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Accounting Quality in Private Firms during the Transition towards International Standards

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Abstract

We study the historical development of Slovenian Accounting Standards (SAS) and their association with accounting quality (AQ). We focus on private firms where the financial reporting process is characterised by low demand for high-quality reporting. We investigate three distinct editions of SAS since 1994 and test how is their development towards international standards related accounting quality. Aggregate earnings management measures indicate that the use of accounting discretion decreases with less earnings smoothing over time. The main features of AQ have been consistent throughout the historical development. Asymmetric timeliness of earnings, the ability of earnings to predict future cash flows, and the ability of accruals to mitigate mismatching are all present throughout. We also document typical departures from properties of high AQ. For example, accruals do not (always) facilitate timely recognition of losses. However, these can be attributed to the overwhelming influence of reporting incentives (e.g. taxation, debt, size) rather than to the (lower) quality of accounting standards.

Keywords: private firms, accounting quality, development of accounting standards, IFRS-like standards

JEL classification: M41, C23, L21, P20

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Accounting Quality in Private Firms during the Transition towards International Standards

1. Introduction and motivation

Previous research into the association between accounting regulation and accounting quality broadly falls into 2 approaches: the first investigates specific accounting treatments (e.g. Berger & Hann, 2003, look at segment reporting; Cazavan-Jeny & Jeanjean, 2006, at R&D) and the second investigates fundamental changes in accounting standards (e.g. Barth, Landsman & Lang, 2008, and Ahmed, Neel & Wang, 2013, look at the adoption of International Financial Reporting Standards (IFRS)). Our study complements this second strand of literature by investigating whether the development of accounting standards is associated with accounting quality of private firms in the Republic of Slovenia. We track the complete history of the development process of accounting standards in a single country over two decades and present a longitudinal analysis containing two fundamental changes in the standards. In our setting all firms must submit detailed financial statements to a government agency. Thus, we have a unique access to financial data for all private firms, which allows empirical investigation of their financial reporting practices as the accounting standards develop and converge towards international standards.

There is very little empirical research regarding accounting quality in Central and Eastern European (CEE) countries, and the few existing studies focus on public firms (e.g. Hellström, 2006; Dobija & Klimczak, 2010; Filip & Raffournier, 2010). Therefore, we first decide to investigate Slovenia as a representative of the CEE countries, which have a similar history and recent transition to a market economy. Second, we study private firms because the CEE countries feature newly established and weakly developed capital markets with relatively few public firms.[1] Moreover, inefficient capital markets appear to be a general and permanent feature of Eastern European (EE) countries. Foye, Mramor and Pahor (2013, p. 130) pessimistically conclude that '*…the stock markets of the EE EU nations are not WFME [weak-form market efficient], nor have they become more efficient since EU accession… as this has not happened after nearly 20 years of operating, there is no*

reason to presume that they ever will.'[2] These arguments reinforce the importance of private firms (sometimes referred to as small and medium-sized enterprises – SMEs) in CEE economies and the investigation of their financial reporting practices. In general, private firms are the engine of economic activity as, for example, SMEs represent over 99% of enterprises in the European Union's (EU) non-financial business economy and account for 67% of employment in the private sector (EIM Business and Policy Research, 2009)[3]. Nevertheless, compared with the large body of accounting literature on public firms, there is limited empirical research on private firms, primarily attributed to poor data availability (Hope, 2015).

Although private firms provide a setting with relatively low demand for high-quality financial reporting, we still expect to find an association between accounting standards and accounting quality. Financial reporting practices of private firms are likely to differ from those of public firms for several reasons. First, in private firms, which are normally smaller, the degree of agency problems between owners and managers is lower (Jensen & Meckling, 1976; Ang, Cole & Lin, 2000; Ball & Shivakumar, 2005). Second, demand for financial reporting to resolve information asymmetries between a firm and outside stakeholders is smaller (Beatty & Harris, 1999; Ball & Shivakumar, 2005; Garrod, Kosi & Valentincic, 2008). Therefore, although it can serve other purposes (e.g. taxation, dividend policies) financial reporting is less likely to be used as a tool to communicate underlying firm performance (e.g. Coppens & Peek, 2005; Garrod et al., 2008). Third, cost considerations may push private firms to produce only one set of financial statements and this may further result in high book-tax conformity regardless of whether this is legally prescribed or not (Ball & Shivakumar, 2005). Prior research has empirically documented such substantial differences. For example, Ball and Shivakumar (2005) find less timely recognition of economic losses in private firms and Burgstahler, Hail and Leuz, (2006) document more pronounced earnings management in private firms because of differences in reporting incentives of both groups of firms.

In line with other CEE countries, Slovenia started its development process towards a market economy in the 1990s. In this period it introduced private ownership of firms and established a

capital market (Mramor & Valentincic, 2001; Duhovnik, 2007; Domadenik, Prasnikar & Svejnar, 2008). This process was accompanied by the introduction of statutory audit, the development of the accounting profession and the need for accounting standards issued by an independent body.

The first set of Slovenian Accounting Standards (SAS 1994) was focused on mitigating information asymmetries between a firm and (various) outside stakeholders because these issues became important with the private ownership of firms. This set of standards, together with existing institutional features, introduced a certain (but probably not very high) level of accounting quality.[4] The second set of SAS (2002) represented a major step towards harmonisation with International Accounting Standards (IAS) and the reinforcement of principles set out in the Fourth Company Law Directive (78/660/EEC) and the Seventh Company Law Directive (83/349/EEC). Fundamental accounting changes, including 'true and fair view' and 'fair value measurement', would be expected to be associated with higher accounting quality compared to SAS 1994. On the other hand, firms were still mainly focused on satisfying tax rules rather than following accounting standards (World Bank, 2004). SAS 2006 moved even closer to IFRS-based financial reporting and focused on providing more decision-useful accounting numbers for capital providers. However, this change may be less relevant for private firms compared to public firms because private firms depend less on external capital providers, have lower demand for financial reporting, and care more about book-tax conformity. Therefore, we may only observe smaller (if any) improvements of accounting quality in this last sub-period.[5]

Since much of the academic debate focuses on accounting standards as one of the primary inputs for improving financial reporting practices (e.g. Barth et al., 2008), we track the three development periods of accounting standards and empirically document their association with accounting quality. Our analysis is to some extent comparable to IFRS-adoption studies: in many countries, IFRS adoption is one of the most significant changes in accounting standards and our setting contains two such changes. Prior studies have investigated the association between accounting quality and mandatory (e.g. Callao & Jarne, 2010; Ahmed et al., 2013) or voluntary (e.g.

Cuijpers & Buijink, 2005; Barth et al., 2008) IFRS adoption in public firms, and voluntary IFRS implementation in private firms (e.g. André, Walton & Yang, 2012; Bassemir, 2012). We focus on private firms and investigate how is the three-period development process of SAS containing two significant and mandatory changes associated with accounting quality.

It is not trivial to find suitable measures to analyse changes in financial reporting practices. We start from a premise that financial statements result from the application of accounting standards as well as the accounting discretion (i.e. judgement) inherent in them. We thus implement measures that capture the extent to which firms use accounting discretion to make financial statements more or less informative about their underlying economic performance. We follow prior literature (e.g. Barth, Cram & Nelson, 2001; Leuz, Nanda & Wysocki, 2003; Ball & Shivakumar, 2005; Burgstahler et al., 2006) and employ various accounting quality measures as a proxy for the extent to which firms use accounting discretion to reduce the informativeness of reported earnings.

We study the period from 1995 to 2014 and track the complete history of SAS development towards international standards. The three-period development process contains two fundamental changes in accounting standards. We find evidence consistent with increasing accounting quality in financial reporting of private firms over time. The first part of our analysis shows annual aggregate earnings management measures, and the time trends of these measures are in line with increasing accounting quality. Specifically, they show a decreasing degree of accounting discretion in reported earnings and decreasing smoothness of reported earnings. While time trends are relatively monotonous in the first two sub-periods, we observe some disruptions in the last sub-period. The second part of our analysis reports regression-based measures for the three sub-periods. We document increasing asymmetric timeliness of earnings over time (and more so for larger firms) and show that accruals serve the mismatch-mitigating role well but do not facilitate so well the timely recognition of economic losses (particularly in smaller firms). We also document a relatively constant ability of earnings and their components to predict future cash flows (with negative earnings being

less persistent) and show an increased ability of working capital accruals to mitigate timing mismatches.

We contribute to existing literature in the following ways. First, the availability of high-quality data allows us to add to the limited research on private firms (e.g. Coppens & Peek, 2005; Kosi & Valentincic, 2013; Gassen & Fülbier, 2015). This is the first comprehensive study that empirically evaluates the two-decade-old history of development of SAS and their association with accounting quality of Slovenian private firms using a 'standard' set of methods.[6] Second, from a comparative point of view, studies exist on the development of accounting in other CEE countries (e.g. Poland: Gornik-Tomaszewski & Jermakowicz, 2001; Dobija & Klimczak, 2010; Romania: King, Beattie, Cristescu & Weetman, 2001; Filip & Raffournier, 2010; Albu & Albu, 2012; Czech Republic: Jindrichovska, 2001; Hellström, 2006; Jindrichovska, Kubickova & Kocmanova, 2014) but few provide empirical analyses and even those are focused on value relevance in public firms. Therefore, this paper also contributes to the assessment of accounting quality in the region. Dimitric (2009, p. 71) for example states that compared to other former Yugoslav republics '*Slovenia has national standards based on IFRS and the highest degree of accounting development*', but claims like this are hitherto unverified. Finally, we contribute to studies examining significant changes of accounting standards (analogous to IFRS adoption) by examining a setting with two such changes. Our study differs from prior papers examining IFRS adoption in public firms (e.g. Cuijpers & Buijink, 2005; Callao & Jarne, 2010; Ahmed et al., 2013) as well as from papers examining voluntary IFRS adoption in private firms (e.g. André et al., 2012; Bassemir, 2012). We investigate mandatory changes in accounting standards in a setting of private firms where demand for high-quality reporting is low.

The paper is structured as follows. Section 2 outlines the three periods of accounting standards' development in Slovenia during our sample period 1995-2014. Section 3 describes the methodology and accounting quality measures employed. Section 4 describes our data collection and final sample, section 5 discusses our main findings and section 6 presents sensitivity tests. Section 7 concludes.

2. Development process of accounting standards

2.1. First edition of Slovenian Accounting Standards – SAS 1994

The first SAS were issued in 1993 by the Association of Accountants, Treasurers, and Auditors of Slovenia. They became effective for accounting periods beginning on or after 1 January 1994 and were based on the draft of Yugoslav standards from 1989. The first Companies Act ('ZGD') was also issued in 1993, inspired predominantly by the German/Austrian corporate law model. [7] It required firms to apply SAS 1994. Concurrently, the Auditing Act of 1993 set up a legal basis for an independent accountancy body, responsible for the development of accounting, auditing and other (closely related) professions. Thus, in January 1994, the Association of Accountants, Treasurers, and Auditors of Slovenia founded the Slovenian Institute of Auditors, responsible, amongst others, for audit-quality control and the development of SAS in agreement with a ministry for economy and finance. The basic accounting requirements for Slovenian firms, such as rules for the chart of accounts, financial statement formats and minimum note disclosures, were set out in the Companies Act, while SAS 1994 provided detailed guidance, especially on measurement.[8]

SAS 1994 were based on the prudence principle (Garrod & Turk, 1995). The prudence approach to accounting preserved historical book vales rather than promoting the discovery of market prices reflecting future cash flows that would demonstrate the true capabilities of firms to service shareholders and other investors (Simoneti & Böhm, 2001). The financial concept of the maintenance of capital and the need for its adjustment in an inflationary environment were at the core of these standards, which might thus be labelled as 'revaluation standards'. SAS 1994 required a form of current cost purchasing power accounting, i.e. certain assets, liabilities, expenses and equity were to be adjusted for annual inflation as measured by changes in the consumer price index (World Bank, 2004). Those inflation-adjusted values were then compared with the current amounts (realisable values), and finally the lower value was applied to assets and the higher value to liabilities. The result of such revaluation was debited or credited to the income statement.[9] This accounting treatment was broadly in line with the general purchasing power approach in IAS (i.e. IAS

15 and IAS 29) although Slovenia was not hyperinflationary (World Bank, 2004). The mandatory inflationary revaluations yielded fairly large and negative accruals.

2.2. Second edition of Slovenian Accounting Standards – SAS 2002

In the years that followed SAS 1994 the Slovenian economic environment underwent considerable transformation. For example, the rate of inflation decreased, Slovenia opened up in political as well as economic terms and started the process of joining the EU. A revision of accounting standards was inevitable, and the second edition of standards (SAS 202) was issued in 2001. At the same time a major amendment of the Companies Act aligned Slovenia's financial reporting requirements with the EU's Fourth and Seventh Company Law Directive (78/660/EEC and 83/349/EEC). The amendment required firms to apply SAS 2002 for separate and consolidated financial statements and did not allow IFRS application for mandatory financial reporting purposes.

SAS 2002 represented a major accounting change and a *massive* step toward harmonisation with IAS as they existed in 2001 although some fundamental differences remained (World Bank, 2004). In particular, SAS 2002 introduced the basis for measuring certain balance sheet items at fair value with asymmetric recognition of unrealised gains and losses in profit or loss. This was a peculiar version of asset revaluation (departure of values from book values in either direction), which had two forms. First, an upward revaluation ('strengthening') of an asset increased the asset's carrying amount if justified market information were available for property, plant and equipment and financial assets. Second, for all assets, an asset write-off ('impairment') decreased an asset's carrying amount if the asset's recoverable amount fell below its carrying amount. The write-offs were mandatory, while the upward revaluations of qualified assets were optional. Asset write-offs were recognised in profit or loss via write-off operating expenses (for all assets except financial instruments) or write-off financial expenses (for financial instruments). Gains from upward revaluation were not recognised in profit or loss but recorded in 'revaluation adjustment' (i.e. revaluation surplus) section of equity[10] (Novak, 2008; Jerman & Novak, 2014).[11]

Mandatory asset write-offs provided a means to convey firms' private assessments about decreases in expected future cash flows and thus improve earnings informativeness. In this respect, SAS 2002 were revolutionary because such an exercise of judgment was not hitherto practiced. Write-offs facilitated timely recognition of economic losses in profit or loss statements before the losses were realised and characterised SAS 2002 by conditional conservatism. We expect that this should ensure timelier economic loss recognition (reflected in regression-based model 1) and more asymmetric recognition of unrealised gains and losses (model 2) compared to SAS 1994. In addition, the abolition of mandatory inflationary revaluations should reduce the magnitude of accruals used (reflected in EM1 measure), and asymmetric economic loss recognition should reduce the negative correlation between accruals and cash flows (EM2 measure) and increase the volatility of earnings relative to cash flows (EM3 measure). On the other hand, the inherent flexibility in the standards could provide greater opportunity to manage earnings, thereby decreasing the financial reporting quality (e.g. Barth et al., 2008).

2.3. Third edition of Slovenian Accounting Standards – SAS 2006

Before joining the EU in May 2004, Slovenia adopted the EU's legal framework, including Regulation (EC) No 1606/2002 on the application of IFRS. In the 2000s, the EU was also transforming its accounting rules and issued the 'Modernisation Directive' 2003/51/EC. These changes led to a further revision of accounting standards in Slovenia, SAS 2006, and the publication of the new Companies Act of 2006 ('ZGD-1').

SAS 2006 were closely aligned with IFRS. According to the standard setter, they were designed to yield similar reporting outcomes to IFRS in most cases (OECD, 2011). Financial statements had to be prepared by all forms of legal entities, but a complete set of financial statements (as in IAS 1) was required only for firms subject to a statutory audit. Small firms with no owners fully liable to creditors had to prepare a balance sheet, an income statement and notes to financial statements, while small firms with any owners fully liable to creditors (therefore including sole proprietorship)

had to prepare a balance sheet and an income statement. Small firms were also allowed to prepare balance sheet in an abbreviated format.

Compared to SAS 2002, SAS 2006 did not constitute such a major change. The biggest conceptual change was mandatory recognition of upward changes in fair value of certain trading securities, derivatives and investment property (in the case of the fair value model choice) in profit or loss before the gains were realised. We thus expect that SAS 2006 *per se* would not change the timeliness of economic loss recognition (model 1), but could reduce asymmetric recognition of unrealised gains and losses (model 2). On the other hand, the SME-segment of private firms rarely holds trading securities, derivatives or investment property, so the application of the 'fair value through profit or loss model' is limited. Accordingly, we may not observe further significant improvements of accounting quality in the last sub-period.

3. Methods

3.1. Aggregate earnings management measures

We first investigate changes in accounting quality during the development process of SAS via aggregate earnings management measures and in the second part of the analysis use regression-based measures. Given the relatively long period under study that includes structural breaks and the effects of the financial crisis, using several metrics enables us to be more precise in interpreting the results of our analyses (Barth et al., 2008). Earnings management is a single albeit important dimension of accounting quality that is particularly responsive to firms' reporting incentives (Burgstahler et al., 2006). High earnings management is inconsistent with high accounting quality.

Our three aggregate earnings management measures are standard in the literature (e.g. Leuz et al., 2003; Burgstahler et al., 2006) and capture a range of practices used to manage reported earnings (e.g. accrual manipulations, earnings smoothing). Where required, they are adapted to the

particular setting of private firms (e.g. Kosi & Valentincic, 2013). *EM*1 is a yearly median ratio of the absolute value of total operating accruals (*ACC*) scaled by cash flow from operations (*CFO*): $EM1_t = |ACC_{it}|/CFO_{it}$. On the one hand, a firm uses accounting discretion to reduce fluctuations in its economic performance; on the other hand, it can use the discretion to misstate its true economic performance. The magnitude of accruals measured by *EM*1 thus serves as a proxy for the extent to which the firm uses accounting discretion in reporting earnings. Higher values of *EM*1 indicate more earnings management and lower accounting quality. Considering standard setters' efforts to move towards higher-quality accounting standards, we expect the ratio to decrease over time. Accruals are calculated as in Dechow, Sloan and Sweeney (1995): $ACC_{it} = (\Delta CA_{it} - \Delta Cash_{it}) - (\Delta CL_{it} - \Delta STD_{it} - \Delta TP_{it}) - Dep_{it}$, where ΔCA_{it} = change in total current assets, $\Delta Cash_{it}$ = change in cash and cash equivalents, ΔCL_{it} = change in total current liabilities, ΔSTD_{it} = change in short-term debt included in current liabilities, ΔTP_{it} = change in income taxes payable, and Dep_{it} = depreciation and amortisation expense for firm *i* in year *t*. *CFO* is calculated indirectly by subtracting the accruals from bottom-line earnings (*NI*) because direct information on firms' cash flows is not available.

*EM*2 is a yearly contemporaneous Spearman's correlation coefficient between accruals and operating cash flow multiplied by -1, so that higher values correspond to more earnings management: $EM2_t = -\rho(ACC_{it}, CFO_{it})$. While use of accounting discretion to mitigate economic shocks to a firm's operating cash flow results in a negative correlation between accruals and cash flow, larger absolute values of this correlation indicate more earnings smoothing that does not reflect the firm's underlying economic performance. Again, we expect *EM*2 to decrease over time.

*EM*3 is an indicator of smoothness of earnings relative to cash flow – the ratio of standard deviation of reported bottom-line earnings within a year and standard deviation of operating cash flow within a year: $EM3_t = -(\sigma(NI_{it}) / \sigma(CFO_{it}))$. It captures the extent to which firms dampen the variability of reported earnings via accruals to conceal the variability in their true economic performance. Higher values indicate more earnings smoothing, often interpreted as inconsistent with high accounting quality, although we stress that '*it is unclear whether income smoothing is*

positive or negative in terms of accounting quality' (Gassen & Fulbier, 2015, p. 163). One stream of literature interprets smoothness as a desirable quality of the financial reporting process (e.g. Tucker & Zarowin, 2006; Dou, Hope & Thomas, 2013), but another stream views it as an indication of earnings management (e.g. Leuz et al., 2003; Burgstahler et al., 2006).

3.2. Regression-based measures

We use four regression-based measures widely employed in existing literature to gauge accounting quality in Slovenian private firms. We base the first measure on conditional conservatism and assume that economic losses are more transitory while economic gains are (more) persistent (Basu, 1997; Ball & Shivakumar, 2005). We employ increases in reported net income (*NI*) to proxy for economic gains and decreases in reported net income to proxy for economic losses. We estimate this asymmetric persistence as:

$$\Delta NI_t = \alpha_0 + \alpha_1 DUM + \alpha_2 \Delta NI_{t-1} + \alpha_3 DUM \cdot \Delta NI_{t-1} + e_t \quad (1)$$

where *DUM* = 1 if $\Delta NI_{t-1} \leq 0$. The predictions are as follows: α_2=0 (gains (earnings increases) are persistent, permanent at the extreme), α_3<0 (losses (earnings decreases) are transitory). High book-tax conformity (as present in our setting) would merely indicate that the α_3 coefficient is less negative (closer to zero) than in a system where financial and tax reporting are separated. A less negative α_3 coefficient implies that economic losses are less transitory (more persistent), consistent with empirical findings reported elsewhere. Specifying model 1 in changes has the advantage that the estimation is less prone to survivorship bias (Ball & Shivakumar, 2005). The remaining measures are derived from the relations between the accruals and cash components of the reported bottom-line earnings.

The second measure focuses on two roles of accruals in the financial reporting process (Ball & Shivakumar, 2005). First, accruals mitigate the variability in operating cash flow due to the mismatches between revenues (expenses) and cash inflows (cash outlays) (Dechow, 1994), which results in a negative contemporaneous correlation between accruals and operating cash flow.

Second, accruals facilitate timely recognition of economic gains and losses. In both cases, this second role of accruals leads to a positive contemporaneous correlation between accruals and cash flow:

$$ACC_t = \beta_0 + \beta_1 DUM + \beta_2 CFO_t + \beta_3 DUM \cdot CFO_t + e_t \quad (2)$$

where *DUM* = 1 if $CFO_t \leq 0$. Ball and Shivakumar (2005) make the following predictions: $\beta_2 < 0$ (negative correlation – accruals mitigate variability in operating cash flow and reverse in subsequent period), $\beta_3 > 0$ (positive correlation – source of positive but asymmetric correlation between accruals and contemporaneous cash flow). A strong positive correlation in the case of loss recognition arises because future cash flows from an individual long-term asset tend to be correlated over time, or 'persistent'. However, as documented in Ball and Shivakumar (2005, p. 111), β_3 can be negative for private firms.

The third aspect of the financial reporting process is the ability of earnings and/or earnings components to predict future cash flows. We take the model used in Barth et al. (2001) and decompose it into current and lagged operating cash flow and accruals and allow for incremental relations in the case of losses (Ball & Shivakumar, 2006; Model 3, p. 236):

$$CFO_{t+1} = \gamma_0 + \gamma_1 CFO_{t-1} + \gamma_2 ACC_{t-1} + \gamma_3 CFO_t + \gamma_4 ACC_t + \gamma_5 DUM_t + \gamma_6 DUM \cdot CFO_t + \\ + \gamma_7 DUM \cdot ACC_t + e_t \quad (3)$$

In this model *DUM* = 1 if $CFO_t \leq 0$. In line with Barth et al. (2001) we expect γ_1 and γ_2, as well as γ_3 and γ_4 to be positive (albeit coefficients for lagged variables should be lower). However, in a typical loss year, γ_7 is expected to be negative, as accruals will capture multi-period cash flow effects (current and a number of future periods).[12]

Dechow and Dichev's (2002) measure of accruals quality is our fourth measure. We estimate a model of changes in working capital (ΔWC_t) on previous, current and future period cash flow from operation (*CFO*). Future cash flow as an explanatory variable means incorporation of information about unrealised gains and losses:

$$\Delta WC_t = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + e_t \quad (4)$$

Accrual quality is represented by the residual of the model (e_t), which captures anything in accruals that is unrelated to cash flow realisations, so higher residuals denote lower accounting quality.[13] For our purposes, higher R^2 from this regression indicates higher accounting quality. In model 4 accruals are negatively related to current cash flows ($-1<\beta_2<0$) – they mitigate the noise in *CFO* due to the mismatches between revenue/expense and cash flow (Dechow, 1994), which results in negative contemporaneous correlation between accruals and cash flow. On the other hand, accruals are positively correlated to preceding and past period *CFO* ($0<\beta_1<1$, $0<\beta_3<1$).

4. Data collection and sample composition

Our data is sourced from a central database of the Agency of the Republic of Slovenia for Public Legal Records and Related Services (operational since 1 January 2003). The Agency is the central element of the financial reporting process in Slovenia. Its predecessor was established in 1966. Its main tasks today are registry; collection, processing and publication of firms' annual reports; statistical research; and credit ratings. In earlier times, a unique task of the Agency's predecessor was also processing all inter-firm payments instead of banks. All firms operating in Slovenia are legally required to submit their financial statements to the Agency regardless of their size. Nevertheless, it should be emphasised that the Agency's role is limited to ensuring that the statements are submitted rather than having any role in monitoring or regulating their content. Less detailed financial statements are then made available to the public, including the tax authorities. The data on whether firms' financial statements were audited or not are available only for the period 2006 and onwards. The Faculty of Economics, University of Ljubljana, keeps the original files for the sample period covered.

The total sample period used in our study is divided into three sub-periods according to accounting standards valid at the time:

- Sub-period 1: 1995-2001 – firm-year observations corresponding to SAS 1994;[14]

- Sub-period 2: 2002-2005 – firm-year observations corresponding to SAS 2002;

- Sub-period 3: 2006-2014 – firm-year observations corresponding to SAS 2006.

A firm's reporting requirements are such that a filing for year *t* contains both the current data (period *t*) as well as data on the preceding year (period *t*-1). In a year where each subsequent set of new standards is introduced, the current file contains comparable data for the previous year. Nevertheless, the new standards are not applied retrospectively for filing purposes. Comparative accounting numbers (i.e. numbers for period *t*-1) are based on the firm's best possible assessment of what accounting numbers would have been reported under the new set of standards. For example, in 2002, when the major change was introduced, the data for 2001 reported in the 2002 filing was not re-calculated.

In terms of size, we initially adopt uniformly the EU's Commission Recommendation 2003/361/EC concerning the definition of micro, small and medium-sized enterprises that came into force on 1 January 2005.[15] First, our sample includes small and medium-sized firms as well as micro firms that have at least 5 employees (as in Mramor & Valentincic, 2003). Second, we do not automatically exclude large firms, which include public firms (i.e. with securities quoted on a stock exchange – currently only 51), but only take out the largest 200 firms by total assets.[16] This criterion excludes all public firms plus some firms that would have been quoted on the stock exchange as an immediate result of the privatisation process. While this procedure is admittedly somewhat arbitrary, we believe that in qualitative terms this corresponds to the term 'private firm' studied in existing literature. Financial firms are excluded due to their fundamentally different reporting properties. We then apply the conventional top/bottom 1% restriction on yearly distributions on all variables because the general economic conditions fluctuated during our sample period. This results in a total sample size of 148,362 firm-year observations spanning the period 1995-2014 comprising 20,796 distinct firms. Our sample firms represent, for example in 2014, 55.6% of total employment in the private sector, 47.9% of total revenue and 28.8% of total assets. The mean (median) lifespan of a firm in the sample is 6 years (5 years). Detailed sample formation is presented in Table 1. We

highlight that the data is from unconsolidated (i.e. separate) financial statements for incorporated firms, including firms that are separate legal entities but whose owners bear unlimited liability.

< TABLE 1 ABOUT HERE >

5. Results

5.1. Descriptive statistics

The variable-level descriptive statistics are presented in Panel A of Table 2. The average firm-year observation in the sample yields a net return on assets of 4.16%, resulting from operating cash flows of 10.05% and a negative accruals component of -5.89%, in line with prior literature. The typical observation turns over total assets into revenue two times per year. Over the entire period, the average growth of reported bottom-line earnings of sample firms is 0.58% per year.

< TABLE 2 ABOUT HERE >

Panel B reports firm-level descriptive statistics. The average firm has about EUR 2.5m of total assets, 28% financed by short- and long-term financial debt (15% of observations have no financial debt), 40% by equity and the rest with operating liabilities. We can thus assume that non-equity financing is important for the majority of our sample firms. The average firm has 33 employees. Note that some firms have no employees. This is not unusual, as owners often are employed elsewhere.[17]

A subset of Panel B relates to the period 2006-2014 and shows descriptive statistics related to ownership and auditing, data which was not available in the prior period. The median firm has two private owners (i.e. physical persons). Some firms have corporations (i.e. legal entities) as owners. They could in a way be considered as 'subsidiaries' although we cannot establish to what extent as only data regarding the number of owners is available for private firms but not their shareholdings. About 10% of observations have been audited (either mandatorily or voluntarily).

Panel C reports bivariate Pearson's correlation coefficients between our variables based on pooled data. All coefficients are in line with our expectations. There is a positive correlation between *NI* and *CFO* (+0.394) and a negative correlation between *ACC* and *CFO* (-0.876), *ΔWC* and *CFO* (-

0.791), which is by definition induced by accrual accounting. There is a very high positive correlation between *ACC* and *ΔWC* (+0.930), suggesting that working capital accruals capture the variation in total accruals well.

5.2. Aggregate earnings-management measures

Figure 1 presents the results for aggregate earnings-management measures *EM*1 to *EM*3. For each measure, we report the corresponding yearly value (thick lines with markers), pooled value for the measure calculated over the entire sample (thick broken line without markers) and the linear time trend (thin full line with the corresponding time-trend regression presented). Note that more earnings management is traditionally associated with lower earnings quality and vice versa.

< FIGURE 1 ABOUT HERE >

Values of *EM*1 range between 0.83 and 0.39, and the median is 0.61. These values are comparable with prior literature (Leuz et al., 2003; Burgstahler et al., 2006). In line with the development process of accounting standards in Slovenia and their ultimate transition towards IFRS-based financial reporting, we find a negative time trend of *EM*1. Since firms do not use accounting discretion via accruals only to reduce variations in their underlying economic performance but also to misreport the economic performance (Leuz et al., 2003), our finding implies a lower degree of accounting discretion in reported earnings. This finding is consistent with higher accounting quality over time. While *EM*1 steadily decreases through the first and second sub-period, we see a reversal in the third period. In particular, the relative magnitude of accruals starts increasing in year 2009. We believe that the economic downturn accompanying the financial crisis and causing poorer economic performance is the main driver of extensive use of accounting discretion during this period. However, we interpret a decrease of *EM*1 in year 2014 as an indication of reverting to previous (higher) levels of accounting quality.

Similarly, we find a negative time trend for *EM*2. Values of this measure range from 0.92 to 0.81 and the median is 0.88, which is again in line with prior literature (Leuz et al., 2003; Burgstahler et al., 2006). While it is natural that *ACC* and *CFO* are negatively correlated, higher values of this

correlation indicate, ceteris paribus, more smoothing of reported earnings that does not reflect a firm's underlying economic performance. Therefore, the decrease in *EM*2 indicates less smoothing of reported earnings over time and implies higher accounting quality. Interestingly, *EM*2 shows the highest values in years just before the crisis (i.e. 2006-2008). This is actually a period of good economic performance since the economy experienced the highest annual GDP growth in 2006 and 2007 (5.7% and 6.9%, respectively). In these years, a private firm may have had an incentive to underreport strong current performance, for example to create reserves for the future, to decrease the likelihood of higher wage demands or achieve tax savings (Abowd, 1989; Brown, Izan & Loh, 1992; Cavanaugh, 2002; Kosi & Valentincic, 2013).

*EM*3 measures the use of accounting discretion to smooth reported earnings with a ratio between standard deviation of *NI* and standard deviation of *CFO* (multiplied by -1). Its range between -0.39 and -0.59 and median of -0.48 are comparable with prior studies (Leuz et al., 2003; Burgstahler et al., 2006; Gassen & Fülbier, 2015), indicating that for our sample *NI* is less volatile than *CFO*. A negative time trend of *EM*3 implies increased accounting quality. In the first and second sub-period the measure steadily decreases (i.e. becomes more negative). It reaches its highest values in years 2006-2008 and then declines again. Although period 2006-2008 has the strongest annual GDP growth, firms may exercise more accounting discretion to underreport strong current performance and to create reserves for the future (other than tax savings in a highly tax-book conformity environment).[18]

In sum, in the first part of our empirical analysis all three standard earnings management measures clearly point to an increasing accounting quality over the sample period. We therefore conclude that the Slovenian accounting standard developments are positively associated with increasing accounting quality in private firms. In particular, our findings imply that managers use accounting discretion to report earnings that more accurately reflect firms' underlying economic performance and are thus more informative to outside stakeholders.

5.3. Regression-based measures of earnings quality

Tables 3, 4, 5 and 6 report results for regression-based measures as presented in Section 3.2. Each table reports first the results for the pooled 1995-2014 sample period and then for the sub-periods. The pooled regressions are estimated first as pooled regressions with year and industry fixed effects included and then as pooled regressions with sub-period dummies corresponding to SAS 2002 (*PERIOD*2 dummy) and to SAS 2006 (*PERIOD*3 dummy). Given our discussion of the properties of accounting standards, the two dummies are defined relative to SAS 1994, the version of accounting standards farthest from international standards. We then estimate the models separately for the three sub-periods with year and industry fixed effects. Finally, we estimate the pooled regressions with and without sub-period dummies on a constant sample. To this end, we identify 1,106 firms that are present during the entire sample period. This sample contains firms that were set up after Slovenia had transitioned to a market economy, as well as firms that were formerly 'socially-owned' but subsequently privatised.[19]

Table 3 reports the results for the asymmetric timeliness of earnings. In all periods, earnings decreases (a proxy for economic losses) are strongly mean-reverting (α_3<0) and absolute values of the coefficients have an increasing trend. This is consistent with accounting standards ensuring timely incorporation of losses in financial statements. However, earnings increases (a proxy for economic gains) are mildly mean-reverting (α_2<0). This might be a consequence of the underlying economics of these firms. For example, new, fast-growing firms stabilise growth in coming years while large firms are already more stable. The pooled results including sub-period dummies reveal that the asymmetric incorporation of losses increases when more international standards are introduced, and mean-reversion of gains becomes less pronounced (i.e. more permanent), both consistent with increasing accounting quality. Qualitatively identical results are obtained when running the regressions on the constant sample.

< TABLE 3 ABOUT HERE >

When we estimate model 1 across size groups and across all versions, untabulated results show that α_2 coefficients increase from micro firms to large firms (i.e. become less negative) and incremental coefficients α_3 increase in absolute terms. This is consistent with large firms being more stable and implementing accounting standards (i.e. more timely loss recognition) more strictly than (the relatively large) micro firms in the sample.

Table 4 shows the results for the two roles that accruals play in the financial reporting process. The first role is to mitigate mismatch between revenues/expenses and cash flows, resulting in a highly negative contemporaneous relation between *CFO* and *ACC*. The second role is to capture the multi-period effect of future expected losses in current-period accruals (write-offs being a typical example) resulting in an incrementally *positive* contemporaneous relation between economic losses (negative *CFO*) and *ACC*.

< TABLE 4 ABOUT HERE >

In all three sub-periods, we observe a highly negative contemporary relation between accruals and cash flow (β_2<0), consistent with the first role. The incremental coefficient on negative cash flows is negative overall and in all three sub-periods (β_3<0) and indicates that in negative cash flow years firms offset more cash flow via accruals than in positive cash flow years. This result is consistent with Ball and Shivakumar (2005, pp.111-115), who find that compared to public firms, private firms tend to accrue substantially fewer unrealised losses in cash-loss years. We cannot make a direct comparison with public firms but we can estimate model 2 across size groups. We find that the mismatch-mitigating role of accruals (β_2) is approximately equal across all groups (results not tabulated). However, the (anomalous) negative sign on the role of accruals to timely recognise economic losses (β_3), is considerably less negative for large than for micro firms. This is consistent with higher accounting quality in large private firms. However, the result is not uniform – β_3 is the most negative for medium-sized firms. While the β_3 is reliably negative in all sub-periods, it is decreasing in absolute terms (i.e. moving more towards zero) relative to SAS 1994 (*PERIOD*2**Dum *CFO*$_t$ and *PERIOD*3**Dum*CFO*$_t$); this is consistent with increasing accounting quality.

Table 5 presents the results of the piecewise linear regression of future *CFO* on current and prior period earnings components (*ACC* and *CFO*). Sample sizes are smaller than in Tables 4 and 5 due to the requirement of at least one additional year of data. In line with our expectations, the estimated coefficients γ_3 and γ_4 are significantly positive in the pooled regression and in all three sub-periods (with lower values for lagged variables γ_1 and γ_2). The ability of current earnings ($\gamma_3 + \gamma_4$) to predict future operating cash flows remains constant over time. However, the relative importance of current operating cash flows decreases over time (*PERIOD*2**CFO*$_t$ and *PERIOD*3**CFO*$_t$), and the relative importance of accruals increases (*PERIOD*2**ACC*$_t$ and *PERIOD*3**ACC*$_t$), consistent with higher quality of the financial reporting process with the introduction of subsequent versions of SAS. Controlling for the sign of current *CFO* reveals that, overall, negative current cash flows are more predictive of future (negative) cash flows (γ_6>0), and accruals less predictive of future cash flows (γ_7<0). This is consistent with generally lower quality of accruals in loss firms. However, this result is not uniform across sub-periods. The second column reveals that this result is primarily due to the influence of the third sub-period (also coinciding in large part with the financial crisis – see Section 6 for a more detailed analysis of the effects of the financial crisis). It also reveals that current accruals are more informative of future cash flows for profit firms under SAS 2006 than under earlier standards. Surprisingly, although we postulate that SAS 2002 represent a major departure from the SAS 1994, there is no difference in accruals' ability to predict future cash flows for profit firms reporting under the two sets of standards (see constant sample analysis vs. period dummy controls in pooled regression in column two).

< TABLE 5 ABOUT HERE >

Table 6 presents results of the linear model that examines the quality of working capital accruals. The model embodies intuition that the role of accruals is to adjust for mismatch between revenue (expenses) and cash inflows (cash outlays). The residual from the regression reflects the accruals that are unrelated to cash flow realisations and higher R^2 indicates higher accounting quality. As predicted, ΔWC are negatively related to current *CFO* (-0.720 pooled, -0.614 to -0.796 for

sub-periods). These values are lower than in Dechow and Dichev (2002) and closer to the theoretical value of -1. The decrease of the coefficients over time (i.e. coefficients become more negative) is consistent with higher quality of accruals. The sub-period analyses (pooled) and sub-period controls (*PERIOD*2**DUM***CFO*$_t$ and *PERIOD*3**DUM***CFO*$_t$) reveal that the estimated coefficient β_2 in fact decreases over time (i.e. becomes more negative). The relations to past and future *CFO* are significantly positive as expected in all sub-periods. The R^2s range between 59.1% and 75.2% (higher than in Dechow and Dichew, 2002) and indicate the relatively good explanatory power of the models. Moreover, their increase over time is consistent with increase in accounting quality.

< TABLE 6 ABOUT HERE >

6. Additional analyses and sensitivity tests

In this section we address various sensitivity issues. For brevity, detailed results are not tabulated but are available from the authors on request.

First, the last period under study (i.e. 2006-2014) is characterised by the financial crisis, which both affects true firm performance and possibly influences firms' reporting incentives. For this sub-period, data availability for private firms has increased. Coincidentally, for the period 2006 onwards, we have data on the number of owners of private firms (separately for private owners and corporate owners), as well as on whether or not they were audited. We therefore re-estimate model 1, the asymmetric earnings timeliness, and model 2, the two roles of accounting accruals, allowing the regression coefficients to vary by the number of private owners (*PO*) and corporate owners (*CO*) and whether the firms are audited (*AUD*=1 if the firm was audited in year *t* or not). At the same time, we subdivide this sub-period into a pre-crisis period (2006-2008) and crisis period (2009-2013).[20] The selection is based on macroeconomic data from the Statistical Office of the Republic of Slovenia (2016) according to whether GDP growth was positive or negative in a particular year.

Untabulated results of re-estimated model 1 show that, overall, earnings reported by firms with more private owners revert slightly less fast, and losses reported by firms with more corporate owners revert to the mean slightly faster. This last result is consistent with firms that are part of a group and hence operate in a more complex environment following the intent of accounting standards closer than firms that are not part of a group. The profits and losses of firms that are audited do not differ systematically from firms that are not audited. However, in the pre-crisis period, the asymmetric recognition of earnings decreases for audited firms is about half that of non-audited firms. This is generally inconsistent with auditing being associated to higher accounting quality. However, it is consistent with private firms exploiting (voluntary) audit status as a 'label' in an attempt to signal higher-quality earnings, an attempt that ultimately appears to fail (see preliminary evidence in Koren, Kosi & Valentincic, 2014). Another explanation for this result is that auditors restrict certain accounting choices that are more likely to be related to opportunistic discretion (e.g. write-offs). This would consequently smooth out earnings.

In terms of the financial crisis, none of the governance variables has a statistically significant influence on the asymmetry of recognition of gains and losses. We note, however, that during the financial crisis, the asymmetric timeliness of loss recognition is considerably lower than overall, a likely consequence of firms delaying loss recognition as much as possible in an attempt to keep solvency ratios and debt covenants at adequate levels. Anecdotal evidence suggests that firms apply a variety of loss-delaying accounting practices (e.g. reluctance of writing off accounts receivable even when past due for over 360 days, reluctance of inventory write-offs despite significant decline in market prices) as well as other practices affecting accruals (e.g. increasing useful lives of depreciable assets). According to Wagenhofer (2011) there should be a mechanism in place that ensures that firms comply with the reporting regulation and report truthfully. Hence, it is worth emphasising that if a Slovenian private firm does not have an audit committee and is not subject to (statutory or voluntary) external audit, its financial reporting practices are not monitored by any

other enforcement mechanism. Prior research (e.g. Barth et al., 2008) suggests that lax enforcement can result in limited compliance with the standards, thereby limiting their effectiveness.

Our results differ from Filip & Raffournier (2014), who report that earnings management of European-listed firms significantly decreased during the crisis years. On the basis of the existing literature they provide various arguments in favour and against higher level of earnings management in the periods of economic downturn. Nevertheless, they justify their findings with the following arguments. First, managers have less incentive to manipulate earnings in crisis periods due to a higher market tolerance for poor performance. Second, monitoring from auditors, creditors and other stakeholders as well as litigation risk increase during crises, which should dissuade insiders from engaging in earnings management. Finally, the behaviour of firms may also respond to a higher demand for more timely earnings in difficult periods. We conjecture that our results are different because we have a sample of private firms, where the degree of agency problems between owners and managers is lower. Based on our descriptive statistics we assume that non-equity financing is important for the majority of our sample firms. In this setting Gassen and Fülbier (2015) argue that a main role of earnings is to serve as a contractible signal on which firms and creditors can coordinate and enforce contracts. Since 15% of observations have no financial debt (either they do not have access/do not use financial debt), our private firms rely heavily on trade credit as their source of finance. Gassen and Fülbier (2015) find that trade credit exhibits a stronger relation with earnings smoothness than other sources of finance. This might be because trade creditors are particularly prone to bankruptcy risk, less efficient in monitoring and handling debt renegotiations and, therefore, less able to monitor their 'investments' by other means. Therefore, in a situation of financial distress, loss-delaying/profit-increasing accrual-related accounting practices should reduce re-contracting costs with (trade and bank) creditors.[21] In addition, Burgstahler et al. (2006) argue that for highly-levered and financially distressed private firms the fear of creditor interference and the subsequent loss of private control benefits can also create incentives to mask (i.e. improve) true

performance.[22] Moreover, in the Slovenian environment with lax oversight of private firm reporting firms might find it easier to use discretion to achieve the desired financial reporting outcome.

Untabulated results of re-estimated model 2 document that for firms with more private owners accruals have a lesser role in mitigating cash flow mismatch, and for firms that have corporate owners (possibly considered as subsidiaries), accruals appear to mitigate cash flow mismatches more than for firms that do not have corporate owners. Again, this last result is consistent with additional demand for high-quality financial reporting in more complex reporting environments. Moreover, for firms that have corporate owners there is a clear positive incremental coefficient on negative operating cash flows, consistent with accruals facilitating timely recognition of economic losses as in Ball & Shivakumar (2005). In a similar vein, we find that during the financial crisis (2009-2013) accruals facilitate timely recognition of economic losses. Regardless of the crisis, we document that accruals better mitigate cash flow mismatches for audited firms (i.e. incremental coefficient is negative).

Second, the firms in our sample are subject to capital market constraints. Therefore, when they seek external financing, they subject their financial reporting practices to requirements demanded by the external financers, banks in the vast majority of cases. Hence, we explore the issue of financial debt in more detail and re-estimate the same two models (1 and 2) for firms that have access to/use financial debt as part of their financing structures versus firms that do not have access to/do not use financial debt. Untabulated results show that firms with financial debt exhibit slightly weaker asymmetric timeliness of economic loss recognition, consistent with firms smoothing out any losses to report smooth earnings, presumably a desirable property of earnings from a creditor's perspective. Less obvious is the result that profits (ΔNI_{t-1}) are less persistent for firms with financial debt. One possible explanation is that this is purely a mechanical effect of interest expense in the income statement: a fixed interest charge would increase variability of earnings and so make it more variable (less permanent). Similarly, accruals of firms with financial debt have a more prominent role in alleviating the mismatch issue and less anomalous timely recognition of losses ($DUM*CFO_t$ closer

to zero) compared to firms without financial debt (the incremental coefficient on financial debt firms would thus be relatively large and positive). This is consistent with creditors demanding timely recognition of economic losses in financial statements (albeit inconsistent with creditors demanding smooth earnings).

Third, this paper is essentially a historical analysis of a country's development of the financial reporting practices. Even though we have carefully selected our sample for the main analyses, a natural question is whether our inferences are sensitive to exclusion of two extreme categories: micro firms and the largest 200 firms in each year. Therefore, we repeat all analyses by reincluding micro firms that were previously excluded (firms with less than five employees) and, within each year, 200 of the largest firms (essentially reinstating all public non-financial firms). We maintain all other requirements as in the main analyses. This expands the sample by more than 3-times to 503,970 firm-year observations. Firms included in the sample represent, for example in 2014, 87.3% of total employment, 89.6% of total revenue and 76.6% of total assets of non-financial firms. Untabulated results remain qualitatively and quantitatively similar. Interestingly, we find that in the asymmetric timeliness model (model 1), the estimated regression coefficient on earnings increases (α_2) is closer to zero (profits are more persistent), α_3 is closer to -0.500 (losses mean-revert faster) and the adjusted R^2s are higher. Similarly, in model 2 accruals still do not (always) facilitate timely recognition of losses, but the estimated β_3 coefficient is less negative than in the main analyses.

Fourth, about 3.9 % of observations in our sample report negative equity. While normally treated as an indicator of 'failure', anecdotal evidence suggests that often these are subsidiaries of established foreign firms. In these cases, negative equity may be a result of transfer pricing. Results of model 1 show that for firms with negative equity earnings increases are permanent, while earnings decreases are strongly mean reverting. The result is stronger if we explicitly control for the number of corporate owners (an indicator of the parent-subsidiary status of reporting firms).

Fifth, growth affects the level of accruals (other than reversals and estimation errors). For a given level of underlying profitability, firms with high growth will report lower profitability (e.g.

Fairfield, Whisenant & Yohn, 2003; Richardson, Sloan, Soliman & Tuna, 2006) and our models use different measures of profitability. High growth firms are more affected by unconditional conservatism (Monahan, 2005) and more likely to require additional external financing, so they are more interested in producing higher-quality earnings. We thus repeat the main analyses in models 1–3 to isolate the effect of growth. For each 2-digit industry code we split the firms in the low-growth and high-growth groups by median growth of total revenue within that industry (Valentincic, 2015). We find that for high-growth firms, economic gains (earnings increases) are more permanent, and economic losses (earnings decreases) are more transitory than for low growth firms. In terms of the two roles of accruals, we do not find any economically meaningful differences between the two groups of firms. In terms of predictability of future cash flows we find that the current level of net income is less predictive of future *CFO*, and that losses reverse less quickly (i.e. are more persistent) than for low-growth firms.

Sixth, our sample period not only covers the three sets of SAS, but is also characterised by qualitatively different macroeconomic environments. Because of extreme variation in main macroeconomic aggregates (e.g. GDP growth, rate of inflation, average bank interest rates), we re-estimate all our analyses with a battery of different methods to ensure that the main inferences are not sensitive to the empirical method used.

Finally, we repeat the analyses by calculating Fama-MacBeth (1973) cross-sectional and Petersen (2009) two-way clustered standard errors. We find again that the results reported in the main analyses are robust to the particular estimation method employed.

7. Conclusion

This is the first comprehensive study that empirically evaluates the two-decade-old history of development of accounting standards in Slovenia and their association with accounting quality. The history of SAS begins in 1994 when the institutional framework consistent with market economies

was established, and, effectively, ends with SAS (2006), valid until the end of 2015, which are largely aligned with IFRS. A distinct feature of our setting is the system of financial statement data collection, which ensures consistent, high-quality data for all firms. With this advantage we investigate the association between accounting standards and accounting quality in private firms where market demand for high-quality financial reporting is low. Moreover, our study is among the first to empirically analyse private firms in a CEE country and can serve as a comparison for studies to be conducted in other CEE countries.

We find that accounting quality increased with the development process of accounting standards. As expected, we document particularly strong evidence for the first, major, change in accounting standards. Aggregate earnings management measures indicate that the use of accounting discretion decreases over time and there is less earnings smoothing. Regression-based measures show that the main features of accounting quality have been consistent throughout the historical development of SAS and comparable to features observed for private firms elsewhere. Asymmetric timeliness of earnings, the ability of earnings to predict future cash flows, and the ability of accruals to mitigate mismatching are all present throughout the sample period under study. These features are significantly more pronounced in the latter two sub-periods relative to the first one. We also document a few divergences from properties expected under high accounting quality. For example, accruals do not (always) facilitate timely recognition of losses. We attribute these divergences to the influence of reporting incentives (e.g. taxation, debt, size) rather than to (lower) quality of accounting standards per se.

While overall we show that throughout the three sets of SAS earning quality has increased, we acknowledge that accounting standards are not the sole factor influencing firms' financial reporting practices. They are an outcome of various features of the financial reporting system including enforcement and litigation as well as reporting incentives (Soderstrom & Sun, 2007; Barth et al., 2008).[23] We conjecture that institutional features such as litigation, accounting enforcement and audit regulation remain relatively constant for private firms over our sample period (World Bank,

2014). Conversely, reporting incentives (including opportunistic discretion exercised by managers; Barth et al., 2008) might fluctuate, particularly in times of economic shock such as the recent financial crisis. It is beyond the scope of this study to determine the relative contribution of each of these features directly so we caution the reader to interpret the results accordingly. Finally, we investigate private firms in a single country and avoid the need to control for potentially confounding effects of country-specific factors that are not related to the financial reporting system. The results might thus not generalise to other economies.

Notes

[1] Federation of European Securities Exchanges (2016) reports the lowest number of firms with listed shares as of December 2014 among CEE countries in Czech Republic and Hungary (23 and 48 respectively), and the highest in Slovakia and Bulgaria (125 and 372 respectively). For Slovenia, 51 firms are reported.
[2] To be precise, their EE sample includes Slovenia and results are presented at the country level.
[3] Results per county show the same characteristics for CEE countries (EIM Business and Policy Research, 2009).
[4] Schipper and Vincent (2003) argue that accounting standard setters view the quality of financial reports as an indirect indicator of the quality of accounting standards.
[5] The fourth set of standards was introduced in 2016. SAS 2016 are highly aligned with IFRS, but they are stand-alone standards without any direct references to IFRS (Novak & Valentincic, 2017). On the other hand, SAS 2006 directly referred to IFRS for detailed guidance (e.g. financial leases, business combinations).
[6] At least in part due to high-quality data, Slovenia features a number of finance (e.g. Foye et al., 2013; Crnigoj, 2016; Marinsek, Pahor, Mramor & Lustrik, 2015) and accounting papers (e.g. Kosi & Valentincic, 2013), so an assessment of the accounting properties from a longitudinal point is overdue in order to solidify the external validity of this research.
[7] Although Slovenia's company law is based on German legislation, it has separate company law and bankruptcy/reorganisation law, and does not have such an extensive commercial code as Germany.
[8] Initially, 32 standards were developed and later new ones were added, totalling 38 topically organised standards. SAS 1994 encompassed a wider scope than IFRS. At that time (and until SAS 2016) a specific feature of SAS was that they did not exclusively focus on external financial reporting but also provided some solutions for internal reporting. Nevertheless, detailed aspects of internal reporting were not elaborated in SAS since they largely depend on the needs of a specific entity. SAS 1994 and later are aimed primarily at firms. But they can be applied by other entities depending on their specific requirements and subject to the relevant national regulation.
[9] The evaluation approach based on the appropriate price index influenced the so-called 'formation' and 'utilisation' of revaluation result. The formation of revaluation result comprised the effects of revaluation of carrying amounts of fixed assets, inventories, contractual rights, depreciation, amortisation and costs of material, while the utilisation of revaluation result comprised the effects of revaluation of liabilities and equity. If the utilisation of revaluation result within an accounting period was above (below) the formation of revaluation result, the deficit (surplus) was included as a separate line item of the income statement under financial expenses (revenues).
[10] If the affected asset was previously upwardly revalued ('strengthened'), any write-off had to be first charged against previously recognised revaluation surplus, presented in equity.
[11] For other differences between SAS 2002 and IAS see World Bank (2004).
[12] Note that since *ACC+CFO=NI* the model in 3 is a disaggregated version of the model employed in Kosi and Valentincic (2013): $CFO_{t+1} = \gamma_0 + \gamma_1 LOSS_t + \gamma_2 NI_t + \gamma_3 LOSS_t * NI_t + e_t$ where higher-quality earnings

resulting from higher accounting quality should be better able to predict future cash flows (γ_2>0), and losses should be highly transitory i.e. less persistent (γ_3<0).

[13] Dechow and Dichev (2002) measure does not require assumptions about unmanaged accounting fundamentals, and provides a direct link between cash flows and current accruals. But it does not distinguish non-manipulative estimation errors from intentional earnings management and requires the assumption that working capital accruals lag or lead cash receipts and disbursements by no more than one year (Schipper & Vincent, 2003).

[14] This data actually includes financial statements from 1994, but we require opening values of total assets as deflators. No comparable data for observations prior to 1994 is available.

[15] The criteria are expressed in terms of number of employees, size of total assets and total revenue. According to Recommendation 2003/361/EC, a micro firm is a firm where the number of employees < 10 and balance sheet totals (total assets) ≤ EUR 2m or net turnover (sales) ≤ EUR 2m. A medium firm (firms larger than this are 'large') is a firm where the number of employees < 250 and balance sheet totals (total assets) ≤ EUR 43m or net turnover (sales) ≤ EUR 50m.

[16] There are approximately 600 firm-years in our sample that are officially classified as large.

[17] It is also not an error. We require the entry criteria of 5 employees only for micro firms, but not for other relatively large firms. These can have relatively large assets and revenue yet no employees.

[18] Graham, Harvey and Rajgopal (2005) report that the US financial executives of relatively big public firms have strong preferences for smooth earnings, which are perceived as less risky by investors. They believe that smoother earnings improve the predictability of future earnings, which in turn increases stock price. Smooth earnings also reassure suppliers and customers that the business is stable. Moreover, more than three-fourths of the financial executives were willing to sacrifice some economic value to achieve smooth earnings.

[19] After gaining independence from the former Yugoslavia in 1991, Slovenia quickly established a process to transform a large number of commercial enterprises from 'social' (i.e. 'labour managed') to private ownership. The 1992 Law on Ownership Transformation included components of both voucher and cash privatisation. The law provided that 20% of the capital of the subject firms would be allocated to managers and employees; 20% would be allocated equally to two state funds (a pension fund and a restitution fund); and up to 20% would be allocated to Privatisation Investment Funds (PIFs), or voucher funds, that would obtain shares in return for privatisation vouchers collected from the public. The remaining 40% was available for discretionary distribution by workers' councils to be sold either to employees/managers or to outside parties. The employees/managers mainly chose to distribute these shares to firm insiders, but not necessarily extensively to management (OECD, 2011). A total of 1,334 firms were privatised (Mramor & Valentincic, 2001).

[20] In 2014, aggregate GDP growth was again positive and so the data for 2014 is included in the pooled results, but not included in either of the two sub-periods.

[21] Based on reasoning of Christie and Zimmerman (1994, p. 542), cited by Lehman (2016, p. 328).

[22] While it is common in some European countries that bank representatives sit on supervisory boards of public firms, making them effectively corporate insiders, banks rarely assume this role in private firms (mainly because supervisory boards are less common). Therefore, reported performance is likely to be an important trigger for lender intervention (Burgstahler et al., 2006). Currently in Slovenia the two-tier model prevails amongst larger, listed firms, while single-tier boards are mainly adopted by smaller firms.

[23] Several studies show the importance of law enforcement for financial reporting outcomes in cross-country settings (e.g. Bushman & Piotroski, 2006; Daske, Hail, Leuz & Verdi, 2008) but we focus on a single country.

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TABLES & FIGURE

Table 1: Sample formation procedure

All observations	917,405	
Less financial, real estate, other	-99,305	
Less inactive firms or firms less than 12 months in operation	-135,945	
Less micro firms (<5 employees) & largest 200 firms per year	-509,504	
Less simultaneous top/bottom 1% restriction on variables	-24,289	
Total observations (firm-years) in sample:	**148,362**	
Of which:	#	%
Micro with 5 or more employees	62,346	42.02
Small	63,615	42.88
Medium	19,484	13.13
Large	2,917	1.97
Profit observations	124,851	84.15
Loss observations	23,511	15.85
No financial debt	22,349	15.06
Access to financial debt	126,013	84.94
Positive equity	142,597	96.11
Negative equity	5,765	3.89

Table 2: Descriptive statistics (1995-2014)

Panel A: Descriptive statistics of variables

	Mean	St. dev.	Min.	Q25	Median	Q75	Max	Skew	n
NI_t	0.0416	0.1125	-0.8608	0.0034	0.0238	0.0739	1.0047	0.6815	148,362
$NI_t \leq 0$ (*DUM*)	0.1585	0.3652	0.0000	0.0000	0.0000	0.0000	1.0000	1.8705	148,362
ΔNI_t	0.0058	0.1038	-0.7514	-0.0233	0.0006	0.0282	1.3749	1.0283	148,362
$\Delta NI_t \leq 0$ (*DUM*)	0.4822	0.4997	0.0000	0.0000	0.0000	1.0000	1.0000	0.0711	148,362
ΔNI_{t-1}	0.0152	0.1187	-0.6412	-0.0215	0.0014	0.0337	1.6324	2.6592	142,928
$\Delta NI_{t-1} \leq 0$ (*DUM*)	0.4641	0.4987	0.0000	0.0000	0.0000	1.0000	1.0000	0.1438	142,928
ACC_t	-0.0589	0.2143	-2.4673	-0.1366	-0.0478	0.0305	1.8976	-0.8955	148,362
ACC_{t-1}	-0.0622	0.2521	-3.7532	-0.1411	-0.0475	0.0348	2.7418	-1.4926	142,928
ΔWC_t	0.0195	0.1972	-2.0972	-0.0537	0.0161	0.0965	1.8976	-0.4227	148,362
CFO_t	0.1005	0.2320	-1.8364	-0.0030	0.0759	0.1834	2.6524	1.1957	148,362
$CFO_t \leq 0$ (*DUM*)	0.2585	0.4378	0.0000	0.0000	0.0000	1.0000	1.0000	1.1033	148,362
CFO_{t+1}	0.0838	0.2000	-0.9264	-0.0077	0.0690	0.1685	1.5227	0.4659	139,946
CFO_{t-1}	0.1163	0.2773	-2.1351	-0.0008	0.0814	0.1980	4.0021	2.0109	142,928

Notes: Number of observations is 148,362 firms-years, but some variables are limited by lead/lag availability. The reported statistics are for the pooled sample 1995-2014. Variables are defined as follows: NI_t is bottom-line net income, ACC_t is total (operating) accruals, ΔWC_t is working capital accruals, CFO_t is cash flow from operations. All variables are deflated by opening total assets (t-1). Δ denotes annual change of a variable.

Panel B: Firm-level descriptive statistics

	Mean	St. dev.	Min.	Q25	Median	Q75	Max	Skew	n
Revenue	3,173,762	8,321,166	29	409,222	958,599	2,600,000	590,000,000	12.275	148,362
Operating profit	94,599	512,577	-26,000,000	1,448	22,229	92,677	19,000,000	1.436	148,362
Net income	60,649	506,859	-31,000,000	1,509	12,831	62,409	16,000,000	-7.078	148,362
Op. cash flow	152,916	967,736	-39,000,000	-901	37,307	158,212	32,000,000	-3.086	148,362
Total accruals	-92,150	923,869	-42,000,000	-109,525	-21,454	13,893	46,000,000	4.611	148,362
Working-cap. acc.	47,710	861,451	-27,000,000	-31,234	6,368	67,234	47,000,000	11.084	148,362
Total assets	2,558,662	5,322,093	1,360	279,215	748,233	2,200,000	60,000,000	4.638	148,362
Equity	1,025,507	2,634,473	-33,000,000	60,612	216,521	775,922	52,000,000	5.532	148,362
Financial debt	736,705	2,049,699	0	24,837	141,822	527,066	64,900,000	7.098	148,362
# of employees	33.1862	76.2512	0.0000	7.0000	11.0000	26.0800	8,883.0000	16.982	148,362
Info 2006-2014:									
# Owners (*PO*)	2.705	9.867	0	1	2	2	556	26.763	71,836
# Owners (*CO*)	0.582	1.512	0.000	0.000	0.000	1.000	51.000	8.994	71,836
Audited (*AUD*)	0.102	0.303	0.000	0.000	0.000	0.000	1.000	2.632	73,532

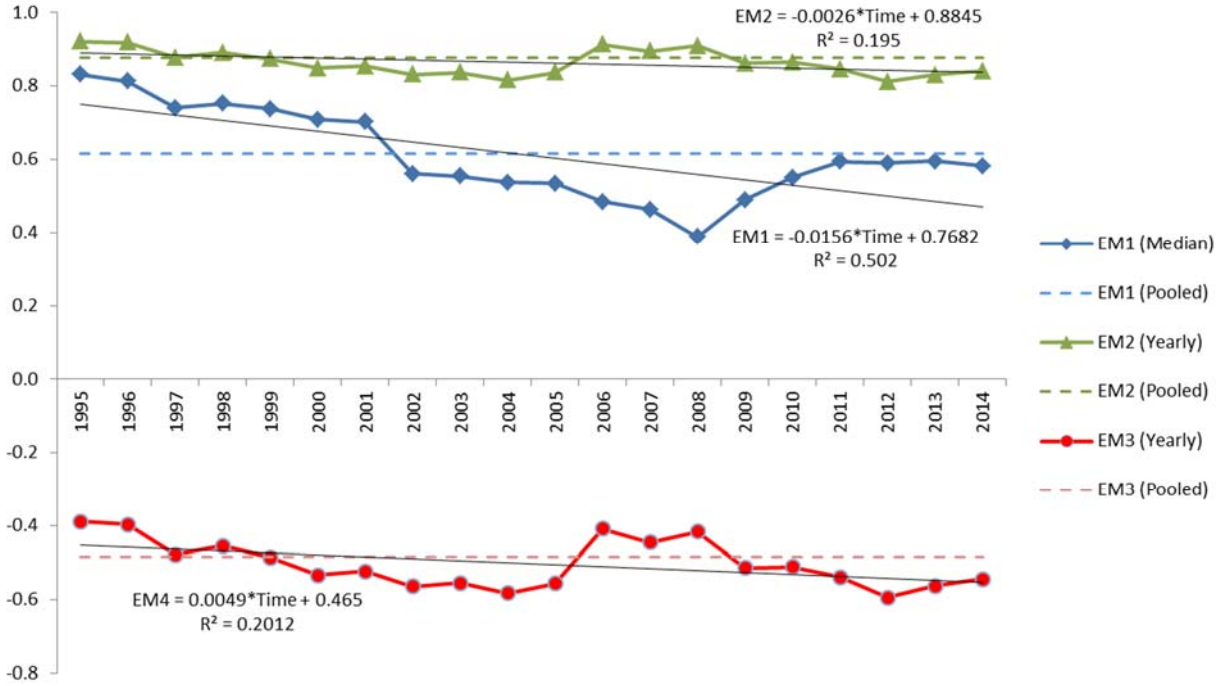
Notes: All amounts of financial statement items/variables are in EUR (*not* thousand EUR). Number of observations is 148,362 firm-years. Statistics are for pooled sample 1995-2014. Financial statement variables denominated in local ('pre-euro') currency. *Slovenian tolar* is converted to euros using the fixed exchange rate at the time of adopting the euro of 239.64 Slovenian tolar/euro. Slovenia adopted the euro on 1.1.2007. Ownership and auditing information is collected separately and is only available for years 2006-2014.

Panel C: Correlation matrix, pooled

	NI_t	ΔNI_t	$\Delta NI_t \leq 0$	ACC_t	ACC_{t-1}	ΔWC_t	CFO_t	CFO_{t+1}
ΔNI_t	**0.617**							
	(0.000)							
$\Delta NI_t \leq 0$	**0.207**	**-0.230**						
	(0.000)	**(0.000)**						
ACC_t	**0.099**	**0.070**	**0.017**					
	(0.000)	**(0.000)**	**(0.000)**					
ACC_{t-1}	**0.008**	**-0.083**	**0.023**	**0.071**				
	(0.003)	**(0.000)**	**(0.000)**	**(0.000)**				
ΔWC_t	**0.140**	**0.099**	**0.029**	**0.930**	**-0.012**			
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**			
CFO_t	**0.394**	**0.235**	**0.087**	**-0.876**	**-0.061**	**-0.791**		
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**		
CFO_{t+1}	**0.224**	**0.083**	**0.060**	**-0.071**	**-0.089**	**0.020**	**0.174**	
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	
CFO_{t-1}	**0.210**	**-0.051**	**0.277**	**-0.051**	**-0.891**	**0.034**	**0.151**	**0.156**
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**

Notes. Number of observations is 148,362 firm-years, but some variables are limited by lead/lag availability. The reported Pearson's correlation coefficients are for the pooled sample 1995-2014. Variables are defined as follows: NI_t is bottom-line net income, ACC_t is total (operating) accruals, ΔWC_t is working capital accruals, CFO_t is cash flow from operations. All variables are deflated by opening total assets (t-1). Δ denotes annual change of a variable. Boldfaced coefficients are significant at 1% or better.

Figure 1: Aggregate measures of earnings management



Notes: Number of observations is 148,362 firm-years. Four aggregate earnings management (EM) measures are shown (solid lines with markers), pooled value of EM measure (broken lines, no markers) and the linear trend (solid thin line) together with the corresponding time-trend regression. *EM*1 is median ratio of the absolute value of total accruals (*ACC*) scaled by the value of cash flows from operations (*CFO*) by year *t*: $EM1_t = |ACC_{it}|/CFO_{it}$; *EM*2 is contemporaneous Spearman's correlation between *ACC* and *CFO* (multiplied by -1 so that higher values correspond to more earnings management): $EM2_t = -\rho(CFO_{it}, ACC_{it})$; *EM*3 is an indicator of earnings smoothing: ratio of standard deviation of bottom-line earnings and standard deviation of cash flows: $EM3_t = -(\sigma(NI_{it})/\sigma(CFO_{it}))$.

Table 3: Asymmetric timeliness of earnings, 1995-2014 and by sub-period

	Pooled 1995-2014	Pooled 1995-2014	Sub-per. 1 1995-2001	Sub-per. 2 2002-2005	Sub-per. 3 2006-2014	Constant sample	Const. sample by sub-per.
DUM	**-0.010*** **	**-0.011*** **	**-0.011*** **	**-0.011*** **	**-0.009*** **	**-0.008*** **	**-0.007*** **
	(-0.001)	**(-0.001)**	**(-0.001)**	**(-0.001)**	**(-0.001)**	**(-0.001)**	**(-0.002)**
ΔNI_{t-1}	**-0.125*** **	**-0.140*** **	**-0.136*** **	**-0.133*** **	**-0.118*** **	**-0.155*** **	**-0.159*** **
	(-0.003)	**(-0.005)**	**(-0.006)**	**(-0.007)**	**(-0.004)**	**(-0.009)**	**(-0.013)**
$DUM*\Delta NI_{t-1}$	**-0.368*** **	**-0.312*** **	**-0.323*** **	**-0.402*** **	**-0.381*** **	**-0.369*** **	**-0.296*** **
	(-0.006)	**(-0.011)**	**(-0.012)**	**(-0.014)**	**(-0.009)**	**(-0.017)**	**(-0.026)**
Year-FE	Yes	No	Yes	Yes	Yes	Yes	No
Industry-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
*PERIOD*2		**-0.002***					**-0.006****
		(-0.001)					**(-0.002)**
*PERIOD*3		**-0.004*** **					**-0.013*** **
		(-0.001)					**(-0.002)**
*DUM*PERIOD*2		0.002					-0.002
		(0.002)					(-0.003)
*DUM*PERIOD*3		0.001					-0.003
		(0.001)					(-0.003)
$PERIOD2*\Delta NI_{t-1}$		**0.026****					-0.028
		(0.008)					(-0.026)
$PERIOD3*\Delta NI_{t-1}$		**0.020****					0.025
		(0.007)					(-0.021)
$PERIOD2*DUM*\Delta NI_{t-1}$		**-0.130*** **					**-0.130***
		(-0.017)					**(-0.050)**
$PERIOD3*DUM*\Delta NI_{t-1}$		**-0.056*** **					**-0.123****
		(-0.014)					**(-0.038)**
Constant	**-0.006***	0.003	-0.002	-0.008	0.007	0.002	0.004
	(-0.003)	(0.003)	(-0.005)	(-0.005)	(0.004)	(0.005)	(0.004)
R-squared	0.088	0.079	0.076	0.086	0.095	0.104	0.093
N	142,928	142,928	39,332	30,064	73,532	21,014	21,014

Notes: Variables are defined as follows: NI_t is bottom-line net income, Δ denotes change in the variable, *DUM* is a dummy variable defined as *DUM*=1 if $\Delta NI_{t-1} \leq 0$. All variables are deflated by opening total assets (*t*-1). Standard errors of estimated regression coefficients reported in parentheses below estimated coefficients. *PERIOD*2 denotes the sub-period 2 (2002-2005), and *PERIOD*3 denotes the sub-period 3 (2006-2014). Constant sample consists of firms operating in all years 1995-2014.Boldfaced coefficients are significant at 5% or better, levels of significance marked as: * p<0.05, ** p<0.01, *** p<0.001. The estimated regression equation is:

$$\Delta NI_t = \alpha_0 + \alpha_1 DUM + \alpha_2 \Delta NI_{t-1} + \alpha_3 DUM \cdot \Delta NI_{t-1} + e_t .$$

Table 4: The two roles of accruals in the financial reporting process: the B&S (2005) model, 1995-2014 and by sub-period

	Pooled 1995-2014	Pooled 1995-2014	Sub-per. 1 1995-2001	Sub-per. 2 2002-2005	Sub-per. 3 2006-2014	Constant sample	Const.sample by sub-per.
DUM	**-0.011*** **	**-0.015*** **	**-0.014*** **	-0.002	**-0.005*** **	**-0.009*** **	**-0.012*** **
	(-0.001)	**(-0.002)**	**(-0.002)**	(-0.002)	**(-0.001)**	**(-0.002)**	**(-0.003)**
CFO_t	**-0.767*** **	**-0.814*** **	**-0.810*** **	**-0.643*** **	**-0.746*** **	**-0.763*** **	**-0.805*** **
	(-0.002)	**(-0.002)**	**(-0.002)**	**(-0.005)**	**(-0.002)**	**(-0.004)**	**(-0.004)**
$DUM*CFO_t$	**-0.196*** **	**-0.093*** **	**-0.104*** **	**-0.331*** **	**-0.221*** **	**-0.220*** **	**-0.141*** **
	(-0.004)	**(-0.011)**	**(-0.011)**	**(-0.008)**	**(-0.005)**	**(-0.012)**	**(-0.025)**
Year-FE	Yes	No	Yes	Yes	Yes	No	No
Industry-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
*PERIOD*2		-0.002					**-0.015*** **
		(-0.001)					**(-0.002)**
*PERIOD*3		**0.012*** **					**-0.014*** **
		(0.001)					**(-0.002)**
*DUM*PERIOD*2		**0.012*** **					**0.013***
		(0.002)					**(0.005)**
*DUM*PERIOD*3		**0.011*** **					**0.012****
		(0.002)					**(0.004)**
*PERIOD*2$*CFO_t$		**0.171*** **					**0.164*** **
		(0.005)					**(0.012)**
*PERIOD*3$*CFO_t$		**0.075*** **					**0.115*** **
		(0.003)					**(0.009)**
*PERIOD*2$*DUM*CFO_t$		**-0.236*** **					**-0.238*** **
		(-0.014)					**(-0.039)**
*PERIOD*3$*DUM*CFO_t$		**-0.141*** **					**-0.165*** **
		(-0.012)					**(-0.030)**
Constant	**-0.032****	-0.020	-0.021	**-0.026*** **	-0.001	0.011	0.020
	(-0.011)	(-0.011)	(-0.012)	**(-0.005)**	(-0.005)	(-0.019)	(-0.019)
R-squared	0.781	0.781	0.797	0.714	0.778	0.786	0.785
N	148,362	148,362	44,766	30,064	73,532	22,120	22,120

Notes: Variables are defined as follows: CFO_t is cash flow from operations, ACC_t is total (operating) accruals, *DUM* is a dummy variable defined as *DUM*=1 if $CFO_t \leq 0$. All variables are deflated by opening total assets (*t*-1). Standard errors of estimated regression coefficients reported in parentheses below estimated coefficients. *PERIOD*2 denotes the sub-period 2 (2002-2005), and *PERIOD*3 denotes the sub-period 3 (2006-2014). Constant sample consists of firms operating in all years 1995-2014.Boldfaced coefficients are significant at 5% or better, levels of significance marked as: * p<0.05, ** p<0.01, *** p<0.001. The estimated regression equation is: $ACC_t = \beta_0 + \beta_1 DUM + \beta_2 CFO_t + \beta_3 DUM \cdot CFO_t + e_t$.

Table 5: The ability of current and lagged earnings components to predict future cash flows, 1995-2014 and by sub-period

	Pooled 1995-2014	Pooled 1995-2014	Sub-per. 1 1995-2001	Sub-per. 2 2002-2005	Sub-per. 3 2006-2014	Constant sample	Const.sample by sub-per.
CFO_{t-1}	**0.127*** **	**0.122*** **	**0.125*** **	**0.105*** **	**0.139*** **	**0.194*** **	**0.184*** **
	(0.005)	**(0.005)**	**(0.009)**	**(0.010)**	**(0.007)**	**(0.015)**	**(0.015)**
ACC_{t-1}	**0.079*** **	**0.077*** **	**0.070*** **	**0.069*** **	**0.105*** **	**0.110*** **	**0.097*** **
	(0.005)	**(0.005)**	**(0.009)**	**(0.010)**	**(0.007)**	**(0.015)**	**(0.015)**
CFO_t	**0.323*** **	**0.373*** **	**0.371*** **	**0.300*** **	**0.265*** **	**0.371*** **	**0.405*** **
	(0.006)	**(0.010)**	**(0.010)**	**(0.013)**	**(0.009)**	**(0.016)**	**(0.022)**
ACC_t	**0.340*** **	**0.291*** **	**0.305*** **	**0.321*** **	**0.387*** **	**0.298*** **	**0.252*** **
	(0.007)	**(0.011)**	**(0.011)**	**(0.014)**	**(0.010)**	**(0.017)**	**(0.024)**
DUM	**-0.006*** **	**-0.018*** **	**-0.018*** **	-0.006	**-0.013*** **	**-0.009***	-0.014
	(-0.002)	**(-0.003)**	**(-0.003)**	(-0.003)	**(-0.002)**	**(-0.004)**	(-0.007)
$DUM*CFO_t$	**0.054*** **	**-0.138*** **	**-0.128*** **	**-0.109*** **	**0.158*** **	0.015	-0.069
	(0.013)	**(-0.03)**	**(-0.031)**	**(-0.025)**	**(0.017)**	(-0.044)	(-0.082)
$DUM*ACC_t$	**-0.106*** **	**0.099*** **	**0.088*** **	**-0.094*** **	**-0.212*** **	0.027	**0.233*** **
	(-0.011)	**(0.023)**	**(0.024)**	**(-0.023)**	**(-0.016)**	(-0.038)	**(0.067)**
Year-FE	Yes	No	Yes	Yes	Yes	No	No
Industry-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
*PERIOD*2		**-0.026*** **					**-0.017*** **
		(-0.002)					**(-0.005)**
*PERIOD*3		**-0.017*** **					**-0.023*** **
		(-0.002)					**(-0.004)**
*DUM*PERIOD*2		**0.012***					-0.004
		(0.005)					(-0.011)
*DUM*PERIOD*3		0.003					-0.001
		(-0.004)					(-0.009)
$PERIOD2*CFO_t$		**-0.082*** **					**-0.120** **
		(-0.016)					**(-0.038)**
$PERIOD2*ACC_t$		0.016					-0.027
		(-0.017)					(-0.042)
$PERIOD3*CFO_t$		**-0.108*** **					**-0.062***
		(-0.012)					**(-0.032)**
$PERIOD3*ACC_t$		**0.101*** **					**0.142*** **
		(0.014)					**(0.035)**
$PERIOD2*DUM*ACC_t$		**-0.193*** **					**-0.193*** **
		(-0.033)					(-**0.108)**
$PERIOD3*DUM*ACC_t$		**-0.319*** **					**-0.319*** **
		(-0.028)					**(-0.087)**
$PERIOD2*DUM*CFO_t$		0.029					0.029
		(0.039)					(0.130)
$PERIOD3*DUM*CFO_t$		**0.312*** **					**0.312*** **
		(0.035)					**(0.103)**
Constant	**0.111*** **	**0.070*** **	**0.096*** **	**0.036*** **	**0.075*** **	**0.124*** **	**0.076*** **
	(0.006)	**(0.005)**	**(0.010)**	**(0.009)**	**(0.009)**	**(0.010)**	**(0.009)**
R-squared	0.104	0.104	0.112	0.065	0.108	0.149	0.145
N	134,512	134,512	39,332	30,064	65,116	19,908	19,908

Notes: Variables are defined as follows: CFO_t is cash flow from operations, ACC_t is total (operating) accruals, *DUM* is a dummy variable defined as *DUM*=1 if $CFO_t \leq 0$. All variables are deflated by opening total assets (*t*-1). Standard errors of estimated regression coefficients reported in parentheses below estimated coefficients. *PERIOD*2 denotes the sub-period 2 (2002-2005), and *PERIOD*3 denotes the sub-period 3 (2006-2014). Constant sample consists of firms operating in all years 1995-2014.Boldfaced coefficients are significant at 5% or better, levels of significance marked as: * p<0.05, ** p<0.01, *** p<0.001. The estimated regression equation is:

$$CFO_{t+1} = \gamma_0 + \gamma_1 CFO_{t-1} + \gamma_2 ACC_{t-1} + \gamma_3 CFO_t + \gamma_4 ACC_t + \gamma_5 DUM_t + \gamma_6 DUM \cdot CFO_t + \gamma_7 DUM \cdot ACC_t + e_t.$$

Table 6: The ability of working capital accruals to mitigate timing mismatches: the D&D (2002) model, 1995-2014 and by sub-period

	Pooled 1995-2014	Pooled 1995-2014	Sub-per. 1 1995-2001	Sub-per. 2 2002-2005	Sub-per. 3 2006-2014	Constant sample	Const.sample by sub-per.
CFO_{t-1}	**0.092*** **	**0.074*** **	**0.091*** **	**0.116*** **	**0.076*** **	**0.136*** **	**0.118*** **
	(0.001)	**(0.002)**	**(0.002)**	**(0.003)**	**(0.002)**	**(0.003)**	**(0.004)**
CFO_t	**-0.720*** **	**-0.636*** **	**-0.614*** **	**-0.706*** **	**-0.796*** **	**0.666*** **	**-0.593*** **
	(-0.001)	**(-0.002)**	**(-0.003)**	**(-0.003)**	**(-0.002)**	**(-0.004)**	**(-0.005)**
CFO_{t+1}	**0.135*** **	**0.160*** **	**0.184*** **	**0.132*** **	**0.103*** **	**0.151*** **	**0.175*** **
	(0.002)	**(0.003)**	**(0.003)**	**(0.003)**	**(0.002)**	**(0.004)**	**(0.005)**
Year-FE	Yes	No	Yes	Yes	Yes	No	No
Industry-FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
*PERIOD2*CFO*$_{t-1}$		**0.043*** **					**0.052*** **
		(0.003)					**(0.009)**
*PERIOD2*CFO*$_t$		**-0.067*** **					**-0.080*** **
		(-0.004)					**(-0.010)**
*PERIOD2*CFO*$_{t+1}$		**-0.025*** **					**-0.045*** **
		(-0.004)					**(-0.010)**
*PERIOD3*CFO*$_{t-1}$		**0.010*** **					**0.022** **
		(0.002)					**(0.007)**
*PERIOD3*CFO*$_t$		**-0.152*** **					**-0.170*** **
		(-0.003)					**(-0.008)**
*PERIOD3*CFO*$_{t+1}$		**-0.055*** **					**-0.054*** **
		(-0.003)					**(-0.008)**
Constant	**0.031*** **	**0.042*** **	**0.019** **	**0.032*** **	**0.064*** **	**0.040*** **	**0.038*** **
	(0.003)	**(0.003)**	**(0.006)**	**(0.005)**	**(0.005)**	**(0.005)**	**(0.005)**
R-squared	0.680	0.686	0.591	0.648	0.752	0.640	0.646
N	134,512	134,512	39,332	30,064	65,116	19,908	19,908

Notes: Variables are defined as follows: CFO_t is cash flow from operations, ΔWC_t is working capital accruals. All variables are deflated by opening total assets (t-1). Standard errors of estimated regression coefficients reported in parentheses below estimated coefficients. *PERIOD*2 denotes the sub-period 2 (2002-2005), and *PERIOD*3 denotes the sub-period 3 (2006-2014). Constant sample consists of firms operating in all years 1995-2014. Boldfaced coefficients are significant at 5% or better, levels of significance marked as: * p<0.05, ** p<0.01, *** p<0.001. The estimated regression equation is: $\Delta WC_t = \beta_0 + \beta_1 CFO_{t-1} + \beta_2 CFO_t + \beta_3 CFO_{t+1} + e_t$.