	0.065	0.087	0.047	0.044	-0.055	0.103			
20. <i>AUD</i>	-0.016	0.008	0.012	0.010	0.007	0.028	-0.028	-0.035	-0.060	-0.018	-0.055	0.032	0.047	0.100	0.086	0.084	-0.064	0.079	0.065		
21. <i>LMB</i>	0.021	0.076	-0.035	0.104	0.006	-0.088	-0.047	0.018	-0.076	-0.013	0.055	0.057	-0.029	0.019	-0.056	-0.070	0.028	-0.034	-0.040	0.081	
22. <i>LGWPPE</i>	-0.010	-0.026	-0.006	0.014	0.001	-0.028	0.013	0.023	-0.004	-0.002	0.021	-0.007	0.017	0.013	0.010	-0.029	0.008	0.006	-0.015	0.018	0.016

(continued on next page)

TABLE 3. Correlation Matrix – Continued

Panel B: Pairwise correlations in strong enforcement countries

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.
1. <i>TAI</i>																					
2. ΔGDP	0.018																				
3. $\Delta INDROA$	0.030	0.124																			
4. $\Delta SALES$	0.045	0.082	0.059																		
5. ΔCFO	0.018	-0.036	0.017	0.148																	
6. <i>RET</i>	0.045	-0.184	0.100	0.108	0.070																
7. <i>D_ΔGDP</i>	-0.009	-0.781	-0.077	-0.068	0.021	0.132															
8. <i>D_ΔINDROA</i>	-0.022	-0.128	-0.522	-0.061	-0.013	-0.105	0.065														
9. <i>D_ΔSALES</i>	-0.062	-0.079	-0.082	-0.554	-0.096	-0.090	0.071	0.078													
10. <i>D_ΔCFO</i>	-0.034	0.032	-0.026	-0.127	-0.595	-0.078	-0.018	0.026	0.149												
11. <i>D_RET</i>	-0.072	0.173	-0.111	-0.090	-0.061	-0.683	-0.112	0.126	0.107	0.082											
12. <i>D_ΔGDP×ΔGDP</i>	0.023	0.795	0.128	0.035	-0.028	-0.146	-0.780	-0.125	-0.044	0.026	0.112										
13. <i>D_ΔINDROA×ΔINDROA</i>	0.047	0.114	0.842	0.050	0.018	0.086	-0.097	-0.393	-0.079	-0.029	-0.104	0.137									
14. <i>D_ΔSALES×ΔSALES</i>	0.053	0.067	0.071	0.622	0.093	0.056	-0.069	-0.061	-0.520	-0.095	-0.079	0.048	0.078								
15. <i>D_ΔCFO×ΔCFO</i>	0.024	-0.052	0.014	0.059	0.788	0.043	0.028	-0.007	-0.083	-0.463	-0.079	-0.018	0.025	0.148							
16. <i>D_RET×RET</i>	0.112	-0.161	0.160	0.090	0.063	0.679	0.099	-0.159	-0.118	-0.079	-0.720	-0.095	0.163	0.104	0.107						
17. <i>SMOOTH</i>	-0.036	0.017	0.064	0.092	0.171	0.056	-0.003	-0.060	-0.014	-0.081	-0.010	-0.003	0.038	-0.033	-0.014	-0.015					
18. <i>BATH</i>	0.040	-0.009	0.061	0.125	0.218	0.079	-0.007	-0.052	-0.128	-0.122	-0.111	0.026	0.061	0.167	0.304	0.175	0.096				
19. <i>DEBT</i>	0.040	-0.006	0.020	0.007	0.001	0.011	-0.004	-0.015	-0.023	-0.011	-0.025	0.013	0.037	0.067	0.051	0.068	-0.057	0.104			
20. <i>AUD</i>	0.063	-0.031	0.005	0.009	0.012	0.054	0.016	-0.012	-0.042	-0.030	-0.092	-0.002	-0.016	0.055	0.108	0.131	-0.102	0.128	0.091		
21. <i>LMB</i>	0.037	0.046	0.009	0.130	-0.009	-0.066	-0.018	-0.005	-0.096	-0.008	0.055	0.023	0.014	0.041	-0.097	-0.072	0.077	-0.054	-0.074	0.009	
22. <i>LGWPPE</i>	0.053	-0.066	0.015	0.026	0.010	-0.017	0.062	-0.021	-0.013	-0.005	0.013	-0.053	0.039	0.001	0.016	-0.013	-0.003	0.008	-0.028	-0.040	0.002

Notes: This matrix presents pairwise Pearson correlations. Correlations in bold are not statistically significant at the 5% level. The other correlations are significant at the 1% level. See Appendix A for variable definitions.

Tobit regression		<i>Weak enforcement countries</i>		<i>Strong enforcement countries</i>			
Dependent Variable:		<i>TAI</i>		<i>TAI</i>		Difference in	
	Expected Sign	Coefficient	t-stat.	Coefficient	t-stat.	Coefficients	t-stat.
		(1)	(2)	(3)	(4)	(5)	(6)
<i>Intercept</i>	?	0.0428	10.06***	0.0704	4.34***	0.0276	1.65*
ΔGDP	+	0.0031	0.28	0.0104	2.41**	0.0073	0.61
$\Delta INDROA$	+	0.0001	0.44	0.0001	0.17	0.0000	0.20
$\Delta SALES$	+	0.0066	3.20***	0.0119	2.28**	0.0053	0.94
ΔCFO	+	0.0084	0.83	0.0302	6.23***	0.0218	1.94*
<i>RET</i>	+	-0.0013	-1.45	-0.0015	-1.54	-0.0002	-0.13
<i>D_ΔGDP</i>	?	0.0014	0.62	0.0002	0.16	-0.0012	-0.49
<i>D_ΔINDROA</i>	?	-0.0002	-0.30	-0.0003	-0.43	-0.0001	-0.12
<i>D_ΔSALES</i>	?	-0.0022	-2.51**	-0.0065	-5.69***	-0.0043	-2.94***
<i>D_ΔCFO</i>	?	-0.0013	-1.41	-0.0014	-1.58	-0.0002	-0.15
<i>D_RET</i>	?	-0.0006	-0.72	0.0010	1.24	0.0016	1.37
<i>D_ΔGDP</i> × <i>ΔGDP</i>	+	0.0220	1.20	0.0281	1.52	0.0061	0.24
<i>D_ΔINDROA</i> × <i>ΔINDROA</i>	+	0.0006	1.98**	0.0007	1.79*	0.0001	0.05
<i>D_ΔSALES</i> × <i>ΔSALES</i>	+	0.0086	2.97***	0.0171	5.84***	0.0085	2.06**
<i>D_ΔCFO</i> × <i>ΔCFO</i>	+	0.0346	2.93***	0.0655	6.65***	0.0309	2.01**
<i>D_RET</i> × <i>RET</i>	+	0.0171	5.40***	0.0332	5.42***	0.0161	2.34**
<i>SMOOTH</i>	-	-0.0131	-2.51**	-0.0143	-4.36***	-0.0012	-0.19
<i>BATH</i>	+	-0.0028	-0.39	-0.0110	-0.83	-0.0081	-0.53
<i>DEBT</i>	+	0.0030	3.00***	0.0001	0.10	-0.0029	-2.05**
<i>AUD</i>	-	-0.0080	-5.23***	-0.0054	-1.23	0.0026	0.55
<i>LMB</i>	+	0.0005	2.04**	0.0014	2.80***	0.0009	1.55
<i>LGWPPE</i>	?	0.0003	1.43	0.0007	3.30***	0.0004	1.41
<i>Country Fixed Effects</i>		YES		YES			
<i>Year Fixed Effects</i>		YES		YES			
<i>Industry Fixed Effects</i>		YES		YES			
Log-likelihood		2,158		6,200			
Pseudo-R ² (%)		10.1		10.4			
Incremental Pseudo-R ² (%)							
economic indicators		3.7		7.5			
opportunistic indicators		3.5		5.1			
Observations		20,244		56,746			

Notes: Columns (5) and (6) present differences in coefficients between strong and weak enforcement countries and respective t-statistics. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively. See Appendix A for variable definitions.

Tobit regression		<i>Weak enforcement countries</i>		<i>Strong enforcement countries</i>			
Dependent Variable:		<i>TAI</i>		<i>TAI</i>			
	Expected Sign	Coefficient	t-stat.	Coefficient	t-stat.	Difference in Coefficients	t-stat.
		(1)	(2)	(3)	(4)	(5)	(6)
<i>Intercept</i>	?	0.0427	9.91***	0.0702	4.38***	0.0275	1.66
ΔGDP	+	0.0068	0.62	0.0119	2.57**	0.0051	0.42
$\Delta INDROA$	+	-0.0001	-0.61	-0.0001	-0.53	0.0000	-0.04
$\Delta SALES$	+	0.0068	3.16***	0.0128	2.06**	0.0059	0.90
ΔCFO	+	0.0070	0.68	0.0298	5.42***	0.0229	1.97**
<i>RET</i>	+	-0.0010	-0.92	-0.0016	-1.18	-0.0006	-0.30
<i>D_ΔGDP</i>	?	0.0019	0.83	0.0002	0.15	-0.0017	-0.67
<i>D_ΔINDROA</i>	?	-0.0001	-0.10	-0.0003	-0.51	-0.0002	-0.27
<i>D_ΔSALES</i>	?	-0.0022	-2.27**	-0.0067	-5.39***	-0.0045	-2.90***
<i>D_ΔCFO</i>	?	-0.0014	-1.52	-0.0017	-1.66*	-0.0003	-0.22
<i>D_RET</i>	?	-0.0006	-0.68	0.0008	0.75	0.0014	1.01
<i>D_ΔGDP×ΔGDP</i>	+	0.0188	1.00	0.0277	1.50	0.0089	0.34
<i>D_ΔINDROA×ΔINDROA</i>	+	0.0007	1.95*	0.0007	1.90*	0.0001	0.15
<i>D_ΔSALES×ΔSALES</i>	+	0.0086	2.73***	0.0181	6.04***	0.0095	2.18**
<i>D_ΔCFO×ΔCFO</i>	+	0.0345	3.00***	0.0661	5.22***	0.0316	1.85*
<i>D_RET×RET</i>	+	0.0165	4.92***	0.0350	4.89***	0.0184	2.33**
<i>SMOOTH</i>	-	-0.0126	-2.18**	-0.0139	-3.72***	-0.0013	-0.19
<i>BATH</i>	+	-0.0050	-0.63	-0.0096	-0.74	-0.0047	-0.31
<i>DEBT</i>	+	0.0031	3.10***	0.0001	0.90	-0.0030	-2.94***
<i>AUD</i>	-	-0.0078	-4.88***	-0.0055	-1.24	0.0023	0.48
<i>LMB</i>	+	0.0006	2.07**	0.0016	2.77***	0.0010	1.51
<i>LGWPPE</i>	?	0.0004	1.94*	0.0007	3.28***	0.0004	1.24
<i>Country Fixed Effects</i>		YES		YES			
<i>Year Fixed Effects</i>		YES		YES			
<i>Industry Fixed Effects</i>		YES		YES			
Log-likelihood		3,668		5,407			
Pseudo-R ² (%)		10.4		10.5			
Incremental Pseudo-R ² (%)							
economic indicators		3.8		7.6			
opportunistic indicators		3.7		5.1			
Observations		19,205		51,956			

Notes: Columns (5) and (6) present differences in coefficients between strong and weak enforcement countries and respective t-statistics. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively. See Appendix A for variable definitions.

Dependent Variable:	Weak enforcement countries		Strong enforcement countries		Difference		
	TAI		TAI		in Coefficients		
	Expected Sign	Coefficient	t-stat.	Coefficient	t-stat.	t-stat.	
	(1)	(2)	(3)	(4)	(5)	(6)	
<i>Intercept</i>	?	0.0384	5.45***	0.0768	4.64***	0.0384	2.13**
ΔGDP	+	0.0004	0.07	-0.0107	-1.52	-0.0111	-1.21
$\Delta INDROA$	+	0.0002	0.96	0.0002	0.92	0.0000	-0.04
$\Delta SALES$	+	0.0037	3.01***	0.0137	2.20**	0.0099	1.56
ΔCFO	+	0.0133	1.63	0.0291	5.73***	0.0157	1.63
<i>RET</i>	+	0.0002	0.35	-0.0013	-1.03	-0.0015	-1.08
<i>D_ΔGDP</i>	?	0.0012	1.02	-0.0004	-0.31	-0.0016	-0.90
<i>D_ΔINDROA</i>	?	-0.0001	-0.22	-0.0002	-0.27	-0.0001	-0.09
<i>D_ΔSALES</i>	?	-0.0035	-4.45***	-0.0065	-5.41***	-0.0030	-2.09**
<i>D_ΔCFO</i>	?	-0.0007	-0.99	-0.0017	-1.64	-0.0011	-0.84
<i>D_RET</i>	?	-0.0001	-0.16	0.0013	1.56	0.0014	1.19
<i>D_ΔGDP×ΔGDP</i>	+	0.0114	0.79	0.0288	1.14	0.0174	0.60
<i>D_ΔINDROA×ΔINDROA</i>	+	0.0006	1.50	0.0005	1.19	-0.0001	-0.16
<i>D_ΔSALES×ΔSALES</i>	+	0.0062	2.57**	0.0159	3.94***	0.0097	2.06**
<i>D_ΔCFO×ΔCFO</i>	+	0.0318	2.56**	0.0647	5.44***	0.0329	1.91*
<i>D_RET×RET</i>	+	0.0164	7.68***	0.0360	5.41***	0.0196	2.80***
<i>SMOOTH</i>	-	-0.0135	-6.12***	-0.0141	-3.50***	-0.0006	-0.13
<i>BATH</i>	+	-0.0018	-0.17	-0.0106	-0.70	-0.0087	-0.47
<i>DEBT</i>	+	0.0021	5.27***	0.0001	0.63	-0.0020	-4.73***
<i>AUD</i>	-	-0.0048	-1.56	-0.0067	-1.34	-0.0019	-0.33
<i>LMB</i>	+	0.0009	4.27***	0.0015	2.55***	0.0006	0.98
<i>LGWPPE</i>	?	0.0005	5.24***	0.0007	2.97***	0.0002	0.93
<i>Country Fixed Effects</i>		YES		YES			
<i>Year Fixed Effects</i>		YES		YES			
<i>Industry Fixed Effects</i>		YES		YES			
Log-likelihood		5,358		5,473			
Pseudo-R ² (%)		8.00		10.60			
Incremental Pseudo-R ² (%)							
economic indicators		2.9		6.7			
opportunistic indicators		3.0		4.3			
Observations		16,952		49,700			

Notes: See Appendix B, Panel A for a breakdown of *TOTAL*. Columns (5) and (6) present differences in coefficients between strong and weak enforcement countries and respective t-statistics. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively. See Appendix A for variable definitions.

Panel A. Pairwise correlation of *DENF* with *EPL*

	<i>DENF</i>	<i>EPL</i>
<i>DENF</i>	1.000	
<i>EPL</i>	-0.410***	1.000

Panel B. Multivariate results relating to *EPL*

Tobit regression

Dependent Variable:	<i>TAI</i>	
	Coefficient	t-stat
	(1)	(2)
<i>DENF</i> × <i>D_ΔSALES</i> × <i>ΔSALES</i>	0.0115	3.35***
<i>EPL</i> × <i>D_ΔSALES</i> × <i>ΔSALES</i>	-0.0164	-3.06***
Log-likelihood	5,534	
Pseudo-R ² (%)	12.2	
Observations	58,419	

Notes: *EPL* is a summary employment protection legislation index computed as the average of two separate employment protection indices provided by the OECD. See Appendix B, Panel B for a breakdown of those indices. Panel A presents pairwise Pearson correlation. Panel B presents the regression results for Eq. (2). For brevity, coefficients and t-statistics (Columns [1] and [2], respectively) are presented only for the interaction terms of *DENF* and *EPL* with negative sales changes (i.e. *D_ΔSALES*×*ΔSALES*). ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively. See Appendix A for variable definitions.

TABLE 8. Results Relating to TAI with economic and opportunistic indicators after including Negative Changes in Asset Revaluations

Panel A. Descriptive statistics of asset revaluation reserve variables

	<i>Weak enforcement countries</i>				<i>Strong enforcement countries</i>				Difference in Means
	N	Mean	Median	Std. Dev.	N	Mean	Median	Std. Dev.	
<i>REVRES</i>	2,671	0.031	0.004	0.056	6,870	0.028	0.006	0.051	0.003**
<i>ΔREVRES</i>	1,990	-0.001	-0.001	0.024	5,097	-0.001	-0.001	0.020	0.000
<i>NEGΔREVRES</i>	1,199	-0.008	-0.001	0.021	3,045	-0.007	-0.001	0.018	0.000

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Journal Pre-proofs

TABLE 8. Results Relating to TAI including Negative Changes in Asset Revaluations Reserves - Continued

Journal Pre-proofs							
Panel I							
variable							
Tobit regression		Weak enforcement countries		Strong enforcement countries			
Dependent Variable:		NEGΔREVRES_TAI		NEGΔREVRES_TAI			
	Expected Sign	Coefficient	t-stat.	Coefficient	t-stat.	Difference in Coefficients	t-stat.
		(1)	(2)	(3)	(4)	(5)	(6)
<i>Intercept</i>	?	0.0489	7.77***	0.0539	4.37***	0.0050	0.36
<i>ΔGDP</i>	+	0.0008	0.06	0.0192	3.86***	0.0184	1.33
<i>ΔINDROA</i>	+	0.0001	0.34	0.0001	0.41	-0.0001	-0.19
<i>ΔSALES</i>	+	0.0107	5.41***	0.0116	3.27***	0.0009	0.22
<i>ΔCFO</i>	+	0.0111	0.69	0.0305	7.70***	0.0194	1.18
<i>RET</i>	+	0.0007	0.90	-0.0011	-1.59	-0.0018	-1.71*
<i>D_ΔGDP</i>	?	-0.0002	-0.07	-0.0006	-0.99	-0.0004	-0.15
<i>D_ΔINDROA</i>	?	0.0002	0.21	-0.0004	-0.67	-0.0006	-0.50
<i>D_ΔSALES</i>	?	-0.0025	-2.19**	-0.0055	-6.36***	-0.0030	-2.09**
<i>D_ΔCFO</i>	?	-0.0019	-1.56	-0.0025	-1.56	-0.0006	-0.28
<i>D_RET</i>	?	0.0011	0.99	-0.0005	-0.86	-0.0015	-1.27
<i>D_ΔGDP×ΔGDP</i>	+	0.0276	1.56	0.0292	1.70	0.0016	0.006
<i>D_ΔINDROA×ΔINDROA</i>	+	0.0007	1.14	0.0009	1.85	0.0002	0.37
<i>D_ΔSALES×ΔSALES</i>	+	0.0091	3.34***	0.0176	6.34***	0.0085	2.18**
<i>D_ΔCFO×ΔCFO</i>	+	0.0375	3.02***	0.0747	6.76***	0.0462	2.24**
<i>D_RET×RET</i>	+	0.0155	3.51***	0.0321	6.62***	0.0167	2.54**
<i>SMOOTH</i>	-	-0.0141	-2.16**	-0.0103	-2.93***	0.0039	0.52
<i>BATH</i>	+	0.0078	1.26	-0.0089	-0.75	-0.0167	-1.24
<i>DEBT</i>	+	0.0021	4.59***	0.0001	0.81	-0.0020	-4.35***
<i>AUD</i>	-	-0.0047	-2.47**	-0.0054	-1.80*	-0.0007	-0.20
<i>LMB</i>	+	0.0007	2.65***	0.0014	2.78***	0.0007	1.33
<i>LGWPPE</i>	?	0.0004	2.16**	0.0007	3.36***	0.0003	0.90
<i>Country Fixed Effects</i>		YES		YES			
<i>Year Fixed Effects</i>		YES		YES			
<i>Industry Fixed Effects</i>		YES		YES			
Log-likelihood		3,025		9,475			
Pseudo-R ² (%)		12.46		14.55			
Incremental Pseudo-R ² (%)							
economic indicators		4.4		8.7			
opportunistic indicators		4.1		5.8			
Observations		20,244		56,746			

Notes: Columns (5) and (6) present differences in coefficients between strong and weak enforcement countries, and respective t-statistics. ***, **, and * represent significance at the 1%, 5%, and 10% level, respectively. See Appendix A for variable definitions.

APPENDIX A: Variable Definitions

Variable	Description	Source or Datastream field (if applicable)
1. Dependent variables		
<i>TAI</i>	Tangible asset impairments in year t , scaled by lagged total assets.	Worldscope, WC18274, WC02999
<i>NEGΔREVRES_TAI</i>	Sum of <i>NEGΔREVRES</i> and <i>TAI</i> in year t .	
<i>DTAI</i>	Dummy variable equaling 1 if <i>TAI</i> is negative and 0 otherwise.	
2. Independent variables		
2A. Moderating variables		
<i>RL</i>	Rule of Law index from the Worldwide Governance Indicators (WGI) project.	World Bank website. Available at: https://info.worldbank.org/governance/wgi/#home Brown et al. (2014)
<i>TOTAL</i>	The <i>TOTAL</i> index for year 2008 from Brown et. al. (2014).	Brown et al. (2014)
<i>DENF</i>	Dummy variable equaling 1 for strong enforcement countries (i.e. if <i>RL</i> for a country is equal or higher than 1.3 in year t) and 0 otherwise.	
<i>EPL</i>	Summary employment protection legislation index. <i>EPL</i> is the average of the index of protection for permanent workers against dismissal, and the index on regulation on temporary forms of employment.	OECD. Available at: https://www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm
2B. Economic indicators		
<i>ΔGDP</i>	Percentage change in the Gross Domestic Product from period $t-1$ to t of the country of the firm's domicile.	World Bank. Available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD
<i>ΔINDROA</i>	Median change in the firm's industry return on assets from period $t-1$ to t in the country of the firm's domicile.	Worldscope, WC08326
<i>ΔSALES</i>	Change in the firm's sales from period $t-1$ to t , scaled by lagged total assets.	Worldscope, WC01001, WC02999
<i>ΔCFO</i>	Change in the firm's operating cash flows from period $t-1$ to t , scaled by lagged total assets.	Worldscope, WC04860, WC03000
<i>RET</i>	Firm's stock return for the 12-month period of fiscal year t .	Datastream, RI
<i>D_ΔGDP</i>	Dummy variable equaling 1 if <i>ΔGDP</i> is negative and 0 otherwise.	
<i>D_ΔINDROA</i>	Dummy variable equaling 1 if <i>ΔINDROA</i> is negative and 0 otherwise.	
<i>D_ΔSALES</i>	Dummy variable equaling 1 if <i>ΔSALES</i> is negative and 0 otherwise.	
<i>D_ΔCFO</i>	Dummy variable equaling 1 if <i>ΔCFO</i> is negative and 0 otherwise.	
<i>D_RET</i>	Dummy variable equaling 1 if <i>RET</i> is negative and 0 otherwise.	
2C. Opportunistic indicators		
<i>SMOOTH</i>	Change in the firm's pre-impairment earnings from period $t-1$ to t , scaled by lagged total assets when this change is above the median of non-zero positive values of this variable for the particular country and industry-year that the firm operates, and 0 otherwise.	Worldscope, WC01751, WC18274, WC02999
<i>BATH</i>	Change in the firm's pre-impairment earnings from period $t-1$ to t , scaled by lagged total assets when this change is below the median of non-zero negative values of this variable for the particular country and industry-year that the firm operates and 0 otherwise.	Worldscope, WC01751, WC18274, WC02999
<i>DEBT</i>	Ratio of the firm's total debt to earnings before interest, tax, depreciation, and amortization.	Worldscope, WC0325, WC18198
<i>BATH2</i>	Firm's pre-impairment earnings in year t scaled by lagged total assets if it is lower than -20% and 0 otherwise.	Worldscope, WC01751, WC18274, WC0299
2D. Control variables		
<i>AUD</i>	Dummy variable equaling 1 if the firm is audited by a Big 4 firm and 0 otherwise.	Worldscope, WC07800
<i>LMB</i>	Firm's market-to-book ratio with one year lag.	Worldscope, WC09704
<i>LGWPPE</i>	Firm's goodwill scaled by net property plant and equipment with one year lag.	Worldscope, WC18280, WC02501
3. Other variables		
<i>POS</i>	Dummy variable interacted with each economic indicator in stacked regressions. When interacted, equals 1 if the respective economic indicator is positive and 0 otherwise.	
<i>NEG</i>	Dummy variable interacted with each economic indicator in stacked regressions. When interacted, equals 1 if the respective economic indicator is negative and 0 otherwise.	
<i>REVRES</i>	Firm's asset revaluation reserves scaled by lagged total assets.	Worldscope, WC03492, WC02999
<i>ΔREVRES</i>	Change in the firm's asset revaluation reserves from year $t-1$ to t , scaled by lagged total assets.	
<i>NEGΔREVRES</i>	Change in the firm's asset revaluation reserves from year $t-1$ to t , scaled by lagged total assets when this change is negative and 0 otherwise.	

APPENDIX B. Institutional Variables

Panel A. Date of mandatory IFRS reporting, Rule of Law (RL), and TOTAL index

Country	Date of mandatory IFRS reporting	Rule of Law (RL) from Worldwide Governance Indicators project (World Bank, 2018)													TOTAL in 2008 from Brown et al. (2014)
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2008
1. Australia	12/31/2005	1.72	1.77	1.76	1.77	1.74	1.76	1.74	1.77	1.78	1.92	1.83	1.75	1.68	52
2. Austria	12/31/2005	1.86	1.91	1.96	1.92	1.78	1.80	1.80	1.86	1.85	1.95	1.86	1.78	1.81	27
3. Belgium	12/31/2005	1.27	1.24	1.33	1.35	1.38	1.39	1.42	1.43	1.44	1.52	1.46	1.40	1.34	44
4. Bulgaria	12/31/2005	-0.10	-0.09	-0.05	-0.11	-0.04	-0.07	-0.11	-0.09	-0.10	-0.05	-0.10	-0.04	-0.04	n.a.
5. Croatia	12/31/2005	0.13	0.01	0.09	0.09	0.16	0.20	0.22	0.25	0.29	0.32	0.20	0.44	0.33	22
6. Cyprus	12/31/2005	0.89	1.11	1.12	1.22	1.21	1.22	1.07	1.10	1.04	1.08	1.04	0.73	0.88	n.a.
7. Czech Republic	12/31/2005	0.87	0.87	0.91	0.91	0.96	0.95	1.04	1.04	1.04	1.15	1.15	1.09	1.12	19
8. Denmark	12/31/2005	1.95	2.00	2.01	1.97	1.92	1.90	1.92	1.87	1.90	2.10	2.04	1.90	1.86	49
9. Finland	12/31/2005	1.96	1.97	1.91	1.92	1.97	1.97	1.95	1.95	1.94	2.10	2.06	2.02	1.01	32
10. France	12/31/2005	1.42	1.47	1.47	1.51	1.45	1.52	1.45	1.45	1.43	1.47	1.41	1.41	1.44	45
11. Germany	12/31/2005	1.66	1.78	1.77	1.75	1.66	1.63	1.62	1.66	1.65	1.86	1.80	1.61	1.61	44
12. Greece	12/31/2005	0.79	0.87	0.87	0.86	0.65	0.63	0.57	0.43	0.47	0.36	0.27	0.20	0.08	26
13. Hong Kong	12/31/2005	1.61	1.55	1.53	1.49	1.50	1.54	1.55	1.58	1.57	1.86	1.83	1.70	1.72	52
14. Hungary	12/31/2005	0.86	1.00	0.96	0.93	0.80	0.78	0.76	0.62	0.58	0.50	0.40	0.51	0.53	18
15. Iceland	12/31/2005	1.95	1.90	1.85	1.87	1.71	1.71	1.70	1.69	1.66	1.71	1.67	1.51	1.61	n.a.
16. Ireland	12/31/2005	1.60	1.72	1.75	1.72	1.75	1.77	1.76	1.73	1.73	1.78	1.77	1.54	1.43	41
17. Israel	12/31/2008	0.82	0.90	0.83	0.85	0.84	0.92	1.01	0.93	0.98	1.11	1.16	1.02	1.02	48
18. Italy	12/31/2005	0.52	0.39	0.48	0.46	0.40	0.43	0.47	0.40	0.40	0.38	0.28	0.27	0.32	46
19. Lithuania	12/31/2005	0.63	0.72	0.73	0.72	0.73	0.78	0.77	0.85	0.84	0.94	1.01	1.02	0.99	n.a.
20. Luxembourg	12/31/2005	1.83	1.70	1.77	1.80	1.83	1.85	1.83	1.80	1.82	1.91	1.87	1.71	1.74	n.a.
21. Netherlands	12/31/2005	1.76	1.78	1.79	1.76	1.81	1.82	1.82	1.86	1.84	1.98	1.94	1.89	1.83	43
22. New Zealand	12/31/2007	1.86	1.81	1.84	1.86	1.93	1.87	1.90	1.89	1.88	2.01	2.00	1.93	1.92	43
23. Norway	12/31/2005	1.92	1.98	1.95	1.97	1.88	1.90	1.87	1.96	1.98	2.03	2.01	2.02	2.02	47
24. Pakistan	12/31/2009	-0.89	-0.86	-0.89	-0.97	-0.83	-0.74	-0.90	-0.88	-0.86	-0.76	-0.77	-0.83	-0.72	18
25. Philippines	12/31/2005	-0.35	-0.41	-0.46	-0.55	-0.57	-0.55	-0.51	-0.52	-0.40	-0.32	-0.34	-0.40	-0.41	27
26. Poland	12/31/2005	0.48	0.40	0.43	0.55	0.63	0.68	0.77	0.78	0.82	0.84	0.80	0.68	0.47	28
27. Portugal	12/31/2005	1.23	0.99	1.02	1.02	1.06	1.06	1.02	1.07	1.06	1.14	1.15	1.13	1.13	29
28. Romania	12/31/2005	-0.14	-0.12	-0.09	-0.01	0.05	0.05	0.06	0.04	0.13	0.17	0.16	0.30	0.39	15
29. Singapore	12/31/2003	1.71	1.59	1.61	1.61	1.57	1.63	1.67	1.73	1.71	1.82	1.81	1.83	1.82	32
30. Slovenia	12/31/2005	0.89	0.91	0.92	1.01	1.08	1.01	1.05	1.01	1.00	1.00	0.97	1.08	1.02	19
31. South Africa	12/31/2005	0.11	0.26	0.09	0.07	0.12	0.14	0.15	0.11	0.16	0.18	0.09	0.07	-0.04	29
32. Spain	12/31/2005	1.13	1.13	1.17	1.19	1.16	1.19	1.20	1.06	1.02	0.95	0.90	0.98	1.01	42
33. Sweden	12/31/2005	1.81	1.86	1.91	1.93	1.97	1.96	1.94	1.95	1.97	1.99	2.04	2.04	1.94	34

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APPENDIX B. Institutional Variables – *Continued*

Panel A. Date of mandatory IFRS reporting, Rule of Law (RL), and *TOTAL* index

Country	Date of mandatory IFRS reporting	Rule of Law (RL) from Worldwide Governance Indicators project (World Bank, 2018)													<i>TOTAL</i> in 2008 from Brown et al. (2014)
		2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2008
34. Switzerland	12/31/2005	1.91	1.82	1.85	1.82	1.75	1.76	1.73	1.82	1.80	1.99	1.95	1.94	1.93	49
35. Turkey	12/31/2005	0.16	0.05	0.02	0.08	0.10	0.11	0.07	0.04	0.07	0.01	-0.11	-0.16	-0.25	20
36. Ukraine	12/31/2012	-0.78	-0.80	-0.73	-0.68	-0.76	-0.81	-0.82	-0.78	-0.80	-0.79	-0.81	-0.77	-0.71	6
37. United Arab Emirates	12/31/2005	0.40	0.32	0.29	0.42	0.40	0.32	0.50	0.54	0.62	0.65	0.64	0.89	0.80	n.a.
38. United Kingdom	12/31/2005	<u>1.57</u>	<u>1.79</u>	<u>1.74</u>	<u>1.71</u>	<u>1.74</u>	<u>1.76</u>	<u>1.65</u>	<u>1.72</u>	<u>1.71</u>	<u>1.89</u>	<u>1.81</u>	<u>1.63</u>	<u>1.68</u>	<u>54</u>
<i>Median</i>		<i>1.18</i>	<i>1.12</i>	<i>1.15</i>	<i>1.21</i>	<i>1.19</i>	<i>1.21</i>	<i>1.14</i>	<i>1.09</i>	<i>1.05</i>	<i>1.15</i>	<i>1.16</i>	<i>1.11</i>	<i>1.07</i>	<i>33</i>

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APPENDIX B. Institutional Variables – Continued

Panel B. Employment protection indices from OECD

Country	Strictness of employment protection – permanent contracts									Strictness of employment protection – temporary contracts									EPL index								
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2005	2006	2007	2008	2009	2010	2011	2012	2013	2005	2006	2007	2008	2009	2010	2011	2012	2013
1. Australia	1.42	1.42	1.17	1.17	1.17	1.67	1.67	1.67	1.67	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	1.15	1.15	1.02	1.02	1.02	1.27	1.27	1.27	1.27
2. Austria	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	2.37	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.31	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84
3. Belgium	1.89	1.89	1.89	1.89	1.89	2.08	2.08	1.89	1.89	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.13	2.13	2.13	2.13	2.13	2.23	2.23	2.13	2.13
4. Croatia	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.32	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.88	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.60
5. Czech Republic	3.31	3.31	3.05	3.05	3.05	3.05	3.05	2.92	2.92	1.13	1.13	1.13	1.13	1.13	1.31	1.31	1.44	1.44	2.22	2.22	2.09	2.09	2.09	2.18	2.18	2.18	2.18
6. Denmark	2.13	2.13	2.13	2.13	2.13	2.13	2.20	2.20	2.20	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.38	1.75	1.75	1.75	1.75	1.75	1.75	1.79	1.79	1.79
7. Finland	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	2.17	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86	1.86
8. France	2.47	2.47	2.47	2.47	2.38	2.38	2.38	2.38	2.38	3.63	3.63	3.63	3.63	3.63	3.63	3.63	3.63	3.63	3.05	3.05	3.05	3.05	3.00	3.00	3.00	3.00	3.00
9. Germany	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	2.68	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.13	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.84	1.90
10. Greece	2.80	2.80	2.80	2.80	2.80	2.80	2.17	2.17	2.12	2.75	2.75	2.75	2.75	2.75	2.75	2.50	2.25	2.25	2.78	2.78	2.78	2.78	2.78	2.78	2.33	2.21	2.18
11. Hungary	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	1.59	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.25	1.25	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.63	1.42
12. Iceland	n.a.	n.a.	n.a.	1.73	1.73	1.73	1.73	1.73	1.73	n.a.	n.a.	n.a.	0.63	0.63	0.63	0.63	0.63	0.63	n.a.	n.a.	n.a.	1.18	1.18	1.18	1.18	1.18	1.18
13. Ireland	1.44	1.27	1.27	1.27	1.27	1.27	1.27	1.40	1.40	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	1.03	0.95	0.95	0.95	0.95	0.95	0.95	1.01	1.01
14. Israel	n.a.	n.a.	n.a.	2.04	2.04	2.04	2.04	2.04	2.04	n.a.	n.a.	n.a.	0.88	0.88	0.88	0.88	0.88	0.88	n.a.	n.a.	n.a.	1.46	1.46	1.46	1.46	1.46	1.46
15. Italy	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.76	2.68	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.38	2.34
16. Lithuania	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.23	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2.38	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
17. Luxembourg	n.a.	n.a.	n.a.	2.25	2.25	2.25	2.25	2.25	2.25	n.a.	n.a.	n.a.	3.75	3.75	3.75	3.75	3.75	3.75	n.a.	n.a.	n.a.	3.00	3.00	3.00	3.00	3.00	3.00
18. Netherlands	2.88	2.88	2.88	2.88	2.82	2.82	2.82	2.82	2.82	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	1.91	1.91	1.91	1.91	1.88	1.88	1.88	1.88	1.88
19. New Zealand	1.56	1.56	1.56	1.56	1.56	1.56	1.56	1.39	1.39	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.28	1.28	1.28	1.28	1.28	1.28	1.28	1.20	1.20
20. Norway	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.33	2.75	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.54	2.67	2.67	2.67	2.67	2.67	2.67	2.67	2.67
21. Poland	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	2.23	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.75	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99	1.99
22. Portugal	4.42	4.42	4.42	4.42	4.42	4.13	4.13	3.56	3.18	2.56	2.56	2.56	1.94	1.94	1.94	1.94	1.94	1.81	3.49	3.49	3.49	3.18	3.18	3.03	3.03	2.75	2.50
23. Slovenia	n.a.	n.a.	n.a.	2.65	2.65	2.65	2.60	2.60	2.60	n.a.	n.a.	n.a.	1.81	1.81	1.81	1.81	1.81	1.81	n.a.	n.a.	n.a.	2.23	2.23	2.23	2.21	2.21	2.21
24. South Africa	n.a.	n.a.	n.a.	2.16	2.16	2.16	2.16	2.16	n.a.	n.a.	n.a.	n.a.	0.50	0.50	0.50	0.50	0.50	n.a.	n.a.	n.a.	n.a.	1.33	1.33	1.33	1.33	1.33	n.a.
25. Spain	2.36	2.36	2.36	2.36	2.36	2.36	2.21	2.21	2.05	3.25	3.25	3.00	3.00	3.00	3.00	2.56	2.69	2.56	2.80	2.80	2.68	2.68	2.68	2.68	2.39	2.45	2.31
26. Sweden	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	2.61	1.44	1.44	1.44	0.81	0.81	0.81	0.81	0.81	0.81	2.02	2.02	2.02	1.71	1.71	1.71	1.71	1.71	1.71
27. Switzerland	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.13	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36	1.36
28. Turkey	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	2.31	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	4.88	3.59	3.59	3.59	3.59	3.59	3.59	3.59	3.59	3.59
29. United Kingdom	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.26	1.10	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.74

Notes: This Appendix presents institutional variables for the countries included in the sample. The following institutional variables are presented (relevant source in parenthesis): (1) Date of mandatory IFRS reporting (source: PWC IFRS adoption reports, Deloitte IASPlus website, and IFRS official website. Available at: <https://www.pwc.ru/ru/ifrs/ifrs-17-hub-int/pwc-ifrs-by-country-2016.pdf>; <https://www.iasplus.com/en/jurisdictions>; <https://www.ifrs.org/use-around-the-world/use-of-ifrs-standards-by-jurisdiction/>); (2) Rule of Law (RL) from Worldwide Governance Indicators project (source: World Bank, 2018. Available at: <https://info.worldbank.org/governance/wgi/#home>); (3) the *TOTAL* index (source: Brown et al. (2014)); (4) Strictness of employment protection—permanent contracts index, Strictness of employment protection—temporary contracts index, and *EPL* which is their average (source: OECD, available at: <https://www.oecd.org/els/emp/oecdindicatorsofemploymentprotection.htm>). No information was available about the variables in Panel B for Bulgaria, Cyprus, Hong Kong, Pakistan, the Philippines, Romania, Singapore, United Arab Emirates, and Ukraine.