# The impact of SOX on earnings quality outside the U.S.: Evidence from Belgian subsidiaries of U.S. listed companies

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## ABSTRACT

Prior U.S. studies report significant earnings quality effects of the Sarbanes-Oxley Act (SOX). In this paper we examine whether this SOX effect is also observed outside the U.S. on earnings quality measures of foreign subsidiaries of U.S. listed firms. We argue that in institutional environments where the incentives to issue high quality financial reporting are weaker than in the U.S., an "export" of SOX improving earnings quality is likely. Belgium is a suitable institutional setting to test this hypothesis, with weak investor protection, trivial auditor and manager litigation and limited regulatory reforms after the public trust crisis. We find that Belgian subsidiaries of U.S. listed parents indeed manage their earnings less and recognize their losses timelier after SOX, whilst the earnings quality of a control group of Belgian subsidiaries of Belgian listed parents deteriorates. These findings suggest that SOX is associated with an improvement of earnings quality of Belgian SOX compliers and that this change is not caused by changes in the Belgian regulatory environment.



**Key Words: Sarbanes-Oxley; earnings quality; subsidiaries; Belgium.**
**Data Availability: data are available from sources identified in the paper.**

## I. INTRODUCTION

The main goal of the Sarbanes-Oxley Act of 2002 (SOX) was to protect investors by improving the accuracy and reliability of corporate disclosures. Various U.S. studies compare earnings quality measures before and after SOX, and indeed report evidence suggesting that earnings quality has improved after SOX (see for example Cohen et al. (2008), Lobo and Zhou (2006), Bédard (2006) and Iliev (2007)). A caveat to these U.S. studies is that they lack a suitable benchmark group of non-compliers since SOX applies to all U.S. listed firms. Therefore their results cannot be attributed *directly* to SOX (since not all concurrent events have been controlled for) and it is possible that the observed effects would also have occurred without SOX, for example due to increased investor scrutiny or media attention at the time. In this paper we address this caveat by studying the effect of SOX outside the U.S. as this allows for a direct comparison between SOX-compliers and non-compliers.

We argue that in institutional environments where the incentives to issue high quality financial reporting are weaker than in the U.S., an "export" of SOX improving the quality of financial reporting of the foreign U.S. subsidiaries is likely. In particular we test the impact of SOX on the earnings quality of Belgian private subsidiaries of U.S. listed parent companies relative to a benchmark group that is unaffected by Sarbanes-Oxley, i.e. Belgian private subsidiaries of Belgian listed companies. Belgium offers a suitable institutional setting for our study as the incentives for managers and auditors to supply high quality financial reporting are lower in comparison to the U.S.. Belgium is a code law country with a French legal origin that is characterized by weaker investor protection and legal enforcement than in common law countries such as the U.S. (La Porta et al. 1998). Note that in an international comparative study of earnings quality Leuz et al. (2003) report that Belgium occupies

the 21st position in a ranking (from low to high) of earnings management of 31 countries. Furthermore, the Belgian equity market is relatively small and litigation levels against auditors and company officers are low.[1]

We also argue that Belgium is a better setting for our study than its neighbouring European countries. As in many countries around the world, regulatory changes affecting financial reporting, auditing and governance occurred in Belgium in the same time period as the enactment of Sarbanes-Oxley in the U.S.. Although there are some similarities with SOX, the new Belgian measures were not only much weaker than those in the U.S. but also compared to other European countries. No internal control requirements or audit quality inspections by an independent oversight body were introduced in Belgium, whereas such measures were implemented by several of Belgium's neighboring countries, which makes them less suitable as a setting for this study. Hence, the likelihood of 'contamination' through local requirements (similar to SOX) of the benchmark group is smaller in Belgium as compared to other European countries.

As in Brown et al. (2008) we use a "difference-in-differences" model to test whether earnings quality has changed after SOX for a sample of Belgian private subsidiaries of U.S. listed companies (i.e. SOX compliers) as compared to a control group of Belgian private subsidiaries of Belgian listed companies. This approach allows testing for changes in the treatment group of SOX compliers relative to a control group that is not affected by the SOX provisions. More specifically, we use a sample of 383 Belgian private subsidiaries of U.S. listed companies (treatment group of SOX compliers) and 504 Belgian private subsidiaries of Belgian listed companies (control group) each yielding about 2.000 firm-year observations. The sample period

[1] This is evidenced by La Porta et al.'s (2006) liability standard of 0,44 and Wingate's (1997) litigation index of 4,82.

runs from 1999 until 2005, i.e. three years before and three years after the enactment of SOX in 2002.

We use multiple proxies (see, for example, Barth et al. 2008; Lang et al. 2003, 2006) for earnings quality. First we use two abnormal accruals-based earnings management proxies, i.e. the performance-adjusted Modified Jones model (Kothari et al. 2005) and the DeFond and Park (2001) model. Second, we estimate a model for timely loss recognition introduced by Ball and Shivakumar (2005). Together these three proxies capture different aspects of earnings quality and hence increase the robustness of the results.

Univariate and multivariate tests indicate that after SOX Belgian private subsidiaries of U.S. listed firms engaged in less accruals-based earnings management and that they recognized losses timelier. Findings for the control sample of subsidiaries of Belgian listed firms show an increase in upward earnings management and less timely loss recognition after SOX. Overall, these results suggest that even outside the U.S. the Sarbanes–Oxley reform is associated with an increase in earnings quality as evidenced by a decrease in earnings management and more timely loss recognition.

Our study contributes to the literature on the benefits of SOX by documenting earnings quality effects of SOX using a different design and benchmark group as compared to prior studies. Contrary to U.S. studies where it is not feasible to find a clean benchmark group, this study provides results for SOX compliers and non-compliers with similar reporting incentives. Note further that despite the vast amount

of research on SOX benefits, our study is the first to examine the impact of SOX on foreign subsidiaries of U.S. listed companies.[2]

The remainder of this paper is organized as follows. Section 2 provides an overview of prior research on SOX effects. In section 3 we discuss the institutional background relevant to our study and motivate our hypothesis. Section 4 gives an outline of the research design. In section 5 the sample and the data are described. Univariate and multivariate results as well as robustness checks are discussed in section 6 and section 7 concludes.

## II. PRIOR LITERATURE ON SOX EFFECTS

Several U.S. studies report lower levels of (accruals-based) earnings management after SOX. Cohen et al. (2008) find that management of accounting earnings increased steadily from 1987 until the passage of SOX with a significant increase during the period prior to SOX, followed by a significant decline after the passage of SOX. The results of this study also suggest that firms switched from artificial earnings management (proxied by discretionary accruals) to real earnings management (e.g. accelerating the timing of sales through price discounts). The latter is harder to detect and its use has increased after SOX while the use of the former technique has decreased post-SOX. The authors acknowledge that the shifts in earnings management cannot be attributed solely to SOX because of a number of concurrent events in the post-SOX period, such as the increased attention towards earnings management of auditors, regulators and investors after the accounting scandals. Lobo and Zhou (2006) investigate the evolution of conservatism in financial reporting after SOX. They show that firms report lower discretionary accruals after

[2] Sarbanes-Oxley applies to all companies listed on a US stock exchange. For some elements (especially Section 404) longer implementation periods have been allowed for smaller companies (non-accelerated filers) and cross-listers (foreign filers).

SOX relative to the time period before SOX. Furthermore, they use the Basu (1997) approach to show that firms incorporate losses more quickly than gains when they report income in the post-SOX period. The potential legal liability faced by the CEO and CFO has increased considerably as a result of SOX. Combined with an increased risk aversion this may have caused more conservatism in financial statements, as conservative financial reporting is less associated with shareholder litigation (Watts 2003). Bartov and Cohen (2008) report a decline in the frequency of just meeting or beating analysts' earnings forecasts after SOX. They find that this coincides with significant decreases in accruals-based earnings management and expectations management and with an increase in real earnings management. Finally, Chambers and Payne (2008) report evidence suggesting an improvement in accrual reliability (measured as persistence) after SOX. They also report that the greatest improvement is experienced by companies who are audited by non-specialist auditors, lower-independence auditors and those companies that represent a higher litigation or reputation risk to their auditor.

Prior literature on SOX effects also include studies on the impact of audit quality inspections by the PCAOB. However, such studies provide mixed results on the usefulness of the inspection reports. Gunny and Zhang (2006) provide some preliminary evidence that PCAOB inspection opinions are able to distinguish earnings quality whereas the 'old' AICPA peer review opinions do not. The findings of Lennox and Pittman (2009) suggest however that PCAOB inspections help to improve audit quality but that clients do not find the inspectors' reports informative. Another noteworthy auditor related finding is the increase in going-concern opinions after December 2001 reported by Geiger et al. (2005). A similar result is reported by Sercu et al. (2006). This finding suggests an increase in auditor conservatism after SOX

even though SOX did not contain provisions on the issuing of going-concern opinions. Note that Geiger et al. (2005) believe that this change is due to auditors' concerns related to reputation, further regulation and litigation.

Finally, various SOX-related studies look into the effects of the internal control requirements of SOX Sections 302 and 404. Whereas most studies look at the characteristics of firms that disclose internal control weaknesses (see, for example, Ge and McVay 2005; Ashbaugh-Skaife et al. 2007; Doyle et al. 2007)[3], Bédard (2006) and Iliev (2007) investigate earnings management effects related to the internal control requirements in the SOX Act. Bédard (2006) examines whether the internal control requirements implemented by SOX have improved earnings quality as measured by unexpected accruals. Overall, his findings are consistent with an increase in the quality of earnings caused by the SOX internal control requirements. Iliev (2007) compares certain characteristics of accelerated and non-accelerated filers.[4] These accelerated filers are subject to SOX Section 404 on internal control disclosures and they appear to have significantly lower accruals and discretionary accruals than non-accelerated filers. Hence, these results suggest less earnings management for companies that have to report on the effectiveness of their internal control system.

## III. INSTITUTIONAL SETTING AND HYPOTHESIS DEVELOPMENT

The U.S. studies discussed above suggest that SOX has affected various elements of the financial reporting process in the United States. However, since SOX applies to all U.S. listed firms there is no natural control group of non-compliers to compare with. Several studies (e.g. Cohen et al. 2008; Lobo and Zhou 2006)

[3] The main findings are that internal control weaknesses are more likely for firms that are smaller, younger, more complex, faster growing and/or undergoing restructuring.
[4] The sample of Iliev (2007) consists of firms which have a market value slightly above or below the threshold of 75 million $ free float which determines whether a firm is an accelerated filer or not.

acknowledge that their results cannot be attributed directly to SOX since not all concurrent events have been controlled for. In other words, it is possible that the observed effects would also have occurred without SOX (e.g. because of investor scrutiny or media attention). In this study we examine the impact of SOX outside the U.S. as this allows for a direct comparison of earnings quality between SOX-compliers and non-compliers before and after the implementation of SOX.

There are two possible channels through which an "export'' of SOX can take place. First, non-U.S. firms that cross-list on an American stock exchange are also subject to SOX. As a result one could compare earnings quality measures of such cross-listing firms in their home country with non-compliers only listed in their home country. However, it is likely that due to sample size considerations cross-listing firms from different countries and hence various institutional environments would have to be included in the sample which could contaminate the analysis.[5] Second, SOX is applicable to all listed firms in the United States which also includes their subsidiaries around the world. These subsidiaries have to follow the accounting, auditing and governance standards of their country of incorporation but they also have to comply with the requirements of SOX. Consequently, financial reporting quality by foreign subsidiaries of U.S. firms and local subsidiaries can be compared in a particular non-U.S. setting. To our knowledge no study has yet examined the effects of SOX on foreign subsidiaries of SOX compliers.

In this paper, the focus will be on Belgian subsidiaries of U.S. listed parent companies. We argue that in institutional environments where the incentives to issue high quality financial reporting are weaker than in the U.S., an export of SOX improving the quality of financial reporting of the foreign U.S. subsidiaries is likely.

[5] Note that there has been some research into the possible costly effects of the new regulation on (potential) cross-listers (e.g. Litvak 2007) and it is also a concern of regulators (i.e. cross-listers are granted some exemptions and more time for implementation).

La Porta et al. (1998) classify Belgium as a code law country with a French legal origin. This implies that on average investor protection and legal enforcement are weaker than in common law countries such as the U.S.. The Belgian equity market is relatively small and litigation levels against auditors and company officers are low.[6] This is evidenced by La Porta et al.'s (2006) liability standard of 0,44 and Wingate's (1997) litigation index of 4,82. Also, Aerts (2002) indicates that since 1831 only eight cases against external auditors made it to court in Belgium. These institutional features are associated with relatively lower earnings quality levels as compared to countries where incentives to provide high quality financial reporting are more pronounced. This is illustrated by a study by Leuz et al. (2003) which shows that Belgium occupies the 21st position in a ranking (from low to high) of earnings management of 31 countries. The alignment between financial statements for external reporting and tax purposes is very high in Belgium (Hung 2001) which also is likely to affect earnings management (for tax reasons).

We argue that the SOX standards have the potential to affect earnings quality of Belgian subsidiaries of U.S. listed firms for the following reasons. First, 'local' (*in casu* Belgian) auditors who participate in the audit of a subsidiary of a SOX-complying U.S. parent company are obliged to register with the PCAOB.[7] This implies that such local auditors are subject to PCAOB quality reviews, are required to hand over documents to the PCAOB when requested and are subject to restrictions regarding the supply of certain non-audit services. Audits of foreign subsidiaries of U.S. listed firms also need to be performed in accordance with the PCAOB Auditing Standards. Second, although not required by the SOX Act itself, many parent

[6] Sarkissian and Schill (2004) report that in 1998 the ratio of stock market capital to GDP is 1.04 for Belgium compared to 1.52 in the United States and 1.90 in the United Kingdom.
[7] For instance: 68 U.K., 41 German, 35 French, 16 Dutch and 15 Belgian audit firms are registered with the Public Company Accounting Oversight Board (as of February 26, 2008).

companies require the CEO and CFO of their foreign subsidiaries to provide certifications of the financial statements similar to those required under Sections 302, 404 and 906. This creates a pyramid of accountability and is likely to deter local officers from manipulating earnings excessively. Furthermore these certifications are also useful as evidence in court and thus increase liability. A third element is the internal control requirement of Section 404. Subsidiaries are required to maintain an effective internal control system (although exceptions for relatively small subsidiaries are made). On top of the export of the SOX standards to foreign subsidiaries of U.S. listed firms, there is *de facto* also an export of U.S. liability to foreign subsidiaries which should deter managers and corporate officers from earnings management. When the (consolidated) earnings of a U.S. listed parent company are misstated, shareholders can start a (class-action) law suit. It will be irrelevant to them whether the earnings management occurred in the U.S. or abroad (at subsidiary level).[8]

In addition to arguing that the SOX standards affect earnings quality of Belgian subsidiaries of U.S. listed firms, we also argue that the SOX standards affect the earnings quality of Belgian subsidiaries of U.S. listed firms *more* than the Belgian standards affect earnings quality of Belgian subsidiaries of Belgian listed companies. As many countries in the world, Belgium introduced new regulations to address the public trust crisis in the same period as the SOX Act was introduced. The Belgian Corporate Governance Law (effective since August 22, 2002) has a more narrow scope but also affects the auditing profession and contains several governance provisions. The provisions on auditor independence and audit committees are very similar as those in SOX. However, there are important differences between the Belgian regulations and SOX concerning independent audit quality inspections and

[8] Local auditors and managers can thus be brought before a U.S. court. Whether they will be convicted is uncertain because of jurisdictional issues. Many shareholder litigation cases are settled out of court and the settlement amount can also serve as a deterrent for auditors and managers.

internal control requirements. Belgium lacks regulation on these issues while several of its neighbouring countries (e.g. France, the Netherlands and the U.K.) have introduced such measures in recent reforms.[9] Therefore we argue that the Belgian institutional environment offers an ideal experimental setting to study the effects of SOX on foreign subsidiaries of U.S. listed firms, as the likelihood of 'contamination' through local requirements (similar to SOX) of the benchmark group is reduced.

Overall, it is likely that local auditors and managers of Belgian subsidiaries of U.S. listed companies have increased incentives to constrain earnings management resp. will prefer more conservative numbers as compared to auditors and managers of subsidiaries of non SOX-compliers. Moreover, an effective internal control system as required through SOX should reduce the likelihood of errors and intentional misstatements of accounting numbers in the accounts of the subsidiaries of the SOX-complying subsidiaries of U.S. listed firms. Therefore, we expect that the earnings quality of the Belgian subsidiaries of U.S. stock listed companies will improve after SOX. As discussed earlier a contribution of this study is that alternative explanations will be ruled out by including a control group that is unaffected by SOX. Our prediction is that the difference in earnings quality between the SOX compliers (treatment group) and non-compliers (control group) will become larger after SOX because of the export of SOX as well as the weaker (new) local regulations to which the control group is subject. This leads to the following hypothesis:

[9] Since the *Loi de Sécurité Financière* of 2003 the *Haut Conseil du Commissariat aux Comptes* and the *Autorité des Marchés Financiers* are responsible for audit oversight in France (Baker et al. 2008). Since October 1st, 2006 the *Autoriteit Financiële Markten* is the independent oversight body for auditors in the Netherlands (Meuwissen and Wallage 2008). In the U.K. the Professional Oversight Board for Accountancy resorts under the Financial Reporting Council and monitors the quality of auditing for public interest entities through its Audit Inspection Unit since 2004 (Turley 2008).

HYPOTHESIS: *Ceteris paribus, after the implementation of SOX the improvement of the quality of earnings for Belgian subsidiaries of U.S. stock listed companies will be higher relative to the change in the quality of earnings of Belgian subsidiaries of Belgian stock listed companies.*

Note that there are arguments against finding a SOX effect outside the U.S. It is uncertain whether the enforcement by the SEC and PCAOB is effective outside the U.S.. Procedural and jurisdictional issues might prevent this. The fact that the PCAOB operates beyond U.S. borders and that it regulates foreign auditors has led to arguments with the E.U. concerning jurisdiction. Above that, the findings of Siegel (2005) suggest that the SEC has usually not been able to enforce U.S. securities laws against U.S. listed foreign firms. As this study focuses on foreign subsidiaries of U.S. listed firms the SEC and PCAOB might experience similar difficulties in trying to get non-U.S. offenders (i.e. Belgian auditors and managers) convicted.

## IV. RESEARCH DESIGN

### "Difference-in-differences" approach

Following Brown et al. (2008) we use a "difference-in-differences" approach (DID). This allows comparing the change in earnings quality for the Belgian private subsidiaries of U.S. listed parents (treatment group) after SOX relative to a sample of firms that do not comply with SOX (control group). To estimate the DID-model, a suitable control group must be chosen. As discussed earlier, Belgium is an appropriate environment since there are few Belgian measures that can 'contaminate' the benchmark sample (control group) and litigation is unlikely to be a strong deterrent for Belgian auditors and managers. The treatment group consists of Belgian private

subsidiaries of U.S. listed parents. The most suitable control group are Belgian private subsidiaries of Belgian listed parents. Notwithstanding obvious differences (e.g. in size of both parent and subsidiary) both groups of subsidiaries share a number of incentives. Using listed firms or private firms that are not subsidiaries seems unsuitable because of the difference in reporting incentives.

**Earnings quality models**

Following previous studies (e.g. Barth et al. 2008; Brown et al. 2008; Lang et al. 2003, 2006) we use several measures for earnings quality. This should reduce measurement error from noisy proxies and improve the robustness of the results. Two main categories of measures will be used: accruals-based earnings management proxies and timely loss recognition.[10]

***Abnormal accruals measures.*** Two common models from the literature will be applied to estimate discretionary or abnormal accruals. First of all, the Modified Jones model (Dechow et al. 1995) will be used as a measure for earnings management (defined as $EM_1$). We include net income over total assets in the model to performance-adjust our abnormal accruals (Kothari et al. 2005). The performance-adjusted Modified Jones model will be estimated cross-sectionally per year and per 2-digit SIC group (as in DeFond and Jiambalvo 1994).[11] An out-of-sample estimation approach is used and therefore data were gathered for all 2.500 Belgian private subsidiaries of listed parents (regardless of their country of origin). These are then used to estimate the earnings management proxies for both the treatment group and

[10] Timely loss recognition is also referred to as conditional conservatism (Ball and Shivakumar 2005).
[11] Subramanyam (1996) and Bartov et al. (2001) show that the cross-sectional approach is to be preferred over time-series estimation. Cross-sectional estimation allows for larger samples per model and the use of time-series models also lowers the power of tests which examine time-series behaviour in discretionary accruals, because of overlapping estimation and treatment periods.

the control group. Secondly, we use the DeFond and Park (2001) model to estimate abnormal working capital accruals (defined as $EM_2$). This measure uses a firm's own prior year accruals and current and prior year sales to calculate the expectation benchmark.[12] Both earnings management measures will be used as the dependent variable ($EM_j$) in the following model:

$$EM_j = \alpha_0 + \alpha_1 POSTSOX + \alpha_2 US + \alpha_3 (US * POSTSOX) + \sum_{i=4}^{N} [\alpha_i Controls] + \varepsilon \quad \text{[Eq. 1]}$$

where j = 1 if the the residual from the performance-adjusted Modified Jones model is used as our measure of earnings management, and j = 2 if the abnormal working capital accruals as in DeFond and Park (2001) are used as a measure of earnings management. POSTSOX is a dummy that equals one for the years 2003-2005 and zero otherwise. We use 2003 as the first year of compliance since most relevant provisions became effective during 2003.[13] A dummy (US) is included which takes the value of one if the parent of the subsidiary is listed in the U.S. (and hence compliant with SOX) and zero if the parent of the subsidiary is Belgian. The US-dummy is then interacted with the POSTSOX-dummy to indicate the change in earnings quality after SOX for the subsidiaries of U.S. listed parents relative to the control group. Several control variables will be included in the model and these will be discussed further.

***Timely loss recognition.*** The other measure for earnings quality that will be used in this paper is timely loss recognition which is defined as the extent to which current-

[12] Because of data availability we use operating revenue instead of sales to calculate this proxy.
[13] In the robustness checks we discuss the effect of excluding the year 2002 and of using 2002 until 2005 as the POSTSOX period.

period accounting earnings asymmetrically incorporate economic losses relative to economic gains (Brown et al. 2008). Contrary to the earnings management models discussed above which yield firm-specific estimates, the timely loss recognition approach compares groups of firms (i.e. SOX compliers versus non-compliers). Because the samples we use consist of private subsidiaries of listed parents it is impossible to use the Basu (1997) model which requires stock returns. A good alternative however is the Ball and Shivakumar (2005) model that is based on accruals. They argue that timely gain and loss recognition is based on expected and not realized cash flows, and therefore is accomplished through accruals. Economic losses are more likely to be recognized on a timely basis as unrealized (i.e. non-cash) accrued charges against income. Economic gains are more likely to be recognized when realized, and thus accounted for on a cash basis. This causes the asymmetry in the accruals model. Consistent with the findings of Lobo and Zhou (2006) we expect an increase in timely loss recognition for the treatment group (i.e. the SOX compliers). Therefore, we estimate the following model:[14]

$$\begin{aligned} TACCS = {} & \alpha_0 + \alpha_1 OPCF + \alpha_2 NEGOPCF + \alpha_3 POSTSOX + \alpha_4 (POSTSOX * OPCF) \\ & + \alpha_5 (POSTSOX * NEGOPCF) + \alpha_6 US + \alpha_7 (US * OPCF) + \alpha_8 (US * NEGOPCF) \\ & + \alpha_9 (US * POSTSOX) + \alpha_{10} (US * POSTSOX * OPCF) \\ & + \alpha_{11} (US * POSTSOX * NEGOPCF) + \sum_{i=12}^{N} [\alpha_i Controls] + \varepsilon \end{aligned} \qquad \text{[Eq.2]}$$

TACCS is total accruals scaled by lagged total assets, OPCF is cash flows from operations scaled by lagged total assets and NEGOPCF equals negative values

[14] The original Ball and Shivakumar (2005) model includes a dummy indicating negative values for cash flow from operations and an interaction term with cash flow from operations. Following Brown et al. (2008) we estimate separate coefficients for negative cash flow values so that the DID interaction terms are products of maximum three variables. This should ease interpretation of the coefficients.

of OPCF and zero otherwise.[15] The coefficient $\alpha_2$ measures the incremental sensitivity of earnings to economic losses for Belgian private subsidiaries of Belgian listed parents in the pre-SOX period (i.e. timely loss recognition for the control group). If losses are recognized timelier than gains, then we expect that $\alpha_2$ is positive. The coefficients $\alpha_{10}$ and $\alpha_{11}$ represent respectively the change in timely gain and loss recognition for Belgian private subsidiaries of U.S. listed parents after SOX relative to the control group. If SOX positively affected timely loss recognition then we expect a positive coefficient for $\alpha_{11}$. There is no reason to expect a change in timely gain recognition so $\alpha_{10}$ should not be significantly different from zero.

**Control Variables**

All models include a number of control variables for firm-specific effects and we also add industry dummies based upon the Campbell (1996) classification (see APPENDIX 1). First of all, we control for leverage since it is possible that debt covenants provide incentives for earnings management (DeFond and Jiambalvo 1994). Furthermore, leverage also proxies for exogenous volatility in economic income (Ball and Shivakumar 2005). Unlike most studies we use both the ratio of other long-term debt (OLTDEBT) on total assets and the ratio of long-term financial debt (LTFDEBT) on total assets. Because the sample consists of subsidiaries it is possible they obtain financing from their parent or from other group companies. It is likely that the incentives to manage earnings (or to recognize losses and gains) are not the same for both types of debt. If the subsidiary is closely monitored by its parent, earnings management will be futile. If financing is obtained through bank loans there

[15] Cash flow from operations is calculated as the difference between net income and total accruals. Total accruals are calculated as in Dechow et al. (1995): (ΔCurrent Assets – ΔCash) – (ΔCurrent Liabilities – ΔShort-Term Debt) – Depreciation. Following Burgstahler et al. (2006) we assume that if a firm does not report information on cash or short–term debt, the changes in these variables are zero.

may be more opportunities and incentives to manage earnings. Bank loans can be granted conditional on fulfilling the terms of a debt covenant which can stimulate upwards earnings management. However, banks can also perform a monitoring function in which case there is less earnings management. The sign on other long-term debt will depend on the monitoring of the parent and therefore we do not make a prediction. Second, in the earnings management models we include the level of operational cash flow (OPCF) scaled by lagged total assets. Previous research has indicated a negative relation with abnormal accruals proxies (Dechow et al. 1995) so we expect a negative coefficient for this variable. A third variable controls for the size of the company through the natural logarithm of total assets (LNTA). A larger firm might have more incentives to manage earnings (e.g. meet expectations of the parent company) but there is also more monitoring by the parent, by auditors and tax inspectors. Firm size also proxies for exogenous volatility in economic income (Ball and Shivakumar 2005). Previous research (e.g. Reynolds and Francis 2001; Chung and Kallapur 2003) finds a negative coefficient for this variable. Fourth, a Big 4 dummy (BIG4) is added because the literature (e.g. Becker et al. 1998; Francis et al. 1999) indicates that Big 4 auditors constrain earnings management more than non-Big 4 auditors.[16] Previous earnings management studies using Belgian data (e.g. Vander Bauwhede et al. 2003; Vander Bauwhede and Willekens 2004) report mixed findings on such an effect. The fifth control variable is one-year growth of operating revenue (ORGROWTH) which proxies for exogenous volatility in economic income (Ball and Shivakumar 2005).[17] Furthermore, growth firms are more likely to have negative accruals (Anthony and Ramesh 1992). Sixth, Ball and Shivakumar (2005) argue that their findings for the U.K. are not significantly biased by tax incentives. But since

[16] The Big 4 auditors are Deloitte, Ernst & Young, KPMG and PricewaterhouseCoopers. Arthur Andersen is also coded as Big 4 in the period before its demise.
[17] Operating revenue is used instead of the more commonly used sales because of data availability.

financial statements are also used for tax purposes in Belgium (Hung 2001) it is necessary to control for possible effects from taxation. Therefore the models include a dummy (LAGTAXD) that equals one if taxes were paid in the previous year as in Vander Bauwhede and Willekens (2004). If companies want to minimize their tax burden they might try to manage their earnings down. Companies that paid taxes in the previous year are more likely to pay taxes in the current year and therefore more downward earnings management is expected. Seventh, we control for liquidity by including the current ratio (CR). Companies with liquidity problems may try to conceal their bad condition to avoid violating debt covenants (Sweeney 1994). An eighth control is the ratio of operating revenue of the subsidiary on the consolidated operating revenue of the parent (RELOR). This variable captures the importance of the subsidiary and could mean both enhanced monitoring by the parent but also more independence in reporting decisions. Given the lack of literature on the relation between parent companies and subsidiaries, we do not make a prediction on the sign. Finally, we also include a dummy (LOSS) which takes the value of one if net income is negative because firms increase reported earnings to avoid reporting losses (Burgstahler and Dichev 1997). Table 1 provides an overview of all variables.

**[Insert TABLE 1 here]**

## V. SAMPLE, DATA AND DESCRIPTIVE STATISTICS

### Sample and Data

The models that were discussed in the previous section are tested for a sample of Belgian private subsidiaries of U.S. listed companies relative to a control group (i.e. Belgian private subsidiaries of Belgian listed companies). Data for these two

samples is obtained from the AMADEUS database (version February 2007).[18] The following sample selection procedure was used. First, the subsidiaries need to be located in Belgium. Second, these companies must be active (i.e. not bankrupt, in liquidation, etc). Third, we only include private subsidiaries of listed companies (subsidiaries that are listed are subject to stricter regulation which could affect their earnings quality). Fourth, we require that the subsidiaries report unconsolidated figures so that our sample only contains Belgian GAAP data.[19] Fifth, we only include companies from 55 industry groups (by 2-digit U.S. SIC). Following Burgstahler et al. (2006) we use the industry classification of Campbell (1996) but we exclude the financial industry (SIC 60-67). This industry classification is included in APPENDIX 1. The sixth and final selection criterion relates to the ownership of the company. The treatment group consists of Belgian private subsidiaries of U.S. listed companies. This is the SOX complier group (it will be referred to as BE SOX). The control group consists of Belgian private subsidiaries of Belgian listed companies (the BE LOCAL group). All subsidiaries are at least 50.01% owned by the parent company (to ensure that legal requirements apply).

The sample period runs from 1999 until 2005 for several reasons. First of all, the coverage of the AMADEUS database is lower the further one goes back in time. Including 1997 and 1998 was possible but these years have far fewer observations than the other years of the sample period. A second reason is that this sample period contains as many years before (1999 – 2001) as after SOX (2003 – 2005). SOX was enacted on July 30th, 2002 so 2002 can be seen as a transition year. A third reason is

[18] AMADEUS is a product of Bureau Van Dijk Electronic Publishing (www.bvdep.com). Auditor information was obtained from several editions of the BELFIRST database. For companies with missing auditor information, we manually collected the information from the annual accounts that are available at the website of the Belgian National Bank (www.nbb.be).

[19] IFRS is not allowed for the individual (or statutory) accounts we use in our samples. Furthermore, consolidated accounts are usually only available at parent-level and have been cleared of tax effects. Mixing up consolidated an unconsolidated accounts could distort the results due to tax differences.

that the sample contains observations from before the large accounting scandals (both in Europe and in the U.S.) were discovered (in 2001-2003). Linked to this is that many corporate governance measures were introduced in the same period.[20]

An important issue related to the local subsidiaries is that their Belgian parent could be cross-listed in the U.S. and hence subject to SOX. To avoid contamination of the sample it is necessary to remove such observations. We have used Thomson Datastream[21] to manually look up all parent companies and obtain the exchanges on which they are listed. None of the Belgian parent companies in our sample appears to be cross-listed in the U.S. The search criteria and the sample period discussed above, yield two final samples. The sample of Belgian SOX compliers contains 383 firms and between 1.906 and 2.053 firm-years (depending on the proxy for earnings quality that is used). The sample of Belgian local subsidiaries contains 504 firms (between 1.960 and 2.118 firm-years). Details on the number of observations can be found in table 2. Outliers were dealt with by winsorizing all control variables and the dependent variable in the timely loss recognition models (TACCS) at the 1st and 99th percentile (as in Brown et al. 2008). The dependent variables $EM_1$ and $EM_2$ were winsorized at +1 and -1 (as in Francis and Yu 2007).

**[Insert TABLE 2 here]**

**Descriptive Statistics**

In this subsection descriptive statistics are reported for the treatment group and the control group. Recall that winsorizing (at the 1st and 99th percentile) was applied

[20] According to ECGI (2008): in 2003 the U.K. published the Higgs Report (DTI), the Smith Report (FRC) and the Combined Code (FRC), which replaced all previous corporate governance codes. France published new corporate governance principles in 2003 (AFEP & MEDEF) and in 2004 (AFG). Belgium on the contrary published its corporate governance code in December 2004.
[21] Thomson Datastream is a product of Thomson Financial (www.datastream.com).

to these samples to deal with outliers. Table 3 contains mean and median values for all control variables from the model and some other interesting sample characteristics. T-tests for the equality of means are conducted to check for significant differences between the SOX sample (treatment group) and the local sample (control group).

**[Insert TABLE 3 here]**

Panel A of table 3 includes all control variables from the main model. It is clear that the SOX compliers differ significantly from the local subsidiaries. SOX compliers in Belgium have on average a lower ratio of financial long term debt to total assets (LTFDEBT), are on average larger (LNTA) and also have a lower average growth of operating revenue (ORGROWTH). SOX compliers are more likely to have a Big 4 auditor (87%) than local subsidiaries (63%). SOX compliers are on average more likely to have paid taxes in the previous book year (LAGTAXD) when compared to local subsidiaries. Significantly more local subsidiaries report negative net income (LOSS) in the current year than the U.S. subsidiaries which could partly explain the difference in taxes paid. Finally, the ratio of operating revenue of the subsidiaries to the operating revenue of the parent (RELOR) is significantly higher for the local group (i.e. these with a Belgian listed parent).

Panel B of table 3 provides statistics on variables that are not included in the models but that can be insightful. The test of equality for the means indicates that all differences between the two samples are significant at the 1% level. The median SOX subsidiary in Belgium has 14,4 million Euro of assets (compared to 6,8 million for Belgian local subsidiaries). The return on assets indicates that local subsidiaries are significantly less profitable compared to SOX compliers. Belgian SOX compliers are

on average older (26,14 years) than the local subsidiaries (22,37 years). On average local subsidiaries have more subsidiaries of their own than SOX compliers. Finally, consolidated operating revenue and total assets of the parent company (in millions of Euro) are reported to indicate their size. American parent companies are significantly larger than Belgian parent firms in terms of operating revenue. However, the difference is less obvious for total assets of the parent. Belgian parent firms are larger on average but the median values indicate that American parents are larger.

Panel C of table 3 shows the composition of the sample by industry. Industry composition differs between the two subgroups but we control for this by including industry dummies in the model. Despite these differences, the same three industries are the largest in both samples (accounting for half of the local sample and two thirds of the US SOX group). These industries are: the consumer durables, textiles and trade, and the services industry.

## VI. RESULTS

### Univariate Results and Correlations

Before turning to the regression models we report some univariate results. A series of T-tests for the equality of means will be conducted for the accruals-based earnings management proxies both within and between groups. Timely loss recognition will not be tested in a univariate way.

First, in panel A of table 4 a comparison of the earnings management proxies between the treatment and control group is reported. These proxies are the performance-adjusted Modified Jones discretionary accruals ($EM_1$) and the DeFond and Park (2001) abnormal working capital accruals ($EM_2$). For both proxies we include the unsigned values ($ABSEM_j$), the positive values ($POSEM_j$), the negative

values ($NEGEM_j$) and the signed values ($SIGNEDEM_j$). The results show that over the entire sample period (1999-2005) the average absolute and positive values of both earnings management proxies are significantly larger for the subsidiaries with Belgian listed parents. Although these results suggest less earnings management by the SOX compliers they are unable to attribute this effect to SOX. Therefore, in panel B of table 4 we report equality tests between the pre-SOX and post-SOX periods within each subsample. In the treatment group (BE SOX) there are significant decreases in the level of earnings management after SOX based on one signed and two unsigned proxies ($SIGNEDEM_1$, $ABSEM_1$ and $ABSEM_2$). The proxies for upward ($POSEM_1$ and $POSEM_2$) and downward ($NEGEM_1$ and $NEGEM_2$) earnings management show decreases of both types but with mixed significance (i.e. insignificant decreases for one proxy and significant decreases for the other proxy). The results for the control group (BE LOCAL) show significant increases for four proxies ($POSEM_1$, $POSEM_2$, $SIGNEDEM_1$ and $SIGNEDEM_2$). This suggests that while the control group displays more upward earnings management the treatment group shows a significant improvement (i.e. less earnings management) after SOX. Finally, in panel C of table 4 equality tests are reported between the treatment and control groups for both the pre-SOX and post-SOX periods. The goal of these tests is to determine whether there are significant differences between the groups. The findings show that before SOX (1999-2001) only two of the eight proxies for earnings management ($POSEM_1$ and $SIGNEDEM_1$) differ significantly. After SOX (2003-2005) however the average values for six of the eight proxies are significantly different between the two sample groups. More specifically, the Belgian private subsidiaries of U.S. listed parents have significantly lower average values than the Belgian private subsidiaries of Belgian listed parents. This suggests that after SOX there was a divergence in the average

levels of earnings management between both groups which is consistent with our hypothesis.

**[Insert TABLE 4 here]**

Finally, in table 5 we report Spearman and Pearson correlations between all variables that will be included in the regression models for the treatment and control samples combined. The largest correlations are those between operational cash flow and the earnings management proxies. This finding is not surprising since operational cash flow was calculated as the difference between net income and total accruals. Pearson correlations between growth of operating revenue and the abnormal working capital accruals are quite large. Since operating revenue is used to calculate abnormal working capital accruals we will not include this control variable in the models where $EM_2$ is the dependent variable. Overall, the remaining correlations are below 50% and there do not appear to be problems of multicollinearity.

**[Insert TABLE 5 here]**

**Multivariate Results**

In this subsection we report the regression results for both the abnormal accruals measures and the timely loss recognition model. In all regressions standard errors are clustered by firm to correct for unobserved within-firm correlation patterns (Petersen 2009). As discussed above each model will be run following a "difference-in-differences" specification which includes Belgian subsidiaries of Belgian listed firms as the control group.

***Abnormal accruals models.*** Table 6 and 7 report the results for the models with the earnings management proxies as the dependent variable. Each table contains three panels displaying the analysis for: (1) the pre-SOX period (1999-2001), (2) the post-SOX period (2003-2005), and (3) the full sample period (1999-2005). In the first two panels a US dummy indicates whether the treatment group differs significantly from the benchmark group. In the third panel the POSTSOX coefficient shows the change after SOX for the control group while the interaction between POSTSOX and US indicates the effect for the treatment group.

The results from the Modified Jones discretionary accruals in panel A of table 6 suggest that before SOX both groups had similar levels of earnings management. However, after SOX the treatment group manages its earnings significantly less than the control group (see panel B). This is confirmed by the results over the full sample period in panel C. While the control group experiences a significant increase in upward earnings management ($POSEM_1$), the treatment group displays significantly less (upward and downward) earnings management. In other words, after SOX the subsidiaries of Belgian parents managed their earnings more and the subsidiaries of U.S. parents managed significantly less. This suggests a unique effect for the U.S. group and not an overall Belgian effect which provides support for our hypothesis.

**[Insert TABLE 6 here]**

In table 7, DeFond and Park (2001) abnormal working capital accruals are used as the dependent variable. Again we find almost no difference in earnings management before SOX between both groups (see panel A of table 7). After SOX

the treatment group displays significantly less upward earnings management ($POSEM_2$) relative to the benchmark group (see panel B). Consistent with the results for $POSEM_1$, the significant positive POSTSOX coefficient on $POSEM_2$ indicates that Belgian private subsidiaries of Belgian listed parent firms use slightly more upward earnings management in the period 2003 – 2005 (panel C). The interaction term (US * POSTSOX) shows significant decreases for both the absolute, the positive and the signed earnings management proxies ($ABSEM_2$, $POSEM_2$ and $SIGNEDEM_2$). So relative to the control group, the subsidiaries of U.S. listed parent companies engaged in less earnings management after SOX. Contrary to the Modified Jones results in table 6, there is no significant change for downward earnings management ($NEGEM_2$) while there is for the signed proxy ($SIGNEDEM_2$).

**[Insert TABLE 7 here]**

The findings from the DeFond and Park (2001) proxy ($EM_2$) provide weaker support (i.e. lower significance) for our hypothesis. The main differences between the Modified Jones and the DeFond and Park (2001) measures are the following. The Modified Jones model is based on total accruals (i.e. including depreciation and amortization) while the DeFond and Park model uses working capital accruals. As mentioned above the high alignment of financial statements for reporting and tax purposes in Belgium could provide an incentive for downward earnings management. Depreciation and amortization can be suitable for this purpose (e.g. through the use of accelerated depreciation which is accepted by Belgian tax law).[22] The second difference between both measures is that the Modified Jones model is estimated per

[22] Consistent with the absence of depreciation in the DeFond and Park (2001) measure we find more firms that use upward earnings management (52,9% of observations). In the Modified Jones models the firms that manage upwards and downwards are more balanced (49,4% manage upwards).

industry while the DeFond and Park proxy is firm-specific. The Modified Jones model can therefore capture industry-wide effects that would not be explained by the firm-specific expectation. Despite these differences both proxies are highly correlated (see table 5) and combined they provide strong support for our hypothesis of a greater difference in earnings quality between SOX compliers and non-compliers after SOX.

***Timely loss recognition.*** Timely loss recognition improves the quality of earnings as they become more useful for corporate governance and debt agreements (Ball and Shivakumar 2005). We expect that recognition of losses will become timelier after SOX for Belgian private subsidiaries of U.S. listed parents and that this improvement will be stronger than local changes (if any). The findings reported in table 8 show that this is the case and thus provide support for the hypothesis of better earnings quality after SOX. The significant positive coefficient on NEGOPCF indicates that the control group displayed timely loss recognition before SOX but the interaction term (POSTSOX * NEGOPCF) shows a very significant decrease after SOX. The treatment group on the contrary had no timely loss recognition before SOX (US * NEGOPCF) but experienced a very significant improvement in timely loss recognition after SOX (US * POSTSOX * NEGOPCF). The significant negative coefficient on OPCF is consistent with the noise-reduction role of accruals (Dechow et al. 1998). The findings for the control group are consistent with the increases in upward earnings management for this group reported in tables 6 and 7. If managers of Belgian subsidiaries of Belgian listed parents want to report higher earnings they can use both positive discretionary accruals and delay the recognition of losses. If SOX provides incentives to improve earnings quality then managers of Belgian subsidiaries of U.S. listed parents would engage in less discretionary accruals management and

recognize their losses more timely. Overall, this is what we find in both univariate and multivariate tests using three measures. Combined these findings provide strong support for our hypothesis of better earnings quality after SOX for Belgian private subsidiaries of U.S. listed parents relative to a control group that is only affected by Belgian regulations.

**[Insert TABLE 8 here]**

**Robustness checks**

In this section we report the outcome of a number of robustness checks. In all multivariate analyses reported in tables 6 to 8 we adopted specific outlier treatment procedures for the dependent variables. In particular we winsorized the TACCS measure at 1%/99%, and winsorized all $EM_j$ measures at +1/-1. To test whether this affects the results, we adopted alternative outlier treatment procedures and re-ran all regressions. When the TACCS measure is winsorized at +1/-1 all findings from the timely loss recognition analysis hold. Winsorizing $EM_1$ at 1%/99% reduces the significance of the decrease in downward earnings management ($NEGEM_1$) to a t-statistic of 1,58 but the other changes remain very significant. We apply the same procedure to $EM_2$ and find that the results for $SIGNEDEM_2$ and $POSEM_2$ hold while the decrease for $ABSEM_2$ becomes insignificant (t-stat of -1,45).

We also test whether the treatment of the year 2003 as the first post-SOX year affects our results. Therefore we run all models using a POSTSOX dummy which takes the value of one starting in 2002 rather than in 2003. The $EM_1$ results show less downward earnings management but no change in upward earnings management. The $EM_2$ results show no significant changes. Finally, the change in timely loss

recognition is less significant than reported in table 8. Overall, these findings are consistent with SOX requiring an implementation period before the full effects materialize. Since 2002 can be considered as a transition year, we reran all our models without observations from this year. All our conclusions for each of the three proxies hold.

Because our analyses are based on an unbalanced panel, it is possible that the findings are driven by the entry or exit of firms over the years. Therefore we reran all our regressions using balanced samples whereby about one third of the observations are lost. The findings for $EM_1$ are confirmed and are also robust to different outlier treatment and the exclusion of 2002. The result for $ABSEM_2$ is consistent but $SIGNEDEM_2$ is no longer significant. When 2002 is excluded, the significance of $ABSEM_2$ falls just above the 10% level. Overall, these tests suggest that our main results are not driven by the unbalanced sample composition.

Finally, 87% of the treatment firms are audited by a Big 4 firm while this is the case for only 63% of the control firms (see table 3). Although we include a Big 4 dummy in our models, we further test whether our findings are driven by Big 4 effects by excluding non-Big 4 clients. This reduces the sample size by about 20%. The results for $ABSEM_1$, $NEGEM_1$, $ABSEM_2$, and $POSEM_2$ hold while the significance of $POSEM_1$ and $SIGNEDEM_2$ drops to t-statistics of -1,27 and -1,37. Interestingly, the increase in upward earnings management ($POSEM_1$) for the benchmark sample is no longer significant when non-Big 4 clients are excluded. However, the result is still confirmed by the DeFond and Park proxy ($POSEM_2$).

## VII. CONCLUSION

Various U.S. studies compare earnings quality measures before and after SOX, and report evidence suggesting that earnings quality has improved after SOX (see for example Cohen et al. (2008), Lobo and Zhou (2006), Bédard (2006) and Iliev (2007)). As these U.S. studies lack a suitable benchmark group of non-compliers, their results cannot be attributed *directly* to SOX and it is possible that the observed effects would also have occurred without SOX. In this paper we address this caveat by studying the effect of SOX outside the U.S. as this allows for a direct comparison between SOX-compliers and non-compliers. In particular we examine whether earnings quality is affected differently for Belgian subsidiaries of U.S. listed firms (SOX-compliers) and Belgian subsidiaries of Belgian listed firms (non-compliers) in the post-SOX time period. Such analysis is possible since the SOX standards also apply to foreign subsidiaries of U.S. listed firms, and since Belgian (foreign) local auditors and managers have incentives to comply with these SOX standards.

Using a "difference-in-differences" approach we find that Belgian subsidiaries of U.S. listed parents indeed manage their earnings less and recognize their losses more timely after SOX. In the same time period, a control group of Belgian subsidiaries of Belgian listed parents displays more upward earnings management and less timely loss recognition. These findings suggest that SOX is associated with an improvement of earnings quality for Belgian SOX compliers and that this change is not caused by contemporary changes in the Belgian regulatory environment (e.g. by the concurrent Belgian Corporate Governance Law).

Our study contributes to the literature on the benefits of SOX by documenting earnings quality effects of SOX using a different design and benchmark group than prior U.S. studies. Contrary to U.S. studies where it is not feasible to find a clean

benchmark group, this study provides results for SOX compliers and non-compliers with similar reporting incentives. Furthermore, our study is the first to examine the impact of SOX on foreign subsidiaries of U.S. listed companies.

The results of our study are subject to a number of limitations. First, capturing earnings quality is difficult and the measures used in this paper are imperfect. Although three different models are tested to capture different aspects of earnings quality effects of SOX, not all characteristics of earnings quality are taken into account. Second, despite the use of a "difference-in-differences" approach the improvement in earnings quality cannot be attributed fully to SOX. Even in Belgium, the period of interest (i.e. post-SOX) was characterized by several concurrent events such as increased investor scrutiny and media attention. It is possible that these also influenced earnings quality. Finally, although this study is intentionally based on just one country with a relatively weak incentive framework for earnings quality (i.e. weak investor protection and trivial litigation), this design limits the validity of the results across other countries.

Future research could examine whether the "export" of SOX differs depending on the institutional environment by comparing countries with weak and strong investor protection and different enforcement regimes. Finally, another interesting research question that arises from our findings relates to what the main drivers are of the improvement in earnings quality established after SOX. In other words, is the improvement due to auditors' response to the oversight and litigation threat, or has audit quality increased? Or is the improvement due to better internal controls which make it more difficult for management to manage earnings?

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**APPENDIX 1: Campbell (1996) industry classification:**

| | Description | U.S. SIC groups | Dummy |
|---|---|---|---|
| **1** | Petroleum industry | 13, 29 | PET1 |
| **2** | Finance/real estate industry | 60-69 | / |
| **3** | Consumer durables industry | 25, 30, 36, 37, 50, 55, 57 | CDR3 |
| **4** | Basic industry | 10, 12, 14, 24, 26, 28, 33 | BAS4 |
| **5** | Food/tobacco industry | 1, 20, 21, 54 | FTB5 |
| **6** | Construction industry | 15-17, 32, 52 | CNS6 |
| **7** | Capital goods industry | 34, 35, 38 | CAP7 |
| **8** | Transportation industry | 40-42, 44, 45, 47 | TRN8 |
| **9** | Utilities industry | 46, 48, 49 | UTI9 |
| **10** | Textiles/trade industry | 22-23, 31, 51, 53, 56, 59 | TEX10 |
| **11** | Services industry | 72, 73, 75, 80, 82, 89 | SVS11 |
| **12** | Leisure industry | 27, 58, 70, 78, 79 | LSR12 |
| | | | |

In our analyses, the financial industry (SIC 60-69) is excluded hence the lack of a dummy for this industry group. The consumer durables industry will be used as reference category in the regression models.

**TABLE 1: Variable definitions**

| *DEPENDENT VARIABLES* | |
|---|---|
| **VARIABLE** | **DEFINITION** |
| **$ABSEM_1$** | Absolute value of the discretionary accruals as calculated by the performance-adjusted Modified Jones model (Kothari et al. 2005). |
| **$POSEM_1$** | Positive discretionary accruals as calculated by the performance-adjusted Modified Jones model (Kothari et al. 2005). |
| **$NEGEM_1$** | Negative discretionary accruals as calculated by the performance-adjusted Modified Jones model (Kothari et al. 2005). |
| **$SIGNEDEM_1$** | Signed value of the discretionary accruals as calculated by the performance-adjusted Modified Jones model (Kothari et al. 2005). |
| **$ABSEM_2$** | Absolute value of the abnormal working capital accruals as calculated by the DeFond and Park (2001) model. |
| **$POSEM_2$** | Positive abnormal working capital accruals as calculated by the DeFond and Park (2001) model. |
| **$NEGEM_2$** | Negative abnormal working capital accruals as calculated by the DeFond and Park (2001) model. |
| **$SIGNEDEM_2$** | Signed value of the abnormal working capital accruals as calculated by the DeFond and Park (2001) model. |
| **TACCS** | Total accruals scaled by lagged total assets. |
| ***TEST VARIABLES*** | |
| **POSTSOX** | Dummy equal to one if the observation is from the years 2003-2005 and zero otherwise. |
| **US** | Dummy equal to one if the subsidiary has a U.S. listed parent and zero otherwise. |
| ***CONTROL VARIABLES*** | |
| **OLTDEBT** | Other long term debt scaled by total assets. |
| **LTFDEBT** | Long term financial debt scaled by total assets. |
| **OPCF** | Operational cash flow (calculated as net income minus total accruals) scaled by lagged total assets. |
| **NEGOPCF** | Equals negative values of OPCF and zero otherwise. |
| **LNTA** | Natural logarithm of total assets. |
| **BIG4** | Dummy equal to one if the auditor is a Big 4 company, zero otherwise. |
| **ORGROWTH** | Growth in operating revenue from year t-1 to year t. |
| **LAGTAXD** | Dummy equal to one if the company paid taxes in the previous book year, zero otherwise. |
| **CR** | Current ratio (higher values indicate better liquidity). |
| **RELOR** | Ratio of operating revenue of the subsidiary on operating revenue of the parent. |
| **LOSS** | Dummy equal to one if net income is negative and zero otherwise. |
| **INDUSTRY** | 10 dummies indicating membership of one of the 11 Campbell industry groups. See APPENDIX 1 for a list of the dummies. |

**TABLE 2: Sample composition and number of firm-years**

| | Firms | Firm-years $EM_1$ | Firm-years $EM_2$ | Firm-years TLR |
|---|---|---|---|---|
| **BE SOX** | 383 | 1906 | 2053 | 1981 |
| | | | | |
| **BE LOCAL** | 504 | 1960 | 2049 | 2118 |
| | | | | |
| **TOTAL** | **887** | **3866** | **4102** | **4099** |
| | | | | |

**With:**

*Samples:*

BE SOX = Belgian private subsidiaries of U.S. listed companies that meet all selection criteria discussed in section V. These companies are subject to SOX and form the treatment group.

BE LOCAL = Belgian private subsidiaries of Belgian listed companies that meet all selection criteria discussed in section V. These companies are not subject to SOX and serve as the control group.

*Proxies for earnings quality:*

$EM_1$ = discretionary accruals as calculated by the performance-adjusted Modified Jones model (Kothari et al. 2005).

$EM_2$ = abnormal working capital accruals as calculated by the DeFond and Park (2001) model.

TLR = timely loss recognition model of Ball and Shivakumar (2005).

The number of firm-years indicates the number of observations for which all necessary control variables are available. Models can thus be estimated with this number of observations.

**TABLE 3: Descriptive statistics**

**Panel A: Control variables**

| | BE SOX | | BE LOCAL | | |
|---|---|---|---|---|---|
| **Variable** | **Obs** | **Mean** *Median* | **Obs** | **Mean** *Median* | (†) |
| **OLTDEBT** | 2053 | 0,0372 | 2049 | 0,0346 | n.s. |
| | | *0,0063* | | *0,0035* | |
| **LTFDEBT** | 2053 | 0,0899 | 2049 | 0,1299 | *** |
| | | *0,0000* | | *0,0049* | |
| **OPCF** | 2053 | 0,0623 | 2049 | 0,0633 | n.s. |
| | | *0,0477* | | *0,0525* | |
| **LNTA** | 2053 | 9,6069 | 2049 | 8,9938 | *** |
| | | *9,5750* | | *8,8210* | |
| **BIG4** | 2053 | 0,8738 | 2049 | 0,6345 | *** |
| | | *1,0000* | | *1,0000* | |
| **ORGROWTH** | 2053 | 0,1507 | 2049 | 0,2339 | *** |
| | | *0,0285* | | *0,0444* | |
| **LAGTAXD** | 2053 | 0,7063 | 2049 | 0,5900 | *** |
| | | *1,0000* | | *1,0000* | |
| **CR** | 2053 | 2,1612 | 2049 | 2,3164 | n.s. |
| | | *1,2600* | | *1,1600* | |
| **RELOR** | 2053 | 0,0823 | 2049 | 0,1819 | *** |
| | | *0,0041* | | *0,0087* | |
| **LOSS** | 2053 | 0,2723 | 2049 | 0,3260 | *** |
| | | *0,0000* | | *0,0000* | |

(†) = T-test for difference in means between BE SOX sample and BE LOCAL sample. Significant differences are indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***).

**With**: OLTDEBT (other long term debt scaled by total assets); LTFDEBT (long term financial debt scaled by total assets); OPCF (operational cash flow scaled by lagged total assets); LNTA (natural logarithm of total assets); BIG4 (dummy equal to one if the auditor is a Big 4 company, zero otherwise); ORGROWTH (growth in operating revenue from year t-1 to year t); LAGTAXD (dummy equal to one if the company paid taxes in the previous book year, zero otherwise); CR (current ratio); RELOR (ratio of operating revenue of the subsidiary on operating revenue of the parent); LOSS (dummy equal to one if net income is negative and zero otherwise). The variables OLTDEBT, LTFDEBT, OPCF, ORGROWTH, CR and RELOR are winsorized at 1% and 99%.

**TABLE 3: Descriptive statistics**

**Panel B: Other variables**

| | BE SOX | | BE LOCAL | | |
|---|---|---|---|---|---|
| **Variable** | **Obs** | **Mean**<br>***Median*** | **Obs** | **Mean**<br>***Median*** | (†) |
| **ASSETS** | 2053 | 71881<br>*14400* | 2049 | 44507<br>*6775* | *** |
| **ROA** | 2034 | 5,36<br>*4,72* | 2024 | 3,58<br>*2,54* | *** |
| **AGE** | 2053 | 26,14<br>*20,00* | 2049 | 22,37<br>*18,00* | *** |
| **NSHAREH** | 2053 | 1,31<br>*1,00* | 2049 | 1,65<br>*2,00* | *** |
| **NSUBS** | 2053 | 1,14<br>*0,00* | 2049 | 1,40<br>*0,00* | *** |
| **UOOPREV** | 2053 | 19024<br>*6620* | 2049 | 4788<br>*856* | *** |
| **UOASSETS** | 1954 | 33421<br>*8871* | 2049 | 66352<br>*1549* | *** |

(†) = T-test for difference in means between BE SOX sample and BE LOCAL sample. Significant differences are indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***).

**With:** ASSETS (total assets in thousands of Euro); ROA (return on assets from AMADEUS); AGE (difference between the year of incorporation and the last year available on AMADEUS); NSHAREH (number of known shareholders); NSUBS (number of subsidiaries owned by the company); UOOPREV (operating revenue of the ultimate owner, i.e. the parent company, in millions of Euro); UOASSETS (total assets of the ultimate owner, i.e. the parent company, in millions of Euro). The variables ASSETS, ROA, AGE, NSHAREH, NSUBS, UOOPREV and UOASSETS are winsorized at 1% and 99%.

**TABLE 3: Descriptive statistics**

**Panel C: Composition of the sample by industry**

| | | BE SOX | | BE LOCAL | |
|---|---|---|---|---|---|
| **Industry** | **Dummy** | **# Obs** | **%** | **# Obs** | **%** |
| **Petroleum** | **PET1** | 14 | 0,68% | 0 | 0,00% |
| **Consumer durables** | **CDR3** | 657 | 32,00% | 439 | 21,43% |
| **Basic industry** | **BAS4** | 274 | 13,35% | 152 | 7,42% |
| **Food/Tobacco** | **FTB5** | 66 | 3,21% | 231 | 11,27% |
| **Construction** | **CONS6** | 9 | 0,44% | 126 | 6,15% |
| **Capital goods** | **CAP7** | 171 | 8,33% | 70 | 3,42% |
| **Transportation** | **TRN8** | 44 | 2,14% | 160 | 7,81% |
| **Utilities** | **UTI9** | 34 | 1,66% | 99 | 4,83% |
| **Textiles/Trade** | **TEX10** | 400 | 19,48% | 307 | 14,98% |
| **Services** | **SVS11** | 322 | 15,68% | 325 | 15,86% |
| **Leisure** | **LSR12** | 62 | 3,02% | 140 | 6,83% |
| **TOTAL** | | **2053** | **100,00%** | **2049** | **100,00%** |
| | | | | | |

**For more information on the industry classification please consult APPENDIX 1.**

**TABLE 4: Univariate results**

**Panel A: Comparison of accruals measures between the two samples (1999-2005)**

| | BE SOX | | BE LOCAL | | |
|---|---|---|---|---|---|
| **Variable** | **Obs** | **Mean**<br>*Median* | **Obs** | **Mean**<br>*Median* | (†) |
| **$ABSEM_1$** | 1906 | 0,2095<br>*0,1130* | 1960 | 0,2522<br>*0,1336* | *** |
| **$POSEM_1$** | 908 | 0,1984<br>*0,1089* | 1000 | 0,2655<br>*0,1365* | *** |
| **$NEGEM_1$** | 998 | -0,2200<br>*-0,1187* | 960 | -0,2380<br>*-0,1306* | n.s. |
| **$SIGNEDEM_1$** | 1906 | -0,0210<br>*-0,0068* | 1960 | 0,0187<br>*0,0044* | *** |
| **$ABSEM_2$** | 2053 | 0,1762<br>*0,0926* | 2049 | 0,1973<br>*0,1021* | *** |
| **$POSEM_2$** | 1118 | 0,1757<br>*0,0928* | 1052 | 0,2028<br>*0,1084* | *** |
| **$NEGEM_2$** | 935 | -0,1770<br>*-0,0916* | 997 | -0,1910<br>*-0,0985* | n.s. |
| **$SIGNEDEM_2$** | 2053 | 0,0151<br>*0,0104* | 2049 | 0,0110<br>*0,0022* | n.s. |
| **TACCS** | 1981 | -0,0400<br>*-0,0279* | 2118 | -0,0580<br>*-0,0525* | * |

(†) = T-test for difference in means between BE SOX sample and BE LOCAL sample. Significant differences are indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***).

BE SOX = treatment group (Belgian private subsidiaries of U.S. listed parents);
BE LOCAL = control group (Belgian private subsidiaries of Belgian listed parents).

**With**: $EM_1$ (discretionary accruals as calculated by the performance-adjusted Modified Jones model) and $EM_2$ (abnormal working capital accruals following the DeFond and Park model). ABS indicates that the absolute values are used, POS the positive values, NEG the negative values and SIGNED means the signed values. TACCS (total accruals scaled by lagged total assets, see footnote 15).

**In all panels of this table, the variables $ABSEM_1$, $POSEM_1$, $NEGEM_1$, $SIGNEDEM_1$, $ABSEM_2$, $POSEM_2$, $NEGEM_2$, and $SIGNEDEM_2$ are winsorized at +1 and -1 as in Francis and Yu (2007). The variable TACCS is winsorized at 1% and 99% (as in Brown et al. 2008). This is consistent with the outlier treatment in our multivariate models.**

**TABLE 4: Univariate results**

**Panel B: Earnings management comparison before and after SOX within groups**

| | BE SOX | | | BE LOCAL | | |
|---|---|---|---|---|---|---|
| **$ABSEM_1$** | **PRE-SOX** | **POST-SOX** | **T-test** | **PRE-SOX** | **POST-SOX** | **T-test** |
| mean | 0,2410 | 0,1810 | *** | 0,2421 | 0,2646 | n.s. |
| median | 0,1287 | 0,1014 | | 0,1247 | 0,1428 | |
| N | 776 | 840 | | 692 | 979 | |
| **$POSEM_1$** | **PRE-SOX** | **POST-SOX** | **T-test** | **PRE-SOX** | **POST-SOX** | **T-test** |
| mean | 0,2002 | 0,1797 | n.s. | 0,2358 | 0,2959 | *** |
| median | 0,1197 | 0,0901 | | 0,1229 | 0,1677 | |
| N | 362 | 400 | | 363 | 512 | |
| **$NEGEM_1$** | **PRE-SOX** | **POST-SOX** | **T-test** | **PRE-SOX** | **POST-SOX** | **T-test** |
| mean | -0,2770 | -0,1820 | *** | -0,2490 | -0,2300 | n.s. |
| median | -0,1435 | -0,1092 | | -0,1300 | -0,1225 | |
| N | 414 | 440 | | 329 | 467 | |
| **$SIGNEDEM_1$** | **PRE-SOX** | **POST-SOX** | **T-test** | **PRE-SOX** | **POST-SOX** | **T-test** |
| mean | -0,0540 | -0,0100 | *** | 0,0052 | 0,0450 | ** |
| median | -0,0093 | -0,0064 | | 0,0106 | 0,0123 | |
| N | 776 | 840 | | 692 | 979 | |
| **$ABSEM_2$** | **PRE-SOX** | **POST-SOX** | **T-test** | **PRE-SOX** | **POST-SOX** | **T-test** |
| M | 0,1872 | 0,1627 | ** | 0,1872 | 0,2047 | n.s. |
| median | 0,1006 | 0,0840 | | 0,0972 | 0,1067 | |
| N | 824 | 924 | | 728 | 1029 | |
| **$POSEM_2$** | **PRE-SOX** | **POST-SOX** | **T-test** | **PRE-SOX** | **POST-SOX** | **T-test** |
| mean | 0,1846 | 0,1579 | * | 0,1781 | 0,2236 | *** |
| median | 0,0996 | 0,0824 | | 0,0929 | 0,1232 | |
| N | 442 | 519 | | 362 | 551 | |
| **$NEGEM_2$** | **PRE-SOX** | **POST-SOX** | **T-test** | **PRE-SOX** | **POST-SOX** | **T-test** |
| mean | -0,1903 | -0,1689 | n.s. | -0,1963 | -0,1830 | n.s. |
| median | -0,1029 | -0,0860 | | -0,1013 | -0,0849 | |
| N | 382 | 405 | | 366 | 478 | |
| **$SIGNEDEM_2$** | **PRE-SOX** | **POST-SOX** | **T-test** | **PRE-SOX** | **POST-SOX** | **T-test** |
| mean | 0,0108 | 0,0146 | n.s. | -0,0100 | 0,0347 | *** |
| median | 0,0086 | 0,0153 | | -0,0012 | 0,0100 | |
| N | 824 | 924 | | 728 | 1029 | |

T-tests for difference in means between PRE-SOX and POST-SOX within each sample. Significant differences are indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***). PRE-SOX (1999 – 2001); POST-SOX (2003 – 2005); BE SOX (treatment group); BE LOCAL (control group).

**With**: $EM_1$ (discretionary accruals as calculated by the performance-adjusted Modified Jones model) and $EM_2$ (abnormal working capital accruals following the DeFond and Park model). ABS indicates that the absolute values are used, POS the positive values, NEG the negative values and SIGNED means the signed values.

**TABLE 4: Univariate results**

**Panel C: Tests of equality of means between groups before and after SOX**

| | PRE-SOX | | | POST-SOX | | |
|---|---|---|---|---|---|---|
| **$ABSEM_1$** | **BE SOX** | **BE LOCAL** | **T-test** | **BE SOX** | **BE LOCAL** | **T-test** |
| mean | 0,2410 | 0,2421 | n.s. | 0,1810 | 0,2646 | *** |
| median | 0,1287 | 0,1247 | | 0,1014 | 0,1428 | |
| N | 776 | 692 | | 840 | 979 | |
| **$POSEM_1$** | **BE SOX** | **BE LOCAL** | **T-test** | **BE SOX** | **BE LOCAL** | **T-test** |
| mean | 0,2002 | 0,2358 | * | 0,1797 | 0,2959 | *** |
| median | 0,1197 | 0,1229 | | 0,0901 | 0,1677 | |
| N | 362 | 363 | | 400 | 512 | |
| **$NEGEM_1$** | **BE SOX** | **BE LOCAL** | **T-test** | **BE SOX** | **BE LOCAL** | **T-test** |
| mean | -0,2770 | -0,2490 | n.s. | -0,1820 | -0,2300 | *** |
| median | -0,1435 | -0,1300 | | -0,1092 | -0,1225 | |
| N | 414 | 329 | | 440 | 467 | |
| **$SIGNEDEM_1$** | **BE SOX** | **BE LOCAL** | **T-test** | **BE SOX** | **BE LOCAL** | **T-test** |
| mean | -0,0540 | 0,0052 | *** | -0,0100 | 0,0450 | *** |
| median | -0,0093 | 0,0106 | | -0,0064 | 0,0123 | |
| N | 776 | 692 | | 840 | 979 | |
| **$ABSEM_2$** | **BE SOX** | **BE LOCAL** | **T-test** | **BE SOX** | **BE LOCAL** | **T-test** |
| mean | 0,1872 | 0,1872 | n.s. | 0,1627 | 0,2047 | *** |
| median | 0,1006 | 0,0972 | | 0,0840 | 0,1067 | |
| N | 824 | 728 | | 924 | 1029 | |
| **$POSEM_2$** | **BE SOX** | **BE LOCAL** | **T-test** | **BE SOX** | **BE LOCAL** | **T-test** |
| mean | 0,1846 | 0,1781 | n.s. | 0,1579 | 0,2236 | *** |
| median | 0,0996 | 0,0929 | | 0,0824 | 0,1232 | |
| N | 442 | 362 | | 519 | 551 | |
| **$NEGEM_2$** | **BE SOX** | **BE LOCAL** | **T-test** | **BE SOX** | **BE LOCAL** | **T-test** |
| mean | -0,1903 | -0,1963 | n.s. | -0,1689 | -0,1830 | n.s. |
| median | -0,1029 | -0,1013 | | -0,0860 | -0,0849 | |
| N | 382 | 366 | | 405 | 478 | |
| **$SIGNEDEM_2$** | **BE SOX** | **BE LOCAL** | **T-test** | **BE SOX** | **BE LOCAL** | **T-test** |
| mean | 0,0108 | -0,0100 | n.s. | 0,0146 | 0,0347 | n.s. |
| median | 0,0086 | -0,0012 | | 0,0153 | 0,0100 | |
| N | 824 | 728 | | 924 | 1029 | |

T-tests for difference in means between BE SOX and BE LOCAL sample in both the PRE-SOX and POST-SOX period. Significant differences are indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***). PRE-SOX (1999 – 2001); POST-SOX (2003 – 2005); BE SOX (treatment group); BE LOCAL (control group).

**With**: $EM_1$ (discretionary accruals as calculated by the performance-adjusted Modified Jones model) and $EM_2$ (abnormal working capital accruals following the DeFond and Park model). ABS indicates that the absolute values are used, POS the positive values, NEG the negative values and SIGNED means the signed values.

## TABLE 5: Correlation matrix (BE SOX and BE LOCAL; Pearson above diagonal, Spearman below diagonal)

| Variable | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1 $ABSEM_1$** | 1,000 | 1,000 | -1,000 | -0,031 | 0,589 | 0,633 | -0,542 | 0,038 | -0,079 | -0,010 | -0,032 | -0,087 | 0,007 | 0,073 | -0,211 | -0,042 | 0,211 | -0,144 | -0,011 | -0,040 | 0,109 |
| **2 $POSEM_1$** | 1,000 | 1,000 | NA | 1,000 | 0,609 | 0,701 | -0,299 | 0,421 | 0,460 | -0,459 | 0,023 | -0,117 | 0,010 | 0,119 | -0,213 | -0,056 | 0,192 | -0,192 | 0,024 | -0,035 | 0,126 |
| **3 $NEGEM_1$** | -1,000 | NA | 1,000 | 1,000 | -0,571 | -0,418 | 0,617 | 0,351 | 0,549 | -0,421 | 0,085 | 0,060 | -0,004 | -0,025 | 0,210 | 0,027 | -0,231 | 0,098 | 0,049 | 0,047 | -0,093 |
| **4 $SIGNEDEM_1$** | -0,011 | 1,000 | 1,000 | 1,000 | 0,054 | 0,447 | 0,380 | 0,531 | 0,633 | -0,571 | 0,047 | -0,041 | 0,006 | 0,075 | -0,014 | -0,030 | -0,005 | -0,062 | 0,062 | 0,014 | -0,009 |
| **5 $ABSEM_2$** | 0,557 | 0,573 | -0,545 | 0,052 | 1,000 | 1,000 | -1,000 | 0,091 | 0,033 | -0,080 | -0,008 | -0,042 | -0,005 | 0,043 | -0,154 | -0,009 | 0,421 | -0,142 | 0,027 | -0,059 | 0,127 |
| **6 $POSEM_2$** | 0,570 | 0,657 | -0,279 | 0,523 | 1,000 | 1,000 | NA | 1,000 | 0,665 | -0,516 | 0,008 | -0,059 | 0,001 | 0,080 | -0,159 | -0,002 | 0,414 | -0,157 | 0,082 | -0,055 | 0,103 |
| **7 $NEGEM_2$** | -0,545 | -0,304 | 0,618 | 0,473 | -1,000 | NA | 1,000 | 1,000 | 0,705 | -0,419 | 0,028 | 0,024 | 0,013 | 0,006 | 0,147 | 0,018 | -0,431 | 0,125 | 0,052 | 0,063 | -0,157 |
| **8 $SIGNEDEM_2$** | -0,011 | 0,445 | 0,446 | 0,606 | 0,081 | 1,000 | 1,000 | 1,000 | 0,772 | -0,584 | 0,033 | 0,001 | 0,002 | 0,046 | -0,032 | 0,005 | 0,026 | -0,014 | 0,097 | -0,007 | -0,075 |
| **9 TACCS** | -0,071 | 0,405 | 0,551 | 0,657 | 0,043 | 0,681 | 0,689 | 0,803 | 1,000 | -0,736 | 0,047 | 0,038 | -0,020 | 0,000 | 0,062 | 0,009 | -0,003 | 0,035 | 0,114 | 0,017 | -0,152 |
| **10 OPCF** | 0,042 | -0,359 | -0,446 | -0,578 | -0,074 | -0,471 | -0,398 | -0,589 | -0,724 | 1,000 | -0,034 | -0,022 | -0,038 | -0,116 | 0,031 | -0,004 | -0,009 | 0,126 | -0,055 | -0,027 | -0,219 |
| **11 POSTSOX** | -0,022 | 0,016 | 0,060 | 0,027 | -0,015 | 0,015 | 0,051 | 0,043 | 0,060 | -0,041 | 1,000 | 0,000 | 0,023 | 0,000 | 0,031 | 0,049 | -0,036 | 0,029 | 0,063 | 0,006 | -0,004 |
| **12 US** | -0,084 | -0,112 | 0,057 | -0,040 | -0,034 | -0,045 | 0,023 | 0,017 | 0,073 | -0,034 | 0,000 | 1,000 | 0,011 | -0,101 | 0,192 | 0,266 | -0,041 | 0,130 | -0,014 | -0,072 | -0,050 |
| **13 OLTDEBT** | -0,093 | -0,087 | 0,100 | -0,038 | -0,108 | -0,092 | 0,127 | -0,018 | -0,029 | 0,092 | 0,012 | 0,073 | 1,000 | -0,061 | 0,093 | 0,018 | -0,022 | -0,029 | -0,034 | -0,010 | 0,061 |
| **14 LTFDEBT** | 0,018 | 0,064 | 0,027 | 0,054 | -0,064 | -0,053 | 0,075 | -0,016 | -0,086 | 0,070 | -0,055 | -0,211 | 0,059 | 1,000 | 0,093 | -0,041 | 0,054 | -0,152 | -0,077 | -0,017 | 0,123 |
| **15 LNTA** | -0,202 | -0,233 | 0,171 | -0,039 | -0,177 | -0,183 | 0,168 | -0,040 | 0,024 | 0,065 | 0,027 | 0,214 | 0,386 | 0,151 | 1,000 | 0,201 | 0,014 | 0,166 | -0,151 | 0,114 | -0,131 |
| **16 BIG4** | -0,033 | -0,039 | 0,026 | -0,028 | -0,013 | -0,012 | 0,015 | -0,001 | -0,004 | -0,008 | 0,049 | 0,266 | 0,060 | -0,115 | 0,209 | 1,000 | 0,017 | 0,012 | 0,056 | -0,011 | -0,007 |
| **17 ORGROWTH** | 0,095 | 0,076 | -0,115 | 0,015 | 0,151 | 0,151 | -0,152 | -0,013 | 0,013 | 0,066 | -0,080 | -0,040 | -0,038 | 0,080 | 0,074 | 0,028 | 1,000 | -0,082 | -0,028 | -0,012 | 0,040 |
| **18 LAGTAXD** | -0,119 | -0,173 | 0,064 | -0,064 | -0,099 | -0,108 | 0,090 | 0,000 | 0,052 | 0,146 | 0,029 | 0,130 | 0,090 | -0,073 | 0,157 | 0,012 | 0,007 | 1,000 | -0,018 | -0,013 | -0,318 |
| **19 CR** | -0,072 | -0,013 | 0,130 | 0,113 | -0,037 | 0,076 | 0,168 | 0,185 | 0,300 | -0,093 | 0,062 | 0,074 | 0,001 | -0,140 | -0,137 | 0,069 | -0,090 | 0,170 | 1,000 | -0,035 | -0,051 |
| **20 RELOR** | -0,107 | -0,136 | 0,080 | -0,048 | -0,107 | -0,123 | 0,087 | -0,044 | -0,030 | 0,048 | 0,015 | -0,116 | 0,240 | 0,200 | 0,447 | -0,065 | 0,108 | 0,075 | -0,086 | 1,000 | -0,004 |
| **21 LOSS** | 0,085 | 0,101 | -0,070 | -0,018 | 0,108 | 0,067 | -0,155 | -0,098 | -0,170 | -0,270 | -0,004 | -0,050 | -0,046 | 0,063 | -0,121 | -0,007 | -0,060 | -0,318 | -0,234 | -0,024 | 1,000 |

**With**: $EM_1$ (discretionary accruals as calculated by the performance-adjusted Modified Jones model) and $EM_2$ (abnormal working capital accruals following the DeFond and Park model). ABS indicates that the absolute values are used, POS the positive values, NEG the negative values and SIGNED means the signed values. TACCS (total accruals scaled by lagged total assets); OPCF (operational cash flow scaled by lagged total assets); POSTSOX (dummy equal to one if the observation is from the years 2003 - 2005 and zero otherwise); US (dummy equal to one if the subsidiary has a U.S. listed parent and zero otherwise); OLTDEBT (other long term debt scaled by total assets); LTFDEBT (long term financial debt scaled by total assets); LNTA (natural logarithm of total assets); BIG4 (dummy equal to one if the auditor is a Big 4 company, zero otherwise); ORGROWTH (growth in operating revenue from year t-1 to year t); LAGTAXD (dummy equal to one if the company paid taxes in the previous book year, zero otherwise); CR (current ratio); RELOR (ratio of operating revenue of the subsidiary on operating revenue of the parent); LOSS (dummy equal to one if net income is negative and zero otherwise). Industry dummies are not reported for brevity. All correlations with industry dummies were less than 30%.

## TABLE 6: Regression results $EM_1$ (performance-adjusted Modified Jones)

## Panel A: Pre-SOX period (1999-2001)

| | $EM_1$: Performance-adjusted Modified Jones | | | |
|---|---|---|---|---|
| | $ABSEM_1$ | $POSEM_1$ | $NEGEM_1$ | $SIGNEDEM_1$ |
| **Intercept** | 0,508 *** | 0,423 *** | -0,426 *** | 0,082 |
| | (10,26) | (8,28) | (-6,27) | (1,63) |
| **US** | 0,003 | -0,018 | -0,025 | -0,038 ** |
| | (0,17) | (-1,07) | (-1,10) | (-2,22) |
| **OLTDEBT** | 0,063 | 0,162 | -0,123 | -0,061 |
| | (0,66) | (1,42) | (-0,94) | (-0,59) |
| **LTFDEBT** | 0,122 ** | 0,074 | -0,081 | 0,008 |
| | (2,54) | (1,64) | (-1,24) | (0,15) |
| **OPCF** | 0,055 | -0,409 *** | -0,374 *** | -0,668 *** |
| | (1,40) | (-6,50) | (-7,06) | (-14,93) |
| **LNTA** | -0,028 *** | -0,019 *** | 0,026 *** | 0,000 |
| | (-5,37) | (-3,72) | (3,92) | (-0,06) |
| **BIG4** | 0,028 | 0,001 | -0,016 | -0,018 |
| | (1,47) | (0,07) | (-0,59) | (-0,93) |
| **ORGROWTH** | 0,053 *** | 0,056 *** | -0,048 *** | 0,001 |
| | (5,18) | (3,42) | (-2,71) | (0,04) |
| **LAGTAXD** | -0,038 ** | -0,049 ** | 0,002 | -0,037 ** |
| | (-2,28) | (-2,50) | (0,09) | (-2,05) |
| **CR** | -0,001 | 0,000 | 0,001 | 0,003 |
| | (-0,77) | (-0,03) | (0,30) | (1,21) |
| **RELOR** | 0,000 | 0,000 | 0,000 | 0,000 |
| | (0,39) | (-0,60) | (-1,26) | (-1,47) |
| **LOSS** | 0,003 | -0,056 ** | -0,044 * | -0,126 *** |
| | (0,14) | (-2,36) | (-1,81) | (-6,13) |
| **Industry controls** | **included** | **included** | **included** | **included** |
| **Observations** | **1468** | **725** | **743** | **1468** |
| **$R^2$** | **0,127** | **0,340** | **0,245** | **0,334** |
| **Adjusted $R^2$** | **0,115** | **0,322** | **0,224** | **0,325** |

Standard errors are clustered per firm to correct for unobserved within-firm correlation patterns (Petersen 2009). T-stats are reported in brackets below the coefficients. Significance is indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***). Coefficients on the industry dummies are not reported for brevity.

**With**: $ABSEM_1$ (absolute value of the Modified Jones discretionary accruals); $POSEM_1$ (positive Modified Jones discretionary accruals); $NEGEM_1$ (negative Modified Jones discretionary accruals); $SIGNEDEM_1$ (signed Modified Jones discretionary accruals); US (dummy equal to one if the subsidiary has a U.S. listed parent and zero otherwise); OLTDEBT (other long term debt scaled by total assets); LTFDEBT (long term financial debt scaled by total assets); OPCF (operational cash flow scaled by lagged total assets); LNTA (natural logarithm of total assets); BIG4 (dummy equal to one if the auditor is a Big 4 company, zero otherwise); ORGROWTH (growth in operating revenue from year t-1 to year t); LAGTAXD (dummy equal to one if the company paid taxes in the previous book year, zero otherwise); CR (current ratio); RELOR (ratio of operating revenue of the subsidiary on operating revenue of the parent); LOSS (dummy equal to one if net income is negative and zero otherwise).

## TABLE 6: Regression results $EM_1$ (performance-adjusted Modified Jones)

## Panel B: Post-SOX period (2003-2005)

| | $EM_1$: Performance-adjusted Modified Jones | | | |
|---|---|---|---|---|
| | **$ABSEM_1$** | **$POSEM_1$** | **$NEGEM_1$** | **$SIGNEDEM_1$** |
| **Intercept** | 0,428 *** (11,13) | 0,484 *** (10,72) | -0,217 *** (-4,59) | 0,177 *** (4,30) |
| **US** | -0,035 ** (-2,45) | -0,050 *** (-3,33) | 0,017 (1,20) | -0,007 (-0,59) |
| **OLTDEBT** | 0,164 * (1,89) | 0,054 (0,64) | -0,270 ** (-2,33) | -0,043 (-0,47) |
| **LTFDEBT** | 0,034 (1,14) | 0,037 (1,06) | -0,025 (-0,72) | -0,002 (-0,06) |
| **OPCF** | -0,028 (-0,76) | -0,459 *** (-10,18) | -0,530 *** (-10,46) | -0,740 *** (-21,11) |
| **LNTA** | -0,021 *** (-5,26) | -0,028 *** (-5,79) | 0,011 *** (2,65) | -0,011 *** (-2,70) |
| **BIG4** | -0,030 * (-1,78) | -0,024 (-1,19) | 0,015 (0,81) | -0,028 * (-1,65) |
| **ORGROWTH** | 0,047 *** (5,98) | 0,026 ** (2,50) | -0,040 *** (-3,95) | -0,006 (-0,51) |
| **LAGTAXD** | -0,041 *** (-2,87) | -0,016 (-0,97) | 0,041 *** (2,66) | 0,002 (0,13) |
| **CR** | 0,002 (1,00) | 0,000 (0,19) | 0,000 (-0,10) | 0,000 (-0,11) |
| **RELOR** | 0,000 *** (-2,68) | 0,000 (-0,49) | 0,000 (1,53) | 0,000 (0,44) |
| **LOSS** | 0,036 ** (2,41) | -0,053 *** (-3,12) | -0,093 *** (-6,17) | -0,121 *** (-8,38) |
| **Industry controls** | **included** | **included** | **included** | **included** |
| **Observations** | **1819** | **912** | **907** | **1819** |
| **$R^2$** | **0,151** | **0,395** | **0,420** | **0,457** |
| **Adjusted $R^2$** | **0,142** | **0,381** | **0,407** | **0,451** |

Standard errors are clustered per firm to correct for unobserved within-firm correlation patterns (Petersen 2009). T-stats are reported in brackets below the coefficients. Significance is indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***). Coefficients on the industry dummies are not reported for brevity.

**With**: $ABSEM_1$ (absolute value of the Modified Jones discretionary accruals); $POSEM_1$ (positive Modified Jones discretionary accruals); $NEGEM_1$ (negative Modified Jones discretionary accruals); $SIGNEDEM_1$ (signed Modified Jones discretionary accruals); US (dummy equal to one if the subsidiary has a U.S. listed parent and zero otherwise); OLTDEBT (other long term debt scaled by total assets); LTFDEBT (long term financial debt scaled by total assets); OPCF (operational cash flow scaled by lagged total assets); LNTA (natural logarithm of total assets); BIG4 (dummy equal to one if the auditor is a Big 4 company, zero otherwise); ORGROWTH (growth in operating revenue from year t-1 to year t); LAGTAXD (dummy equal to one if the company paid taxes in the previous book year, zero otherwise); CR (current ratio); RELOR (ratio of operating revenue of the subsidiary on operating revenue of the parent); LOSS (dummy equal to one if net income is negative and zero otherwise).

## TABLE 6: Regression results $EM_1$ (performance-adjusted Modified Jones)

## Panel C: Full sample period (1999-2005)

| | $EM_1$: Performance-adjusted Modified Jones | | | |
|---|---|---|---|---|
| | $ABSEM_1$ | $POSEM_1$ | $NEGEM_1$ | $SIGNEDEM_1$ |
| **Intercept** | 0,460 *** (14,88) | 0,438 *** (12,18) | -0,317 *** (-8,09) | 0,110 *** (3,50) |
| **POSTSOX** | 0,014 (1,21) | 0,029 ** (2,02) | 0,004 (0,24) | 0,019 (1,46) |
| **US** | 0,017 (1,23) | 0,003 (0,23) | -0,024 (-1,42) | -0,007 (-0,53) |
| **US * POSTSOX** | -0,060 *** (-3,70) | -0,055 *** (-2,90) | 0,052 *** (2,63) | -0,005 (-0,31) |
| **OLTDEBT** | 0,127 ** (2,02) | 0,109 * (1,73) | -0,203 ** (-2,57) | -0,035 (-0,55) |
| **LTFDEBT** | 0,054 ** (2,08) | 0,042 (1,46) | -0,039 (-1,26) | -0,005 (-0,14) |
| **OPCF** | -0,001 (-0,02) | -0,442 *** (-12,83) | -0,441 *** (-11,54) | -0,717 *** (-27,62) |
| **LNTA** | -0,025 *** (-8,13) | -0,024 *** (-6,81) | 0,019 *** (5,26) | -0,005 (-1,51) |
| **BIG4** | -0,004 (-0,31) | -0,016 (-1,11) | -0,005 (-0,35) | -0,027 ** (-2,09) |
| **ORGROWTH** | 0,054 *** (8,92) | 0,037 *** (4,27) | -0,047 *** (-4,51) | -0,003 (-0,31) |
| **LAGTAXD** | -0,043 *** (-4,16) | -0,033 ** (-2,53) | 0,026 ** (2,10) | -0,013 (-1,25) |
| **CR** | 0,000 (0,33) | 0,000 (0,25) | 0,001 (0,47) | 0,001 (0,68) |
| **RELOR** | 0,000 (-1,34) | 0,000 (-1,32) | 0,000 (-0,36) | 0,000 (-1,01) |
| **LOSS** | 0,022 ** (2,06) | -0,052 *** (-3,88) | -0,068 *** (-5,24) | -0,122 *** (-10,84) |
| **Industry controls** | **included** | **included** | **included** | **included** |
| **Observations** | **3866** | **1908** | **1958** | **3866** |
| **$R^2$** | **0,116** | **0,343** | **0,294** | **0,397** |
| **Adjusted $R^2$** | **0,111** | **0,335** | **0,286** | **0,393** |

Standard errors are clustered per firm to correct for unobserved within-firm correlation patterns (Petersen 2009). T-stats are reported in brackets below the coefficients. Significance is indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***). Coefficients on the industry dummies are not reported for brevity.

**With**: $ABSEM_1$ (absolute value of the Modified Jones discretionary accruals); $POSEM_1$ (positive Modified Jones discretionary accruals); $NEGEM_1$ (negative Modified Jones discretionary accruals); $SIGNEDEM_1$ (signed Modified Jones discretionary accruals); POSTSOX (dummy equal to one if the observation is from the years 2003 - 2005 and zero otherwise); US (dummy equal to one if the subsidiary has a U.S. listed parent and zero otherwise); OLTDEBT (other long term debt scaled by total assets); LTFDEBT (long term financial debt scaled by total assets); OPCF (operational cash flow scaled by lagged total assets); LNTA (natural logarithm of total assets); BIG4 (dummy equal to one if the auditor is a Big 4 company, zero otherwise); ORGROWTH (growth in operating revenue from year t-1 to year t); LAGTAXD (dummy equal to one if the company paid taxes in the previous book year, zero otherwise); CR (current ratio); RELOR (ratio of operating revenue of the subsidiary on operating revenue of the parent); LOSS (dummy equal to one if net income is negative and zero otherwise).

## TABLE 7: Regression results $EM_2$ (DeFond and Park)

## Panel A: Pre-SOX period (1999-2001)

| | $EM_2$: DeFond and Park abnormal working capital accruals | | | |
|---|---|---|---|---|
| | **$ABSEM_2$** | **$POSEM_2$** | **$NEGEM_2$** | **$SIGNEDEM_2$** |
| **Intercept** | 0,391 *** (8,64) | 0,319 *** (7,11) | -0,275 *** (-4,25) | 0,089 ** (1,99) |
| **US** | 0,004 (0,24) | 0,001 (0,07) | 0,018 (0,85) | 0,026 * (1,76) |
| **OLTDEBT** | -0,103 (-1,00) | -0,026 (-0,17) | -0,066 (-0,60) | -0,203 ** (-2,21) |
| **LTFDEBT** | 0,084 * (1,79) | -0,024 (-0,55) | -0,043 (-0,67) | 0,002 (0,06) |
| **OPCF** | -0,014 (-0,33) | -0,514 *** (-7,85) | -0,400 *** (-6,78) | -0,656 *** (-15,76) |
| **LNTA** | -0,020 *** (-4,20) | -0,014 *** (-3,56) | 0,016 ** (2,41) | -0,003 (-0,69) |
| **BIG4** | 0,019 (1,14) | -0,001 (-0,03) | -0,024 (-1,11) | -0,017 (-1,16) |
| **LAGTAXD** | -0,057 *** (-3,44) | -0,050 *** (-2,63) | 0,045 ** (2,32) | -0,004 (-0,29) |
| **CR** | 0,000 (0,15) | 0,003 (1,17) | 0,002 (1,43) | 0,003 (1,54) |
| **RELOR** | 0,000 (-1,12) | 0,000 *** (-2,69) | 0,000 (1,39) | 0,000 (-0,67) |
| **LOSS** | 0,029 * (1,73) | -0,072 *** (-3,33) | -0,103 *** (-5,01) | -0,151 *** (-9,40) |
| **Industry controls** | **included** | **included** | **included** | **included** |
| **Observations** | **1552** | **804** | **748** | **1552** |
| **$R^2$** | **0,070** | **0,371** | **0,266** | **0,425** |
| **Adjusted $R^2$** | **0,058** | **0,355** | **0,246** | **0,417** |

Standard errors are clustered per firm to correct for unobserved within-firm correlation patterns (Petersen 2009). T-stats are reported in brackets below the coefficients. Significance is indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***). Coefficients on the industry dummies are not reported for brevity.

**With**: $ABSEM_2$ (absolute value of the DeFond and Park abnormal working capital accruals); $POSEM_2$ (positive DeFond and Park abnormal working capital accruals); $NEGEM_2$ (negative DeFond and Park abnormal working capital accruals); $SIGNEDEM_2$ (signed DeFond and Park abnormal working capital accruals); US (dummy equal to one if the subsidiary has a U.S. listed parent and zero otherwise); OLTDEBT (other long term debt scaled by total assets); LTFDEBT (long term financial debt scaled by total assets); OPCF (operational cash flow scaled by lagged total assets); LNTA (natural logarithm of total assets); BIG4 (dummy equal to one if the auditor is a Big 4 company, zero otherwise); LAGTAXD (dummy equal to one if the company paid taxes in the previous book year, zero otherwise); CR (current ratio); RELOR (ratio of operating revenue of the subsidiary on operating revenue of the parent); LOSS (dummy equal to one if net income is negative and zero otherwise).

## TABLE 7: Regression results $EM_2$ (DeFond and Park)

## Panel B: Post-SOX period (2003-2005)

| | $EM_2$: DeFond and Park abnormal working capital accruals | | | |
|---|---|---|---|---|
| | $ABSEM_2$ | $POSEM_2$ | $NEGEM_2$ | $SIGNEDEM_2$ |
| **Intercept** | 0,269 *** (7,22) | 0,266 *** (6,06) | -0,241 *** (-4,60) | 0,057 (1,37) |
| **US** | -0,018 (-1,27) | -0,033 ** (-2,27) | -0,010 (-0,54) | -0,017 (-1,29) |
| **OLTDEBT** | 0,076 (0,64) | 0,081 (1,04) | -0,129 (-1,18) | 0,021 (0,35) |
| **LTFDEBT** | 0,009 (0,30) | -0,018 (-0,48) | -0,046 (-1,03) | -0,056 (-1,43) |
| **OPCF** | -0,022 (-0,55) | -0,440 *** (-6,59) | -0,428 *** (-7,96) | -0,631 *** (-13,96) |
| **LNTA** | -0,009 ** (-2,19) | -0,008 ** (-2,08) | 0,014 *** (2,66) | 0,002 (0,56) |
| **BIG4** | -0,007 (-0,42) | -0,006 (-0,34) | 0,017 (0,77) | -0,002 (-0,10) |
| **LAGTAXD** | -0,043 *** (-3,15) | -0,027 * (-1,65) | 0,063 *** (3,57) | 0,022 (1,52) |
| **CR** | 0,002 (1,07) | 0,003 ** (2,06) | 0,002 (0,95) | 0,003 ** (2,45) |
| **RELOR** | 0,000 *** (-4,84) | 0,000 *** (-3,57) | 0,000 ** (2,52) | 0,000 (-1,41) |
| **LOSS** | 0,044 *** (2,84) | -0,048 ** (-2,48) | -0,119 *** (-5,72) | -0,137 *** (-8,66) |
| **Industry controls** | **included** | **included** | **included** | **included** |
| **Observations** | **1953** | **1070** | **883** | **1953** |
| **$R^2$** | **0,058** | **0,284** | **0,305** | **0,375** |
| **Adjusted $R^2$** | **0,048** | **0,270** | **0,289** | **0,369** |

Standard errors are clustered per firm to correct for unobserved within-firm correlation patterns (Petersen 2009). T-stats are reported in brackets below the coefficients. Significance is indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***). Coefficients on the industry dummies are not reported for brevity.

**With**: $ABSEM_2$ (absolute value of the DeFond and Park abnormal working capital accruals); $POSEM_2$ (positive DeFond and Park abnormal working capital accruals); $NEGEM_2$ (negative DeFond and Park abnormal working capital accruals); $SIGNEDEM_2$ (signed DeFond and Park abnormal working capital accruals); US (dummy equal to one if the subsidiary has a U.S. listed parent and zero otherwise); OLTDEBT (other long term debt scaled by total assets); LTFDEBT (long term financial debt scaled by total assets); OPCF (operational cash flow scaled by lagged total assets); LNTA (natural logarithm of total assets); BIG4 (dummy equal to one if the auditor is a Big 4 company, zero otherwise); LAGTAXD (dummy equal to one if the company paid taxes in the previous book year, zero otherwise); CR (current ratio); RELOR (ratio of operating revenue of the subsidiary on operating revenue of the parent); LOSS (dummy equal to one if net income is negative and zero otherwise).

## TABLE 7: Regression results $EM_2$ (DeFond and Park)

## Panel C: Full sample period (1999-2005)

| | $EM_2$: DeFond and Park abnormal working capital accruals | | | |
|---|---|---|---|---|
| | $ABSEM_2$ | $POSEM_2$ | $NEGEM_2$ | $SIGNEDEM_2$ |
| **Intercept** | 0,334 *** | 0,294 *** | -0,255 *** | 0,070 ** |
| | (10,74) | (8,74) | (-6,39) | (2,36) |
| **POSTSOX** | 0,002 | 0,023 * | 0,017 | 0,026 ** |
| | (0,16) | (1,68) | (1,21) | (2,33) |
| **US** | 0,006 | 0,006 | 0,014 | 0,018 |
| | (0,38) | (0,43) | (0,86) | (1,44) |
| **US * POSTSOX** | -0,027 * | -0,041 ** | -0,018 | -0,032 ** |
| | (-1,69) | (-2,34) | (-0,97) | (-2,23) |
| **OLTDEBT** | 0,015 | 0,054 | -0,100 | -0,041 |
| | (0,17) | (0,82) | (-1,18) | (-0,81) |
| **LTFDEBT** | 0,033 | -0,020 | -0,033 | -0,040 |
| | (1,37) | (-0,69) | (-0,93) | (-1,27) |
| **OPCF** | -0,025 | -0,491 *** | -0,421 *** | -0,655 *** |
| | (-0,97) | (-11,30) | (-10,73) | (-21,50) |
| **LNTA** | -0,016 *** | -0,013 *** | 0,015 *** | -0,001 |
| | (-4,74) | (-4,19) | (3,51) | (-0,29) |
| **BIG4** | 0,008 | -0,001 | -0,003 | -0,005 |
| | (0,65) | (-0,10) | (-0,20) | (-0,44) |
| **LAGTAXD** | -0,048 *** | -0,034 *** | 0,051 *** | 0,008 |
| | (-4,54) | (-2,74) | (4,26) | (0,82) |
| **CR** | 0,001 | 0,003 * | 0,001 | 0,003 ** |
| | (0,86) | (1,73) | (0,67) | (2,02) |
| **RELOR** | -0,019 *** | -0,017 *** | 0,014 ** | -0,005 * |
| | (-3,66) | (-4,24) | (2,53) | (-1,66) |
| **LOSS** | 0,039 *** | -0,059 *** | -0,113 *** | -0,146 *** |
| | (3,57) | (-4,40) | (-8,21) | (-13,08) |
| **Industry controls** | **included** | **included** | **included** | **included** |
| **Observations** | **4102** | **2170** | **1932** | **4102** |
| **$R^2$** | **0,058** | **0,328** | **0,284** | **0,405** |
| **Adjusted $R^2$** | **0,053** | **0,321** | **0,276** | **0,402** |

Standard errors are clustered per firm to correct for unobserved within-firm correlation patterns (Petersen 2009). T-stats are reported in brackets below the coefficients. Significance is indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***). Coefficients on the industry dummies are not reported for brevity.

**With**: $ABSEM_2$ (absolute value of the DeFond and Park abnormal working capital accruals); $POSEM_2$ (positive DeFond and Park abnormal working capital accruals); $NEGEM_2$ (negative DeFond and Park abnormal working capital accruals); $SIGNEDEM_2$ (signed DeFond and Park abnormal working capital accruals); POSTSOX (dummy equal to one if the observation is from the years 2003 - 2005 and zero otherwise); US (dummy equal to one if the subsidiary has a U.S. listed parent and zero otherwise); OLTDEBT (other long term debt scaled by total assets); LTFDEBT (long term financial debt scaled by total assets); OPCF (operational cash flow scaled by lagged total assets); LNTA (natural logarithm of total assets); BIG4 (dummy equal to one if the auditor is a Big 4 company, zero otherwise); LAGTAXD (dummy equal to one if the company paid taxes in the previous book year, zero otherwise); CR (current ratio); RELOR (ratio of operating revenue of the subsidiary on operating revenue of the parent); LOSS (dummy equal to one if net income is negative and zero otherwise).

**TABLE 8: Timely loss recognition regression results (Ball and Shivakumar)**

| | TACCS |
|---|---|
| **Intercept** | 0,055 ** |
| | (2,26) |
| **OPCF** | -0,995 *** |
| | (-17,84) |
| **NEGOPCF** | 0,362 *** |
| | (3,09) |
| **POSTSOX** | -0,013 |
| | (-1,04) |
| **POSTSOX * OPCF** | 0,127 |
| | (1,53) |
| **POSTSOX * NEGOPCF** | -0,342 ** |
| | (-2,26) |
| **US** | -0,034 *** |
| | (-2,92) |
| **US * OPCF** | 0,120 |
| | (1,58) |
| **US * NEGOPCF** | -0,425 *** |
| | (-3,02) |
| **US * POSTSOX** | 0,040 ** |
| | (2,45) |
| **US * POSTSOX * OPCF** | -0,197 * |
| | (-1,72) |
| **US * POSTSOX * NEGOPCF** | 0,688 *** |
| | (3,40) |
| **OLTDEBT** | -0,207 *** |
| | (-3,55) |
| **LTFDEBT** | -0,092 *** |
| | (-2,93) |
| **LNTA** | 0,004 |
| | (1,60) |
| **BIG4** | 0,001 |
| | (0,10) |
| **ORGROWTH** | 0,007 |
| | (1,37) |
| **LAGTAXD** | 0,009 |
| | (1,33) |
| **CR** | 0,004 *** |
| | (3,63) |
| **RELOR** | -0,006 ** |
| | (-1,98) |
| **LOSS** | -0,210 *** |
| | (-22,14) |
| **Industry controls** | **included** |
| **Observations** | **4099** |
| **$R^2$** | **0,698** |
| **Adjusted $R^2$** | **0,696** |

## TABLE 8: Timely loss recognition regression results (Ball and Shivakumar) CONTINUED

Standard errors are clustered per firm to correct for unobserved within-firm correlation patterns (Petersen 2009). T-stats are reported in brackets below the coefficients. Significance is indicated as follows: $p < 0.10$ (*); $p < 0.05$ (**) or $p < 0.01$ (***). Coefficients on the industry dummies are not reported for brevity.

**With**: TACCS (total accruals scaled by lagged total assets); OPCF (operational cash flow scaled by lagged total assets); NEGOPCF (equals negative values of OPCF and zero otherwise); POSTSOX (dummy equal to one if the observation is from the years 2003 - 2005 and zero otherwise); US (dummy equal to one if the subsidiary has a U.S. listed parent and zero otherwise); OLTDEBT (other long term debt scaled by total assets); LTFDEBT (long term financial debt scaled by total assets); LNTA (natural logarithm of total assets); BIG4 (dummy equal to one if the auditor is a Big 4 company, zero otherwise); ORGROWTH (growth in operating revenue from year t-1 to year t); LAGTAXD (dummy equal to one if the company paid taxes in the previous book year, zero otherwise); CR (current ratio); RELOR (ratio of operating revenue of the subsidiary on operating revenue of the parent); LOSS (dummy equal to one if net income is negative and zero otherwise).