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Accounting Quality and Loan Pricing: The Effect of Cross-country Differences in Legal Enforcement

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ABSTRACT

This study examines whether the strength of legal enforcement at the country level plays a role in the value-relevance of accounting quality for loan pricing determination, using an international sample of firms reporting under IFRS. The underlying hypothesis is that stronger vs. weaker enforcement should affect the informativeness of financial statements, due to their increased credibility, and thus results in a stronger influence of accounting quality on loan pricing, in case this information is considered more reliable by potential lenders. Evidence indicates that accounting quality is consequential for the determination of loan spread only in combination with the level of legal enforcement, and this only holds for the countries with stronger legal enforcement. This evidence indicates that financial statement quality information is value-relevant and has a significant impact on the determination of loan pricing only if this information is considered to be credible enough by loan providers in a country, and this is the case when legal enforcement is stronger.

1. Introduction

There exists significant research indicating that the quality and credibility of financial information is incorporated into the pricing of bank loans, (e.g. Bharath, Sunder, & Sunder, 2008; Costello & Wittenberg-Moerman, 2011; Graham, Li, & Qiu, 2008; Kim et al., 2011a). Accounting quality is expected to affect loan pricing by determining the easiness of the prediction of the future financial position of borrowing firms, their ability to repay their loans, or by influencing the level of information asymmetry between insiders and outsiders (Bharath et al., 2008; Graham et al., 2008). Relevant studies have used a single country setting by focusing on the US market, resulting in unavoidable endogeneity of the relevant findings. Another stream of research, at this point, has indicated that the quality and strength of institutional enforcement mechanisms across countries significantly affect loan pricing and contracting terms (Bae & Goyal, 2009; Qian & Strahan, 2007). This is because country-specific institutional factors are expected to relate to the protection of creditor property rights, as well as contract enforceability (Bae & Goyal, 2009), with strong corporate governance and legal enforcement institutions to be working in the form of correcting mechanisms for uncertainty between insiders and outsiders.

The scope of this paper is to investigate whether the strength of legal enforcement at the country level plays a role for the value-relevance of accounting quality with respect to loan pricing determination. It is expected that the strength and effectiveness of country-level legal enforcement will relatively affect the informativeness of financial statements, due to anticipated increased credibility, and, as a result, the way in which the firm-specific quality of financial statements is incorporated into loan pricing.

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Stronger vs. weaker enforcement at the country level is expected to relate to stronger influence of accounting quality (hereafter, AQ) on loan pricing, under the assumption that lenders will consider this information more reliable in order to project the future cash flows and the probability of default for borrowers. This is because AQ has been considered to be to a significant extent endogenously determined by national institutional factors, such as the strength of the legal system, or political factors that differ among countries (Ball, 2006). A vast amount of research has indeed shown the existence of systematic differences among countries with respect to the quality of corporate financial statements, attributable to differing levels of efficiency of local institutional mechanisms (Ahmed, Neel, & Wang, 2013). This research has reached the unanimous conclusion that accounting quality is generally higher in strong enforcement countries relative to weak enforcement countries (Bhattacharya, Daouk, & Welker, 2003; Burgstahler, Hail, & Leuz, 2006; Leuz, Nanda, & Wysocki, 2003). This is because the strength of legal enforcement at the country level has been shown to affect contract enforceability, and resulting private benefits and control that can be extracted by insiders, the level of protection offered to shareholders (Kanagaretnam, Lim, & Lobo, 2010; Leuz et al., 2003), and the proper use of discretion permitted by accounting rules (Burgstahler et al., 2006).

In relation to the above, as underlined by Bushman and Piotroski (2006), another stream of research has further observed significant cross-country variation in the value-relevance of accounting numbers (e.g. Ali & Hwang, 2000; Defond, Hung, & Trezevant, 2007; Francis, Khurana, & Pereira, 2003; Haw, Hu, Lee, & Wu, 2012; Hope, 2003; Land & Lang, 2002). In the absence of strong enforcement, even the highest quality accounting standards can be expected to make no difference to financial statement users, as they will not be enforced (Hope, 2003). The scope of this study is, therefore, to examine whether AQ is more (as opposed to less) value-relevant for the determination of loan pricing depending on the strength of legal enforcement and creditor protection across countries. The expectation is in favor of a stronger effect and increased value-relevance of AQ for loan pricing in case legal enforcement in a country is stronger, rather than weaker, as the strength of enforcement is assumed to have an effect on the way credit investors rely on reported accounting numbers, and this way shape the link between accounting quality and loan pricing.

According to Leuz (2010), from the moment IFRS have been widely adopted around the world, reporting standards no longer represent the main topic of interest, and there is need to shift attention towards – still pronounced – differences in the enforcement of reporting and disclosure rules. In this direction, this paper makes use of an initial international sample of firms with uniform accounting rules, from 25 European Union (EU) and non-EU countries, which had mandatorily adopted IFRS by 2005, with bank loan data available from LPC's Dealscan database. The sample period extends from 2005 to 2012, and the impact of AQ on loan pricing is examined by using loan spread as a relevant proxy. The focus on loan pricing is based on expectation that this particular loan term directly incorporates risk pricing expressed in monetary terms, while the effect of AQ on loan maturity and collateral requirements is examined in the course of robustness controls. The level of legal enforcement in a country is approximated through Kaufmann, Kraay, and Mastruzzi's (2010) index (Ahmed et al., 2013; Daske, Hail, Leuz, & Verdi, 2008; Houqe, van Zijl, Dunstan, & Waresul Karim, 2012; Wu & Zhang, 2014). In the basic model specification, AQ is defined by assessing the quality of accruals, i.e. the extent to which working capital accruals materialize and efficiently map into current, past and future cash flows (Dechow & Dichev, 2002; McNichols, 2002).

Evidence indicates that AQ negatively and significantly affects bank loan spreads, but only when taking the strength of legal enforcement in a country into account; more specifically AQ is observed to negatively and significantly affect loan spread, with the result to hold only combined with the level of enforcement, which is the case for stronger legal enforcement countries. When repeating the analysis for bank loans of similar quality, it is observed that this result on a significant and differing impact of AQ on loan pricing for stronger vs. weaker enforcement countries is mainly concentrated for non-investment grade or unrated loans, rather than investment grade ones. This result is interpreted as an indication that the effect of AQ on loan pricing is not generally significant, no matter what the strength of enforcement is, for issues which are of higher credit quality: for such issues, information asymmetries and the projection of future cash flow generation prediction and default probability should be expected to be less demanding, due to the already acceptable quality of the issues. However, in the case of non-investment grade or unrated issues, asymmetries between insiders and outsiders should be expected to be stronger, resulting in increased importance for the role of financial statement information in order to resolve these issues and derive loan pricing. Therefore, particularly in the case of these loans, it is observed that the efficiency of enforcement at the country level plays a significant role as to whether AQ is incorporated or not into loan pricing, in other words, whether borrowers consider it credible and informative enough so that it will affect pricing. This result is, therefore, not attributable to differences in the quality of debt between higher vs. lower enforcement institutional environments, and is further robust to a number of controls implemented, for example, for macroeconomic differences in the sample countries examined, the financial crisis of 2008, alternative definition of AQ, the presence of financial covenants, defining the strength of enforcement under more detailed country groupings, or excluding from the sample countries whose GDP generation ability is not accurately represented in terms of number of observations.

Finally, evidence indicates that AQ positively and significantly relates to loan maturity, but again only when taking the strength of legal enforcement in a country into account, while there is no significant differential impact of AQ observed (with and without accounting for the level of enforcement) on loan collateralization status. However, the result on the effect of AQ on loan maturity is considerably weaker in comparison to relevant results on loan spread, which is considered to be explainable taking into account that that loan spread, rather than other pricing terms, directly prices risk and translates it into monetary terms, in contrast to other loan terms forming the overall loan pricing terms and conditions 'package'.

This study focuses on the strength and quality of legal enforcement at the country level, which is expected to affect managerial incentives for producing lower vs. higher quality financial reports, by having a preventive as well as sanctioning role with respect to the misuse of such incentives (Ebner, Hottman, Teuteberg, & Zulch, 2015). The implicit assumption is that the concept of legal

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enforcement, which also incorporates creditor protection, in a country, coincides with the enforcement of accounting standards, constituting together the overall level of efficiency of the institutional mechanisms in this country. This expectation is first based on relevant empirical practices followed by past research (e.g. Ahmed et al., 2013), which make use of proxies for legal enforcement (Kaufmann et al., 2010) in order to examine the impact of IFRS adoption on accounting quality, depending on relative legal enforcement efficiency on a country basis. Secondly, as Houqe et al. (2012) underline: '*Judicial independence measures the "efficiency and integrity of the legal environment as it affects business*" (*Francis & Wang,* 2008; *La Porta, Lopez-de Silanes, Shleifer, & Vishny,* 1998; La Porta et al., 2006). *A country's judicial system might be functioning well but enforcement of accounting regulations may be lacking. However, it is difficult to imagine a situation in which the judicial system works poorly but enforcement of accounting regulation is strong.*' In this respect, the analysis made by this study is based on the implicit assumption that the strength of legal enforcement should affect the enforcement of accounting standards as well. Nevertheless, there are explicit controls used for creditor protection (in addition to accounting for different legal enforcement regimes) in an effort to more accurately capture country-level efficiency of the institutions most valuable to creditors.

In relation to the above, very recently, research has explicitly distinguished between legal and institutional efficiency in general at the country level vs. the enforcement of accounting standards in specific (Ebner et al., 2015). However, as underlined by Ebner et al. (2015), '*accounting enforcement is supposed to reduce only earnings management activities beyond the legal framework; consequently, we expect enforcement reforms to reduce only that part of earnings management metrics which is attributable to improper application of accounting standards.*' It is, therefore, considered that focusing on the strength of legal enforcement in general at the country level (expected to affect the efficiency of accounting enforcement) further permits addressing types of influence of enforcement on AQ not captured by a pure focus on accounting enforcement, for example, capital market discipline, or relevant monitoring of within-GAAP activities negatively affecting the quality of earnings.

Overall, findings by this study work along the line proposed by Leuz (2010), that from the moment IFRS have been widely adopted by a significant number of countries, and constitute a uniform set of accounting standards, at least on paper, there is need to focus on better understanding differences in the enforcement of reporting and disclosure rules. The findings by this study build on previous research conjecturing that the strength of legal enforcement in a country plays a role in the cross-country financial information value-relevance, this time with reference to the value-relevance accounting quality for bank loan pricing determination. This evidence indicates that the same set of accounting rules could have very different valuation implications, depending on the strength of legal enforcement and efficiency of institutional mechanisms. As the set of rules used by sample countries are IFRS, in case IFRS have been hypothesized to constitute a set of accounting standards helping towards improving, and at the same time, making AQ more uniform and comparable among adopting countries, the findings by this study are consistent with the observation that forces shaping accounting quality other than the mere rules set by the standards may need to be given a greater amount of emphasis. These forces specifically refer to managerial incentives, and most importantly, the underlying economic and institutional environment (Ahmed et al., 2013). Such evidence is consistent with a long line of research which has indicated that implementation of IFRS could be the '*Achilles heel of IFRS*' as efficiently expressed by Ball (2006), and by no means should one expect that textual rules prescribed by any set of standards would be resulting in comparable accounting quality value-relevance across firms in different countries without taking preparer incentives, and, more importantly, an uneven international enforcement environment into consideration (Ball, 2006; Ball, Robin, & Wu, 2003). This observation becomes more important to address if one takes into account the size of debt markets, and the resulting information needs of the parties involved, in comparison to the size of capital provided to firms through equity markets.

2. Literature review and hypotheses development

2.1. Literature review

According to traditional banking theory, the most important type of risk faced by banks when issuing loans is credit risk (Freixas & Rochet, 1997; Graham et al., 2008), and, as a result, the likelihood of default is the primary determinant of bank loan pricing (Hasan, Park, & Wu, 2012). Financial statement users employ accounting information in order to forecast firms' future cash flows, and the amount of uncertainty over the future financial information of firms is expected to affect loan pricing (Donelson, Jennings, & McInnis, 2015; Graham et al., 2008). Bharath et al. (2008) hypothesize and find that accounting quality, in the form of accruals quality, influences debt contracting terms for US firms, with similar evidence about accounting restatements (Graham et al., 2008), internal control weaknesses (Kim et al., 2011a) or low earnings predictability (Hasan et al., 2012) all adversely affecting bank loan contracting terms.

Another stream of research has identified the protection of creditor rights and the efficiency of enforcement mechanisms across countries as factors with the ability to affect loan contracting terms (Francis, Hasan, & Song, 2012). This is because these factors are expected to influence the (in)solvency process and creditor rights (Bae & Goyal, 2009), with strong corporate governance and legal enforcement institutions to be working in the form of correcting mechanisms for uncertainty between insiders and outsiders. Research has examined the cross-country impact of creditor protection and law enforcement factors on bank loan contracting terms, and has reached the definitive conclusion that stronger enforcement at either level is linked to more favorable loan contracting terms (Bae & Goyal, 2009; Qian & Strahan, 2007).

According to La Porta et al. (1998), strong investor protection at the country level more adequately protects the rights of outside investors, and results in reduced agency problems between insider (controlling), and outsider (minority) owners. Ball, Kothari, and Robin (2000), Daske et al. (2008), Francis and Wang (2008), Hung (2000), La Porta et al. (1998), La Porta, Lopez-

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de Silanes, Shleifer, and Vishny (2000), La Porta et al., 2006, and Leuz et al. (2003) all show that weak protection for minority shareholders' interests at the country level provides greater incentives and opportunities for managers to engage in corrupt accounting practices, as insiders may enjoy more private benefits and have stronger incentives to hide the true firm performance (Leuz et al., 2003), while Burgstahler et al. (2006) and Leuz et al. (2003) confirm that strong legal systems are associated with lower earnings management. A number of studies are at this point consistent with significant endogeneity regarding the determination of accounting quality (Ball, 2006), and show that accounting quality is generally higher in strong, relative to weak enforcement countries (Burgstahler et al., 2006; Leuz et al., 2003; Bhattacharya et al., 2003).

Since 2005, a significant number of countries around the world have mandatorily adopted IFRS. A primary objective of IFRS adoption is the effort to induce firms to produce financial reporting of higher quality, and with increased value-relevance for external parties (Barth, Landsman, & Lang, 2008). Research has not reached a definitive conclusion regarding whether IFRS have actually led to an improvement (Chen, Tang, Jiang, & Lin, 2010; Daske & Gebhardt, 2006; Ding, Hope, Jeanjean, & Stolowy, 2007; Zeghal, Chtourou, & Fourati, 2012) or deterioration (Callao & Jarne, 2010; Jeanjean & Stolowy, 2008; Paananen & Lin, 2009) in accounting quality, or have had no effect at all. At the same time, a number of studies have associated improvements in the informativeness of accounting numbers and accounting quality post-IFRS only in relation to adequate legal enforcement (Byard, Li, & Yu, 2011; Cai, Rahmam, & Courtenay, 2014; Daske et al., 2008; Houqe et al., 2012; Li, 2010). With respect to the effect of IFRS adoption on debt markets, Ball, Li, and Shivakumar (2015) find evidence on reduced contractibility of IFRS, associated with enhanced discretion and strong emphasis on fair-value accounting, and conclude that IFRS sacrifice usefulness in debt contracting in order to provide financial information more useful to firm valuation. However, Kim et al. (2011b) and Moscariello, Skerratt, and Pizzo (2014) get evidence consistent with an improvement in debt contracting, in line with Florou and Kosi (2015) who observe improvements in credit-relevance for firms, while Chen, Chin, Wang & Yao (2015) actually find an increase in interest rates post-IFRS.

2.2. Hypotheses development

IFRS constitute a single set of accounting rules applied in a variety of countries with very different creditor protection and legal enforcement environments. The efficiency of the application of IFRS has been further shown to significantly differ among adopting countries, and this result has been attributed to differences in compliance and enforcement mechanisms. Schipper (2005) at this point argues that the adoption of IFRS in the European Union provides a powerful setting in order to test the determinants and economic consequences of accounting quality, as accounting standards will be consistent across member countries. Nevertheless, from the moment IFRS have been widely adopted around the world, reporting standards may no longer represent the main topic of interest, with a corresponding need for more attention towards differences in the enforcement of reporting and disclosure rules (Leuz, 2010). In this respect, the widespread application of IFRS offers the possibility to examine the value-relevance of such differences, while keeping the financial reporting regulation environment stable.

According to Bushman and Piotroski (2006), the various incentives of corporate executives, investors, regulators and other market participants shape the properties of reported accounting numbers through a complex interplay of accounting standards, combined with legal, market, regulatory, and political pressures, as well as reporting discretion exercised by managers. Significant research has shown the existence of systematic differences among countries with respect to the quality of the financial statements of firms based in them, attributed to differing levels of efficiency of local institutional mechanisms (Ahmed et al., 2013). Stronger, as opposed to weaker legal enforcement has been expected and shown to affect contract enforceability and resulting private benefits and control that can be extracted by insiders, the level of protection offered to minority shareholders (Leuz et al., 2003), and shareholders in general (Kanagaretnam et al., 2010), and the responsible use of the discretion provided by accounting rules, the misuse of which will result in earnings manipulation (Burgstahler et al., 2006), and managerial opportunistic behavior (Hung, 2000). Overall, capital markets, in combination with a firm's institutional environment, determine the role of earnings, and define its importance with respect to resolving information asymmetries and efficiently communicating firms' financial position to outside parties, with a corresponding effect on the properties of reported earnings (Burgstahler et al., 2006).

In the absence of such a well-functioning environment, earnings could result in playing a minor role in the communication of firm performance to outsiders (Burgstahler et al., 2006). Legal institutions further influence and affect investor assessments of the value-relevance of reported income and accruals (Ali & Hwang, 2000; Ball et al., 2000; Haw, Hu, Hwang, & Wu, 2004). Indeed, a significant stream of research has testified cross-country variation in the value-relevance of accounting numbers (e.g. Ali & Hwang, 2000; Fan & Wong, 2002; Francis et al., 2003, Guenther & Young, 2000; Hope, 2003; Land & Lang, 2002), while other research has observed differing economic consequences of IFRS adoption again depending on differences in the strength of legal enforcement in a country, with reference to accounting quality improvement (Ahmed et al., 2013; Cai et al., 2014; Houqe et al., 2012) or firm valuation in general (Byard et al., 2011; Daske et al., 2008; Li, 2010). For the above reasons, the strength of legal enforcement has also been shown to improve analyst forecast accuracy (Hope, 2003), the informativeness of earnings announcements (DeFond et al., 2007) and price informativeness about future earnings (Haw et al., 2012). Even the highest quality accounting standards may not turn out to be effective, or can even end up being be inconsequential in the presence of weak enforcement at the country level, as the standards are not actually properly applied, and nobody takes action when rules are breached, with the relevant rules to remain requirements only on paper (Hope, 2003).

In this way, on one hand, past research has favorably linked accounting quality with loan contracting terms at the country level, but on the other hand, other research has shown that cross country-differences in creditor protection and the strength of legal enforcement mechanisms also significantly affect loan contracting terms. It is, therefore, expected that the strength and

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effectiveness of legal enforcement at the country level is going to relatively affect the quality of financial statements and their relative informativeness because of the enhanced credibility of financial statements, and consequently, the way in which the firm-specific quality of these statements is incorporated into loan pricing. It is considered that stronger vs. weaker enforcement at the country level is going to lead to a stronger degree of influence of AQ on loan pricing, as lenders consider this information more reliable in order to project the future cash flows and the probability of default for borrowers. In the absence of such credibility, there is expected a diminished role of AQ for loan pricing because prospective lenders may not consider the information provided and respective quality of financial statements to be credible enough in order to help them make efficient economic projections. In this context, this study aims at examining whether accounting quality is more (as opposed to less) value-relevant for bank loan pricing depending on the level of legal enforcement and creditor protection across countries. It is expected that the level of enforcement in a country should result in a stronger association, and increased value-relevance, between AQ and bank loan pricing, leading to the study hypothesis:

H1. *AQ is more strongly (favorably) associated with bank loan pricing for firms from stronger vs. weaker enforcement countries.*

At the country level, it has been shown that better vs. worse AQ results in a lower loan spread (Bharath et al., 2008), so the expectation is that high and effective legal enforcement in a country should directionally associate with this attribute, leading to the sub-hypothesis:

H1a. *AQ is more strongly (negatively) associated with the level of bank loan spreads for firms from stronger vs. weaker enforcement countries.*

This study mainly focuses on one particular price bank loan term, that is loan spread above the basic rate. Despite the fact that past research has considered that the price (spread) and non-price terms (collateral, covenants, maturity, and amount) of loans are often jointly or simultaneously determined (Bharath et al., 2008; Hasan et al., 2012; Jimenez, Salas, & Saurina, 2006), the focus on loan pricing is based on expectation that this particular loan term directly incorporates risk pricing expressed in monetary terms. Other loan terms are non-price in nature, and can be used in order compensate for various information asymmetries between lenders and borrowers (Chen et al., 2015). Nevertheless, the differing effect of AQ on non-price loan terms depending on the strength of country legal enforcement is going to be examined in the course of robustness controls.

In relation to the above, it should be clarified that there is no implication made that low AQ only appears in countries with poorer enforcement mechanisms, and that high AQ is only present in countries with stronger enforcement mechanisms. However, in case the average level of AQ is higher (lower) in countries with stronger (poorer) enforcement mechanisms due to the relative efficiency of institutional mechanisms – with this level still varying across firms because of other factors (e.g. firm-specific incentives) shaping AQ – the level of AQ expected from a representative firm in a country could have an effect on the way bank lenders have learned to rely on information obtained through financial statements when setting their loan pricing.

3. Sample selection and methodology

3.1. Estimation of accounting quality

In accordance with past research (e.g. Francis, LaFond, Olsson, & Shipper, 2005), accounting quality is measured by examining the quality of accounting accruals, that is by assessing the extent to which accruals map into past, current, and future cash flows, following the methodology proposed by Dechow and Dichev (2002) and extended by McNichols (2002). A significant number of studies have estimated accounting quality by employing Jones-type models (Jones, 1991; and also Dechow, Sloan, & Sweeney, 1995) instead of the Dechow and Dichev (2002) methodology (indicatively Chen et al., 2010). According to the Dechow and Dichev (2002) approach, the unexplained portion of the variation in working capital accruals is considered to be an inverse measure of accruals quality, with a greater unexplained portion to imply poorer quality, while this model does not identify accruals as abnormal if they are not explained by a very specific and limited set of fundamentals i.e. PPE and changes in revenues (Francis et al., 2005),[1] as would be the case with Jones-type models (Jones, 1991). For those reasons, combined with the fact that the estimation of the Dechow and Dichev (2002) model assesses the quality of accruals by simultaneously controlling for the impact of industry and year-specific factors on the quality of accruals, the Dechow and Dichev (2002) methodology as extended by McNichols (2002) (through the inclusion of a change in sales and a PP&E regressor in the basic Dechow and Dichev (2002) equation) is used in order to define accounting quality, by assessing the quality of accruals (following Francis et al., 2005 and Rajgopal & Venkatachalam, 2011, among others). Nevertheless, the analysis is complemented with the use of the Modified Jones model in the form of robustness controls.

In this way, the following equation is estimated for all sample countries cross-sectionally for all years (on a year-by-year basis) according to Datastream Level 4 industry sector codes,[2] with at least 20 firm-observations per industry for a year (Francis et al.,

[1] The underlying assumption behind the Dechow and Dichev (2002) model is that investors price securities based on their assessments of future cash flows; therefore, there is need of a measure capturing the information uncertainty in cash flows (Francis et al., 2005).

[2] Use of Datastream Level-4 industry sector definitions for an international sample follows from Doukakis (2014). The estimation of accruals models per industry and year by considering sample countries as a single economic entity is also followed by Haw et al. (2004), Chen et al. (2010), and Doukakis (2014). As pointed out by Houqe et al. (2012, p. 340), the estimation of cross-sectional accruals-models in a cross-country study, when performing relevant estimations on a per country basis, results in industry observations per country which are quite small (Francis & Wang, 2008; Houqe et al., 2012). Nevertheless, accounting quality estimation results are similar (but based on smaller samples of observations) if the estimation takes place per country, industry, and year.

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2005; Jung, Lee, & Weber, 2014):

$$\Delta WC_{i,t} = a_0 + a_1 CFO_{i,t-1} + a_2 CFO_{i,t} + a_3 CFO_{i,t+1} + a_4 \Delta Sales_{i,t} + a_5 GPPE_{i,t} + e_{i,t} \quad (1)$$

where (Worldscope item number in parentheses):

$\Delta WC_{i,t}$ firm i's change in working capital between year t and $t-1$, calculated as $\Delta CA_{i,t} - \Delta CL_{i,t} - \Delta Cash_{i,t} + \Delta STD_{i,t}$;
$\Delta CA_{i,t}$ firm i's change in Current Assets (WC02201) between year t and $t-1$;
$\Delta CL_{i,t}$ firm i's change in Current Liabilities (WC03101) between year t and $t-1$;
$\Delta Cash_{i,t}$ firm i's change in Cash (WC02001) between year t and $t-1$;
$\Delta STD_{i,t}$ firm i's change in Short-term Debt (WC03051) between year t and $t-1$;
$CFO_{i,t}$ firm i's Cash Flow from Operations, or Net Cash Flow — Operating Activities (WC04860) in year t;
$\Delta Sales_{i,t}$ firm i's change in Revenues (WC01001) between year t and $t-1$;
$GPPE_{i,t}$ firm i's gross value of Property, Plant and Equipment (WC02301) in year t;
$e_{i,t}$ error term.

All regression variables in the above equation are scaled by Total Assets (WC03501) at the end of year $t-1$. The absolute value of firm i's residuals from the above regression is used as a proxy for accounting quality, with larger absolute values of residuals to be an indication of poorer accounting quality. The AQ measure employed uses absolute values, and is thus non-directional in nature, given that that the scope of this study is to examine how the level of AQ is incorporated into loan pricing, through its effect on the accurate estimation of future cash flow generation potential by borrowing firms. While other studies have used the standard deviation of the residuals from the above regression as a proxy for the quality of accruals (e.g. Francis et al., 2005; Rajgopal & Venkatachalam, 2011), Srinidhi and Gul (2007) explicitly argue in favor of the use of the absolute value of the residual as a relevant measure when in need of an accruals quality estimate on a firm-year basis. As there is also need for a firm-year specific measure for accruals quality by the present study as well, there is used the estimation error from the above regression, following Srinidhi and Gul (2007), based on Dechow and Dichev (2002, Note 6). Finally, AQ is multiplied by −1, so the value of the relevant proxy, increases with accounting quality and, is then ranked into deciles by year, following Jung et al. (2014).[3]

3.2. Approximation of legal enforcement

With respect to the definition of enforcement, the level of legal enforcement in a country is approximated through Kaufmann et al.'s (2010) index for the quality of rule of law quality in a country (following the data update made in 2013[4]), in accordance with a number of previous studies in the field (Ahmed et al., 2013; Daske et al., 2008; Houqe et al., 2012; Wu & Zhang, 2014). Other studies have employed different proxies for the level of enforcement (e.g. Leuz et al., 2003) mainly based on La Porta et al. (1998), or Djankov, McLiesh, and Shleifer (2007), while there has been expressed criticism in the literature about the adequacy and comprehensive nature of measures used as proxies for enforcement or investor protection in empirical research (Brown, Preiato, & Tarca, 2014; Jeanjean, 2012). However, it is considered that the measure provided by Kaufmann et al. (2010) simultaneously captures a number of aspects of enforcement at the same time, and does not rely on either input or output measures of enforcement (Holthausen, 2009), with a corresponding effect in the efficacy with which rules are applied.[5] This way, this measure is considered to constitute a comprehensive approach to assessing the level of legal enforcement, simultaneously ensuring comparability with a significant number of previous studies in the field. At the same time, this measure provides the opportunity to divide sample countries into high and low enforcement ones, as has been explicitly done by past research (Ahmed et al., 2013).

In line with Ahmed et al. (2013), high (low) enforcement countries are considered to be the ones with a Kaufmann et al. (2010) score above (below) 1.3 in a year. Despite the fact that past research has made use of static proxies for the Kaufman score, e.g. as of year 2005, as in Ahmed et al. (2013), or Byard et al. (2011), or has defined high versus low enforcement countries as the ones with a score value above/below the sample median or a value in the top quartile (with reference to the sample used each time, see, for example, Byard et al., 2011, or Wu & Zhang, 2014), it was selected to define high and low enforcement countries in absolute terms, in order to ensure comparability with results obtained by previous studies (Ahmed et al., 2013). In an opposite case, a high enforcement country could become a low enforcement one if included within a different sample of countries.

[3] Results are similar if there is a continuous measure of AQ used. Robustness checks include estimating accounting quality using the Modified Jones model including a control for performance (Kothari et al. (2005) — with total accruals calculated from cash flow statement or balance sheet data (change in working capital (ΔWC) minus Depreciation (WC04051)), or defining CFO as the sum of 'Funds from Operations' + 'Funds from/for other Operating Activities' = WC04201 + WC04831.

[4] Data were retrieved from http://info.worldbank.org/governance/wgi/index.aspx?fileName=wgidataset.xlsx#home. It should be noted that the data update made in 2013 includes some minor modifications in relation to Kaufmann et al.'s data from previous periods, for example, data from year 2007, used by previous research (e.g. Ahmed et al., 2013, using 2005 as their reference year, for which the relevant enforcement index is above 1.3 for Belgium). However, from the moment more up to date data was available from Kaufman et al. at the time of producing this study, the choice was made to use this dataset in particular.

[5] Specifically, this reflects the '*perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence*' — source: http://info.worldbank.org/governance/wgi/index.aspx?fileName=wgidataset.xlsx#home.

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At the same time, in a primary analysis a time-varying Kaufmann et al. (2010) score is employed rather than a static one (as score values may change from a given year, while the sample period extends from 2005 to 2012).[6]

Past research has indicated that property rights, or the degree or enforceability of contracts, has a stronger effect on the determination of loan terms and conditions (Bae & Goyal, 2009), in comparison to legal *creditor rights* (Qian & Strahan, 2007). In this respect, the scope of this study is to examine the effect of accounting quality on loan term formation across countries after controlling for the enforceability of such rights. In this respect, following Bae and Goyal (2009), the efficacy of protection of property rights is assessed by making use of an aggregate index (*PropertyRightsIndex*), consisting of the total of the three variables, and constructed using three separate indexes provided by La Porta et al. (1998): a corruption index, the risk of expropriation and the risk of repudiation. In this way, estimation results are elaborated after implementing controls for the strength of protection of property rights.

3.3. Sample selection

The purpose of this study is to examine the association between accounting quality and bank loan pricing for firms from countries with different levels of legal enforcement during 2005–2012. There is, therefore, a need for a sample of countries reporting under a common set of accounting rules, as, in an opposite case, eventual differences in the results could be stemming from differences in both the quality of accounting standards as well as differences in enforcement. For this reason, a sample of countries which had mandatorily adopted IFRS by year 2005 is used, in order to secure a uniform accounting environment, permitting the examination of differences in the strength of legal enforcement. There are 26 such countries, according to Daske et al. (2008), (pp. 1100–1102 — with the adoption date of IFRS for Singapore to be year 2003, and 2005 for all other countries) and also Jayaraman and Kothari (2014),[7] and there is the requirement additionally imposed for sample countries to have bank loan data available for at least 150 deals on LCPs' Dealscan Database in order to perform relevant analyses. This 150-deal restriction refers to having data available when performing matching of firm data extracted from the Wordscope database (used for accounting data), with loan data extracted from Dealscan. In this way, an initial sample is constructed consisting of all countries included in the sample used by Jayaraman and Kothari (2014), with the exception of Venezuela, as Venezuela was found to have only 11 loan facilities matched with firms from Worldscope (corresponding to 4 firms with 117 loan deals).[8] This sample includes 25 countries which had mandatorily adopted IFRS by year 2005.

Dealscan reports data on a variety of syndicated loan contract terms, organized according to deals, which may correspond to one or many loan facilities. All data on loan contract terms are reported at the facility level, and following past research (Qian & Strahan, 2007; Kim et al. 2011a; Ferreira & Matos, 2012), all empirical analysis is performed at the facility level. As the only common identifier between Worldscope/Datastream and Dealscan is firm ticker, so in accordance with past research (Bae & Goyal, 2009; Ferreira & Matos, 2012; Hasan et al., 2012; Qian & Strahan, 2007), firms from Worldscope are matched with firms from Dealscan by firm ticker, followed by a manual control of this matching, and further matching of companies by name. This way, in essence, firm matching between Worldscope and Dealscan is performed and confirmed mainly by name, with a significant part of this process to represent hand matching.[9]

Before considering whether firms from Worldscope are matched to firms with data bank loan deals from Dealscan, the initial 25-country sample is used for the calculation of the proxy used for accounting quality estimation. Table 1 Panel A reports the number of non-financial firm-year observations during 2005–2012 according to country, used for AQ estimation from data from Worldscope.[10] This sample is constructed after imposing the following data availability criteria: use only firm-year observations which follow IFRS according to Daske et al.'s (2008) definition, with data on 2-digit SIC codes and Datastream Level-4 industry classifications (also followed by Doukakis, 2014),[11] and finally data available to calculate total accruals (scaled by lagged total assets) during 2005–2012, after removing double observations, and outliers at 1–99% on a yearly basis.[12] The industry sector

[6] Results reported in the primary analysis make use of a time-varying Kaufmann et al. (2010) score above/below 1.3 for the definition of high vs. low enforcement countries. Nevertheless, a definition of high vs. low enforcement countries with reference to the median Kaufmann et al.'s score, calculated among the sample countries used by this study is included among robustness checks, and the same applies for the use of a static score (as of year 2005). In any case, the static vs. time-varying Kaufmann et al. (2010) exhibit a very high Pearson correlation of over 99%. Robustness controls further include the use of alternative proxies for enforcement, by defining high vs. low enforcement countries with reference to the median value of an aggregate index for property rights or degree of enforceability of contracts, as discussed in this section.

[7] There exist cases of non-uniformity in the way accounting standards were adopted by the sample countries (e.g. deletion of some options by Australia, Nobes, 2011, p. 17). Nevertheless, the sample of countries used by this study is completely based on the one used by past research on IFRS adopting countries, ensuring comparability with other studies making use of a sample with uniform and mandatory IFRS adoption. At the same time, this study does not make use of a pre-IFRS adoption sample, as the scope of this study is to examine whether accounting quality is more or less value-relevant for loan pricing determination depending on the strength of legal enforcement at the country level. Thus, the study makes use of a sample of countries which had mandatorily adopted IFRS by year 2005, in order to secure a uniform accounting environment, permitting the examination of differences in the strength of legal enforcement.

[8] Data were downloaded from Dealscan in February 2012.

[9] The matching process between Dealscan and Worldscope results in a total of 29,408 loan facilities for 61 countries, (referring to the very initial sample constructed without imposing any IFRS-adoption criteria at this point) excluding the US, corresponding to 5980 individual firms. For cases in which a number of different borrowers were mentioned for a particular facility in Dealscan, matching with Worldscope firms was performed for the borrowing firm which was mentioned first as among the borrowers for each facility.

[10] Following this initial sample identification for AQ model estimation, all numbers of observations used in subsequent calculations are data-dependent.

[11] This industry classification results in the identification of a total of 33 different industry sectors for the sample used.

[12] Defining IFRS adopting firms using Daske et al.'s (2008) definition rather the one provided by Worldscope, results in an increase in 39 firm-year observations in the sample used for AQ estimation.

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Table 1
Sample composition — firm and facility observations during 2005–2012.
Table 1 Panel A reports the number of non-financial firm-year observations during 2005–2012 according to country, used for initial accounting quality (AQ) model estimation by extracting data from Worldscope. Data availability criteria imposed in order to derive this sample include: use only firm-year observations which follow IFRS according to Daske et al.'s (2008) definition, with data on 2-digit SIC codes and Datastream Level-4 industry classifications, and also data for total accruals (scaled by lagged total assets) during 2005–2012, after removing double observations, and outliers at 1–99% on year-by-year basis. Table 1 Panel B reports information on the number of matched firms (and corresponding loan facilities) between Worldscope and Dealscan, according to country during 2005–2012. These facilities may or may not correspond to firms with enough data available for AQ model estimation. Finally, Panel C of Table 1 reports information on loan facilities of matched firms between Worldscope and Dealscan, which additionally have data available for AQ model estimation (data in Panel A of the table), as well as data on loan spread. Dealscan's '*All-in Spread Drawn*' item is used as a spread proxy, equal to the amount paid by the borrower over the basic rate. The sample selection process is described in detail in Section 3.3, while detailed variable definitions are provided in Appendix A.

Country	Panel A: Data for AQ estimation	Panel B: Data availability following matching between Worldscope/Dealscan		Panel C: Data availability on the AQ proxy for Worldscope/Dealscan-matched firms	
	Firm-year observations used for AQ model estimation	Number of firms matched between Wordscope and Dealscan	Corresponding number of loan facilities for firms matched between Worldscope and Dealscan	Number of loan facilities for firms matched between Worldscope and Dealscan with data for AQ model estimation	Number of loan facilities for firms matched between Worldscope and Dealscan with data for AQ model estimation and also Dealscan's '*All-in Spread Drawn*'
Australia	6828	258	1849	482	155
Austria	426	16	51	27	7
Belgium	632	32	222	92	61
Czech Republic	75	15	49	9	4
Denmark	688	16	86	25	9
Finland	814	53	284	89	17
France	3288	210	1599	542	315
Germany	3210	176	1264	502	275
Greece	1105	46	149	24	9
Hong Kong	887	125	651	2	2
Hungary	142	6	36	1	–
Ireland	310	22	137	36	13
Italy	1618	80	535	165	82
Luxembourg	114	6	32	8	3
The Netherlands	757	77	551	115	57
Norway	986	82	377	123	20
Poland	968	14	58	28	6
Portugal	191	8	76	10	10
Singapore	418	96	401	1	1
South Africa	1127	41	159	52	28
Spain	747	68	609	258	160
Sweden	1449	70	381	54	10
Switzerland	1221	55	243	59	19
Philippines	922	24	140	–	–
United Kingdom	8316	544	3291	729	297
Total	37,239	2140	13,230	3454	1575

breakdown employed AQ estimation is the Datastream Level-4 one, in accordance with past research using international samples (Doukakis, 2014).

Table 1 Panel B further reports information about the number of matched loan facilities, and corresponding number of firms between Worldscope and Dealscan, according to country during 2005–2012. These facilities may or may not correspond to firms with enough data available for AQ proxy estimation. Finally, Panel C of Table 1 reports information on loan facilities from matched firms between Worldscope and Dealscan, which additionally have data available for AQ model estimation (data in Panel A of the Table), as well as data on loan spread.[13] In accordance with past research (indicatively, Graham et al., 2008), Dealscan's '*All-in Spread Drawn*' item is used as a loan spread proxy, equal to the amount paid by the borrower in basis points over LIBOR or LIBOR equivalent for each dollar drawn (Graham et al., 2008).

It can be observed from Table 1 Panel A that a total of 37,239 firm-year observations are used for AQ estimation for a total of 25 sample countries during 2005–2012.[14] At the same time, 2140 firms, corresponding to 13,230 loan facilities are matched between Worldscope and Dealscan for the same country sample during 2005–2012 (Table 1 Panel B). Interestingly, only 3454 out of

[13] There were no observations found for loan facilities of firms matched between Worldscope and Dealscan with enough data for AQ model estimation, and also data on loan spread for Hungary. However, this country is kept in the table, as it resulted from the initial sample country identification, while it is obvious that it is not included in any subsequent estimation involving the simultaneous use of the proxy for accounting quality and loan data.

[14] The estimation of the proxy for AQ additionally imposes the requirement to have data (on a year-by-year basis) for at least 20 firm-observations per industry for a year, by defining industry sectors according to Datastream Level 4 industry sector codes, so that Eq. (1) can be estimated.

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Table 2
Descriptive statistics for legal enforcement according to country, by defining enforcement using the *Rule of Law* index by Kaufmann et al. (2010) (2013 data update). Table 2 reports information on the level of legal enforcement according to year during 2005–2012, by defining legal enforcement using Kaufmann et al.'s (2010) *Rule of Law* index, following the data update made in 2013, for all countries included in the sample (country selection described in Section 3.3). Following Ahmed et al. (2013), high (low) enforcement countries are considered to be the ones with a Kaufmann et al. (2010) score above (below) 1.3 (strong/weak law countries) in a year. The sample selection process is described in detail in Section 3.3, while detailed variable definitions are provided in Appendix A.

Rule of Law index values according to country and year								
Country	2005	2006	2007	2008	2009	2010	2011	2012
Australia	1.712	1.747	1.735	1.754	1.732	1.763	1.741	1.746
Austria	1.863	1.909	1.959	1.927	1.787	1.806	1.811	1.842
Belgium	1.240	1.200	1.306	1.327	1.356	1.370	1.404	1.395
Czech Republic	0.821	0.836	0.861	0.888	0.936	0.925	1.023	1.006
Denmark	1.945	1.984	2.000	1.950	1.921	1.897	1.928	1.851
Finland	1.954	1.960	1.893	1.904	1.974	1.977	1.956	1.943
France	1.400	1.446	1.429	1.478	1.427	1.512	1.440	1.431
Germany	1.656	1.756	1.747	1.721	1.640	1.616	1.607	1.638
Greece	0.776	0.859	0.840	0.836	0.619	0.605	0.548	0.393
Hong Kong	1.612	1.526	1.507	1.476	1.483	1.539	1.550	1.556
Hungary	0.826	0.961	0.919	0.892	0.759	0.748	0.745	0.595
Ireland	1.580	1.695	1.710	1.691	1.742	1.768	1.765	1.730
Italy	0.468	0.351	0.435	0.417	0.351	0.378	0.421	0.361
Luxembourg	1.825	1.683	1.750	1.800	1.817	1.831	1.802	1.774
The Netherlands	1.747	1.764	1.763	1.745	1.805	1.810	1.814	1.841
Norway	1.907	1.957	1.916	1.957	1.890	1.917	1.893	1.949
Philippines	-0.358	−0.406	−0.469	−0.566	−0.599	−0.584	−0.538	−0.546
Poland	0.424	0.354	0.368	0.509	0.597	0.658	0.751	0.745
Portugal	1.198	0.953	0.978	0.993	1.046	1.043	1.026	1.038
Singapore	1.764	1.625	1.643	1.643	1.604	1.683	1.726	1.772
South Africa	0.077	0.237	0.073	0.034	0.093	0.108	0.126	0.079
Spain	1.097	1.095	1.128	1.166	1.133	1.158	1.176	1.043
Sweden	1.776	1.836	1.876	1.913	1.966	1.963	1.948	1.935
Switzerland	1.899	1.800	1.833	1.808	1.755	1.766	1.738	1.812
United Kingdom	1.547	1.755	1.682	1.664	1.726	1.761	1.645	1.690

the 13,230 Worldscope/Dealscan matched facilities also have data available for AQ estimation (Table 1 Panel A), while only 1575 such facilities have further data on '*All-in Spread Drawn*' (Table 1 Panel C). It therefore becomes obvious that only a fraction of firm-year observations from Worldscope have usable data on Dealscan for the estimation of the impact of accounting quality on bank loan pricing. The countries more highly represented in the sample in all panels of Table 1 include Australia, France, Germany, Italy, South Africa, while the country with the highest representation is the United Kingdom.

Table 2 further reports information on the level of legal enforcement according to year and country for all sample countries during 2005–2012, using Kaufmann et al.'s (2010) *Rule of Law* index, following the data update made in 2013, as described in Section 3.1. It is observed from Table 2 that 15 out of 25 sample countries had *Rule of Law* values above 1.3 in 2005, and with the remaining 10 countries to get values below 1.3 for this year.[15] Out of these 15 countries, all kept their *Rule of Law* values above 1.3 for every year until the end of the sample period. Out of the countries with *Rule of Law* below 1.3 in 2005, only Belgium was transferred into the high legal enforcement sample from 2007 onwards, as its value for *Rule of Law* began exceeding the 1.3 threshold on that year.[16]

Institutional efficiency at the country level is expressed in the form of property rights protection in the sample countries. Indexes for corruption, risk of expropriation, risk of contract repudiation is used, based on La Porta et al. (1998), and finally an aggregate index on property rights (*PropertyRightsIndex*), computed using the three previous individual indexes.[17] Emphasis is explicitly given on the country-specific *enforceability* conditions and strength, rather than the existence of creditor rights per se, in accordance with past research underlining the importance of these factors (Bae & Goyal, 2009). The countries getting the highest values for *PropertyRightsIndex* are Switzerland, Norway, The Netherlands, Denmark, Sweden, Finland, Germany, and the United Kingdom, while the countries with the lowest values are Philippines, Greece, South Africa, Italy, and Portugal (untabulated

[15] Austria, Denmark, Finland, France, Germany, Hong Kong, Ireland, Luxembourg, The Netherlands, Norway, Singapore, Sweden, Switzerland, United Kingdom with *Rule of Law* values >1.3 in 2005, and Belgium, Czech Republic, Greece, Hungary, Italy, Philippines, Poland, Portugal, South Africa, Spain with *Rule of Law* values <1.3 in 2005.

[16] Moreover, on average, Kaufmann et al.'s (2010) *Rule of Law* scores appear to be overall exhibiting a rather steady trend, despite some changes on a per country basis, when assessing these scores in the period before vs. after the implementation of IFRS (untabulated results).

[17] When comparing the *PropertyRightsIndex* with the creditor rights index based on Djankov et al. (2007), by retrieving (untabulated) data from the data appendix of the working paper version of the study (available at: http://www.doingbusiness.org/~/media/GIAWB/Doing%20Business/Documents/Methodology/Supporting-Papers/DB-Methodology-Private-Credit-in-129-Counties.pdf, with relevant values for this index ranging from 1 to 4, in ascending order, from lower to higher levels of investor protection), it is observed that creditor protection at the country level does not completely coincide with corruption or risk of expropriation or repudiation levels, confirming hypotheses and findings by Bae and Goyal (2009). Data is not available for all separate indexes reported forming the *PropertyRightsIndex* for every sample country, and this is going to affect the sample used in subsequent analyses described in Section 4

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Table 3
Sample descriptive statistics: facility-specific variables.
This table reports descriptive statistics on facility-specific variables for all sample facilities. Panel A reports descriptive statistics for all sample facilities which satisfy country and sample selection criteria described in Section 3 during 2005–2012, issued by firms with data available for the estimation of accounting quality under the Dechow and Dichev (2002) model, and also data available on Dealscan's '*All-in Spread Drawn*' item. Panels B and C report loan facility data for Panel A firms from countries with *Rule of Law* index values (index based on Kaufmann et al., 2010, following the data update made in 2013) above/below 1.3 (strong/weak law countries), respectively. Following Ahmed et al. (2013), high (low) enforcement countries are considered to be the ones with a Kaufmann et al. (2010) score above (below) 1.3 (strong/weak law countries). Panel B further reports results for two-sample *t*-tests for differences in means, and Wilcoxon rank-sum tests for differences in medians, between (non %) values for countries with strong vs. weak legal enforcement. Data reported include loan spread, the number of lenders, loan maturity in months, facility tranche size in $ millions, and further % of loan facilities with a guarantor in place, or performance pricing provisions, % of loan facilities which are secured, or senior, or sponsored or syndicated, and finally % of loans with credit ratings ranging from 1 to 6 (highest to lowest), or with no such rating. The sample selection process is described in detail in Section 3.3, while detailed variable definitions are provided in Appendix A.

Panel A: All sample facilities

	Mean	Median	Q1	Q3	StDev	N
Spread	176.030	150.000	65.000	250.000	147.012	1575
Number of lenders	12.028	9.000	5.000	16.000	10.182	1521
Loan maturity in months	56.718	60.000	36.000	60.000	29.028	1559
Tranche size in $ millions	1040	380	136	1070	1920	1570
	% of facilities	N		Senior debt rating	% of facilities	
Guarantor	2.48	1575		No rating	61.14	
Performance pricing	10.73	1575		1	–	
Secured loan	24.51	1575		2	1.27	
Senior loan	98.29	1575		3	9.08	
Sponsored loan	13.59	1575		4	16.70	
Syndicated loan	81.33	1575		5	8.00	

Panel B: Loan facilities from countries with *Rule of Law* above 1.3 in a year (strong law countries)*

	Mean	Median	Q1	Q3	StdDev	N
Spread	179.867**	150.000**	65.000	250.000	150.654	1248
Number of lenders	11.106***	8.000***	4.000	15.000	9.582	1197
Loan maturity in months	56.435	60.000	36.000	60.000	25.747	1238
Tranche size in $ millions	953***	352***	132	1000	1690	1243
	% of facilities	N		Senior debt rating	% of facilities	
Guarantor	1.76	1248		No rating	62.10	
Performance pricing	11.46	1248		1	–	
Secured loan	26.68	1248		2	1.52	
Senior loan	97.92	1248		3	7.53	
Sponsored loan	16.27	1248		4	16.11	
Syndicated loan	83.09	1248		5	8.81	
				6	3.93	

Panel C: Loan facilities from countries with *Rule of Law* below 1.3 in a year (weak law countries)

	Mean	Median	Q1	Q3	StDev	N
Spread	161.388	125.000	60.000	235.000	131.377	327
Number of lenders	15.432	13.000	7.000	21.000	11.539	324
Loan maturity in months	57.813	60.000	36.000	62.000	39.225	321
Tranche size in $ millions	1350	475	181	1500	2590	327
	% of facilities	N		Senior debt rating	% of facilities	
Guarantor	5.20	327		No rating	57.49	
Performance pricing	7.95	327		1	–	
Secured loan	16.21	327		2	0.31	
Senior loan	99.69	327		3	14.98	
Sponsored loan	3.36	327		4	18.96	
Syndicated loan	74.62	327		5	4.89	
				6	3.36	

*** Indicates statistical significance at 1%.
** Indicates statistical significance at 5%.
* Indicates statistical significance at 10%.

data). Among the countries with the highest scores, there are included countries representing both common (e.g. the United Kingdom) and civil law environments (e.g. Switzerland, Finland, Germany), and the same applies for the representation of both countries from market (e.g. the United Kingdom) vs. bank-oriented financial systems (e.g. Germany) (distinction made by Demirgüç-Kunt & Maksimovic, 2002).

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4. Empirical findings

4.1. Sample descriptive statistics

Table 3 reports descriptive statistics on facility-specific variables for sample facilities satisfying the sample selection criteria during 2005–2012, that is loan facilities issued by firms with data available for the estimation of accounting quality under the Dechow and Dichev (2002) model, which additionally have data available on Dealscan's item '*All-in Spread Drawn*'. Panel A reports information for all sample facilities satisfying the previous criteria, and Panels B and C report loan facility data for firms from countries with *Rule of Law* index values (based on Kaufmann et al., 2010, following the data update made in 2013) above/below 1.3 (high/weak law countries), respectively. Detailed variable definitions are provided in Appendix A. There are results further reported in Table 3 Panel B for two-sample *t*-tests for differences in means, and Wilcoxon rank-sum tests for differences in medians, between values for countries with stronger vs. weaker enforcement.

It can be observed from Table 3, Panels A, B, and C, that loan spread is significantly higher for loans of firms from higher vs. lower enforcement countries (179.867 vs. 161.388 b.p. using mean values, with median values to be in the same direction, and comparable levels of differential significance). However, the number of lenders per loan facility is significantly higher for firms from countries with lower vs. higher legal enforcement (about 11 vs. 15 lenders on average, for strong/weak law countries), and the same trend holds for relative tranche size (953 vs. 1350 $ million for strong/weak law countries for mean values). Loan maturity is comparable in terms of months (56.453 vs. 57.813 using mean values for strong vs. weak law countries, respectively), and not statistically different between the two groups. Almost in every case, trends for loan characteristics observed for means are confirmed for medians. In this way, loans from weaker vs. stronger enforcement countries appear to involve larger syndicates among which credit risk is spread, and also appear to be larger in size, but, at the same time, have *lower* spreads. This evidence could be surprising if one considers the relative size of countries included in the strong vs. weak law subgroups (to the extent that country size has repercussions for the average size of firms based in the same jurisdiction), but could be explainable upon considering that the stronger enforcement group includes a higher representation of market, rather than bank-based economies (based on the definition by Demirgüç-Kunt & Maksimovic, 2002), and firms from bank-based economies may often be able to secure bank funding more easily due to close relationships with banks (referring to the so-called 'relationship banking', Niskanen & Niskanen, 2006). Another consistent explanation could relate to the consideration of the relative strength in banking competition for the countries included in the stronger vs. weaker enforcement groups, given that the intensity of competition among banks has been linked to reduced loan spreads (Bushman, Hendricks, & Williams, 2013). In case competition among banks is relatively stronger in some of the countries belonging to the weaker enforcement group, as is the case for Portugal, for example (Clerides, Delis, & Kokas, 2015), this could in turn result in lower loan spreads for firms based in these countries, reflective, at least to some extent, of the strength of banking competition, rather than pure firm fundamentals.

There is further observed from Table 3 that the vast majority (and a roughly comparable %) of firms from both strong and weak law countries do not have a senior debt rating at the end of the loan (about 57 to 62%), while the largest amount of senior debt ratings observed (when this rating exists) get rating values of 4 (about 16–19%), corresponding to Moody's – or S&P-equivalent – ratings below A3 but higher than Baa3 (inclusive). A relatively higher % of firms from weak law countries have credit ratings of 3 (Moody's – or S&P-equivalent – rating below Aa3 but above A3 (inclusive)), that is 14.98 vs. 7.53% for weaker vs. stronger law countries, while a higher % of facilities from stronger, compared to weaker law countries have ratings of 5 (rating lower than Baa3 but higher than Ba3 (inclusive)) — 8.81 vs. 4.89%. This last observation is qualitatively consistent with the higher spreads observed on average for the loans of firms from higher vs. lower enforcement countries. Finally, almost all loan facilities are senior in nature for both groups (about 97–99%), while low % of facilities have a guarantor in place (1.76 vs. 5.20% for strong vs. weak law countries), or performance pricing provisions (7–11.5%). Nevertheless, slightly higher % of loans from stronger vs. weaker law countries are syndicated (83.09 vs. 74.62%), or sponsored (16.27 vs. 3.36%) or secured (26.68 vs. 16.21%).[18]

Table 4 reports more descriptive statistics, this time on firm-specific variables for all sample firms with facilities which satisfy the sample selection criteria during 2005–2012, data for the estimation of the accounting quality measure, and additionally data on Dealscan's '*All-in Spread Drawn*' item. Panel A reports this information for all sample countries, while Panels B and C report separate information for firms from countries with *Rule of Law* index values (based on Kaufmann et al., 2010, following the data update made in 2013) above/below 1.3 (strong/weak law countries) respectively.[19]There are again reported in Table 4 Panel B results for two-sample *t*-tests for differences in means, and Wilcoxon rank-sum tests for differences in medians, between values for countries with stronger vs. weaker enforcement. All data are calculated as of the year of the loan facility active date,

[18] Maskara & Mullineaux (2011), using US data from Dealscan, mention that non-syndicated loans are significantly smaller than those that are syndicated, while Dealscan reports roughly equal numbers of bank loans and syndicated loans, at least during their 1985–1999 sample period for US firms (see footnote 3). However, the present study makes use of non-US firms, and there is a higher % of loan facilities observed for firms from higher vs. lower enforcement countries to be syndicated, while the average tranche size of loans from low enforcement countries is actually comparatively higher.

[19] The intangibles-intensity variable *R&D/TA* uses the magnitude of R&D expense as a relevant measure (R&D expense scaled by Total Assets). This variable takes the value of zero if no R&D expense exists for a particular firm-year observation, fulfilling all other sample selection criteria.

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Table 4
Sample descriptive statistics: Firm-specific variables.
This table reports descriptive statistics on firm-specific variables (obtained at the facility level — as described in Section 3.3) for all sample firms during 2005–2012. Panel A reports descriptive statistics for facilities from all sample countries which satisfy country and sample selection criteria described in Section 3, during 2005–2012, with data for the estimation of accounting quality the Dechow and Dichev (2002) model, and also data on Dealscan's '*All-in Spread Drawn*' item. Panels B and C report loan facility data for Panel A firms from countries with *Rule of Law* index values (index based on Kaufmann et al., 2010, following the data update made in 2013) above/below 1.3 (strong/weak law countries), respectively. Following Ahmed et al. (2013), high (low) enforcement countries are considered to be the ones with a Kaufmann et al. (2010) score above (below) 1.3 (strong/weak law countries). Panel B further reports results for two-sample *t-tests* for differences in means, and Wilcoxon rank-sum tests for differences in medians, between values for countries with strong vs. weak legal enforcement. Data reported include proxies for profitability (Net Income scaled by Total Assets — *NI/TA*), asset tangibility (Net PP&E scaled by Total Assets — *NPPE/TA*), firm size (natural logarithm of Sales in $ — *LnSales*), financial leverage (Long Term Debt scaled by Total Assets — *LTD/TA*), the market-to-book ratio (*MVE/BVE*), R&D intensity (R&D expense scaled by Total Assets — *R&D/TA*), and finally values for the accounting quality (AQ) proxy described in Section 3.1, estimated using the Dechow and Dichev (2002) model (in both level, as well as using decile ranking form). All data are calculated as of the year of the loan facility active date. The sample selection process is described in detail in Section 3, while detailed variable definitions are provided in Appendix A.

Panel A: Firm-specific data for loan facilities from all countries[**]

	Mean	Median	Q1	Q3	StDev	N
Control variables						
NI/TA	0.033	0.033	0.010	0.058	0.063	1499
NPPE/TA	0.302	0.261	0.138	0.459	0.210	1499
LnSales (in $)	15.069	14.933	13.922	16.273	1.616	1510
LTD/TA	0.306	0.263	0.163	0.387	0.262	1489
MVE/BVE	1.395	1.842	1.100	2.986	15.620	1438
R&D/TA	0.008	0.000	0.000	0.003	0.022	1575
Accounting quality (AQ) variable						
Dechow-Dichev (2002) model	−0.003	0.000	−0.023	0.023	0.056	1575
Dechow-Dichev (2002) model ranked into deciles	5.519	6.000	3.000	8.000	2.616	1575

Panel B: Firm-specific data for facilities from countries with *Rule of Law* above 1.3 in a year (strong law countries)

	Mean	Median	Q1	Q3	StDev	N
Control variables						
NI/TA	0.036[***]	0.035[***]	0.010	0.061	0.068	1197
NPPE/TA	0.274[***]	0.226[***]	0.118	0.397	0.198	1197
LnSales (in $)	14.976[***]	14.843[***]	13.845	16.235	1.617	1203
LTD/TA	0.299[*]	0.238[***]	0.148	0.360	0.284	1189
MVE/BVE	1.253	1.838[*]	1.131	3.111	17.512	1142
R&D/TA	0.010[***]	0.000[***]	0.000	0.008	0.024	1248
Accounting quality (AQ) variables						
Dechow-Dichev (2002) model	−0.003	0.000	−0.025	0.023	0.059	1248
Dechow-Dichev (2002) model ranked into deciles	5.498	6.000	3.000	8.000	2.679	1248

Panel C: Firm-specific data for facilities from countries with *Rule of Law* below 1.3 in a year (weak law countries)

	Mean	Median	Q1	Q3	StDev	N
Control variables						
NI/TA	0.023	0.028	0.010	0.044	0.040	302
NPPE/TA	0.413	0.385	0.223	0.588	0.217	302
LnSales (in $)	15.432	15.409	14.189	16.539	1.559	307
LTD/TA	0.330	0.327	0.208	0.442	0.144	300
MVE/BVE	1.944	1.855	1.006	2.586	1.408	296
R&D/TA	0.001	0.000	0.000	0.000	0.005	327
Accounting quality (AQ) variables						
Dechow-Dichev (2002) model	−0.001	0.000	−0.017	0.023	0.043	327
Dechow-Dichev (2002) model ranked into deciles	5.599	6.000	4.000	8.000	2.366	327

[***] Indicates statistical significance at 1%.
[**] Indicates statistical significance at 5%.
[*] Indicates statistical significance at 10%.

while detailed variable definitions are provided in Appendix A. Firm-specific information is reported at the facility level, following past research (Qian & Strahan, 2007; Kim et al., 2011a; Ferreira & Matos, 2012), and the same applies for all subsequent empirical analyses.[20]

[20] Dealscan reports data on a variety of loan contract terms, stemming from different loan deals, which may correspond to one or many loan facilities. All data on loan contract terms are reported by Dealscan at the facility level, and in this way, all empirical analysis is performed by this study at the facility level, in accordance with past research (e.g. Ferreira & Matos, 2012; Kim et al., 2011a; Qian & Strahan, 2007). Different facilities from the same deal may possess different loan characteristics (for example, different maturities for different loan tranches corresponding to the same deal). In this way, each facility is considered to be a separate observation, given that loan characteristics and loan spreads may vary across facilities (Kim et al., 2011a, pp. 1166 and footnote 15). The expressions 'loan facility' and 'loan' are used in text interchangeably without distinction, by making reference to loan facilities every time.

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It can be observed from Table 4, Panels A to C, that on average, firms from strong law countries are slightly more profitable compared to firms from weak law countries (*NI/TA* of 0.036 vs. 0.023 using mean and 0.035 vs. 0.028 using median values, with the difference being significant at 1% level for both mean and median values), significantly more R&D expense-intensive, are significantly smaller in terms of Sales, and also have significantly lower tangible assets (*NPPE/TA* of 0.279 vs. 0.412 using mean values) and leverage ratios (*TD/TA* of 0.274 vs. 0.413 with mean values), and lower *MVE/BVE* ratios, although their difference in this last ratio is marginally significant (using median values only). Larger firm size, higher tangibility, and lower R&D intensity for firms from lower enforcement countries in Table 4 Panel C is consistent with evidence on higher loan tranche size, and relatively lower spreads for the loans of firms from these countries, as observed in Table 3. Regarding AQ values, there are no significant differences observed in the values of this proxy (both in level and also in decile form) between firms from stronger vs. weaker law countries. Mean values for the AQ proxy are found to be around zero for levels, and around 5.5 (6, using median values) in terms of decile ranking for both groups. This last observation indicates that AQ quality for the sample firms used by this study, which have loan data available on Dealscan, should be expected to be representative of the overall group of firms form Worldscope used for AQ proxy estimation (presented in Table 1 Panel A), which may or may not have engaged in bank loan contracting and have data available from Dealscan, as the mean AQ decile ranking observed in the more limited sample employed by this study is actually 5.

In any case, results on firm-specific variables reported on Table 4 refer to facilities rather than individual firms, and this way should be interpreted with a relevant degree of caution, as they are not expected to fully reflect firm-specific information. Nevertheless, descriptive statistics from Tables 3 and 4 overall indicate that firms from lower, as opposed to higher enforcement countries tend to be larger, more levered, have more tangible assets, borrow in larger amounts using larger loan syndicates, are granted financing under lower loan spreads, while there do not appear to exist significant differences in AQ (measured by assessing the quality of accounting accruals) between firms from stronger vs. weaker law countries.

4.2. Regression analysis

Next, the impact of AQ on loan pricing is examined, in combination with whether borrowing firms are based on weaker vs. stronger law environments, by simultaneously controlling for the effect of a number of firm and loan-specific factors on loan pricing. Specifically, the effect of AQ on loan spread over the basic rate is examined, while its effect on two other non-price loan terms is further examined (namely, the probability that the loan facility is secured, and loan maturity) in the form of robustness controls, and extension of the analysis. The following equation is estimated with pooled data for all countries during 2005–2012:

$$\begin{aligned} LoanPricing_{i,t} = {} & \alpha_0 + \alpha_1 PropertyRightsIndex + \alpha_2 AQ_{i,t} + \alpha_3 StrongLawCountry_{i,t} + \\ & \alpha_4 AQ * StrongLawCountry_{i,t} + \alpha_5 LTD/TA_{i,t} + \alpha_6 NI/TA_{i,t} + \alpha_7 NPPE/TA_{i,t} + \alpha_8 MVE/BVE_{i,t} + \\ & \alpha_9 LnSales_{i,t} + \alpha_{10} SeniorDebtRating_{i,t} + \alpha_{11} LnMaturity_{i,t} + \alpha_{12} LnNoLenders_{i,t} + \\ & \alpha_{13} LnTrancheSize_{i,t} + YearIndicators_t + e_{i,t} \end{aligned} \quad (2)$$

where *LoanPricing* stands for loan spread, or the natural logarithm of loan spread over the basic rate (Dealscan item '*All-in Spread Drawn*'). Eq. (2) is estimated using OLS, and there are used standard errors clustered by country, following past research on cross-country factors affecting loan terms and conditions (Qian & Strahan, 2007; Bae & Goyal, 2009).

The *AQ* variable is defined as described in Section 3.1, and given that the relevant proxy has been multiplied by −1, its value increases with higher accounting quality. Eq. (2) is first estimated by making use of an interaction term between AQ and a dummy variable taking the value of 1 if the borrowing firm belongs to a stronger enforcement environment (*StrongLawCountry*), and zero otherwise (*AQ*StrongLawCountry*). In case better vs. worse AQ contributes to firms borrowing under lower spreads, there is expected that operating in a stronger vs. weaker enforcement country should accentuate this effect. Eq. (2) is also estimated without the inclusion of an interaction term between AQ and the *StrongLawCountry* indicator, and then separately for firms from stronger vs. weaker enforcement countries. This last methodological approach is followed by Ahmed et al. (2013), who examine the impact of IFRS adoption on AQ for a large international sample, by first estimating results for their pooled sample (including all sample countries), and then by repeating the analysis for countries from strong vs. weak enforcement countries separately.

The selection of control variables is based on Bharath et al. (2008), Graham et al. (2008), Kim et al. (2011a), Kim et al. (2011a), Kim et al. (2011b), and also Bae and Goyal (2009), Ferreira and Matos (2012), and Qian and Strahan (2007), taking into account that the sample employed is multinational, as in the case of the last three studies. In this way, firm-specific control factors include financial leverage (*LTD/TA*), profitability (*NI/TA*), asset tangibility (*NPPE/TA*), the book-to-market ratio (*MVE/BVE*), firm size (*LnSales*. in $) and intangibles intensity, by using R&D expenses (*R&D/TA*) as a relevant proxy, following Ferreira and Matos (2012). All firm-specific variables are taken as of the financial year the loan facility became active. Loan-specific factors include loan maturity (*LnMaturity* — not included as a separate regressor when *LoanPricingTerms* = loan maturity), syndicate size (*LnNoLenders*), and loan tranche size (*LnTrancheSize*).

Loan-specific factors further include senior debt credit rating (*Senior debt rating* — from highest (1) to lowest (6), and by assigning a zero value for borrowers without a rating), while the definition of *Senior debt rating* is based on Qian and Strahan (2007). This particular control variable is included in Eq. (2) in order to account for corporate default risk, following Qian and Strahan (2007). Bharath et al. (2008) employ Altman's *Z*-score as a proxy for firm default, by using a single-country sample. However, the *Z*-score is more intuitively calculated for US firms using relevant factor weights for this particular sample, while the present study makes use of an international sample, for which the corporate default proxy used is the senior debt rating, in accordance with past research. There is also the use of an institutional country-specific variable in Eq. (2), that is the *PropertyRightsIndex* (an aggregate index on property rights,

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Table 5
Accounting quality and loan spread: strong and weak law countries.
The table reports estimation results for the following equation: $LoanPricing_{i,t} = \alpha_0 + \alpha_1 PropertyRightsIndex + \alpha_2 AQ_{i,t} + \alpha_3 StrongLawCountry_{i,t} + \alpha_{4\text{-}i,t} = \alpha_0 + \alpha_1 PropertyRightsIndex + \alpha_2 AQ_{i,t} + \alpha_3 StrongLawCountry_{i,t} + \alpha_4 AQ * StrongLawCountry_{i,t} + \alpha_5 LTD/TA_{i,t} + \alpha_6 NI/TA_{i,t} + \alpha_7 NPPE/TA_{i,t} + \alpha_8 MVE/BVE_{i,t} + \alpha_9 LnSales_{i,t} + \alpha_{10\text{-}i,t} + \alpha_9 LnSales_{i,t} + \alpha_{10} SeniorDebtRating_{i,t} + \alpha_{11} LnMaturity_{i,t} + \alpha_{12} LnNoLenders_{i,t} + \alpha_{13} LnTrancheSize_{i,t} + YearIndicators_t + e_{i,t}$ estimated using OLS and standard errors clustered according to country during 2005–2012. *LoanPricingTerms* stands for the natural logarithm of loan spread (Dealscan item '*All-in Spread Drawn*'). Accounting quality (AQ) is defined according to the Dechow and Dichev (2002) methodology, as described in Section 3.1. Results are reported for all sample countries, with and without an interaction term between AQ and a variable indicating that the firm in question belongs to a strong enforcement country (*StrongLawCountry*), and for countries from strong and weak enforcement countries separately (strong law vs. weak law countries). Following Ahmed et al. (2013), high (low) enforcement countries are considered to be the ones with a Kaufmann et al. (2010) score above (below) 1.3. The equation also includes (untabulated) year indicators. The sample selection process is described in detail in Section 3.3, while detailed variable definitions are provided in Appendix A.

	Pooled sample				Strong law countries		Weak law countries	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
c	8.635	10.88***	8.429	11.43***	9.030	8.20***	7.469	6.49***
PropertyRightsIndex	0.006	0.33	0.006	0.25	−0.010	−0.27	0.035	1.02
AQ	−0.030	−4.95***	−0.002	−0.14	−0.036	−5.99***	0.004	0.37
StrongLawCountry			0.217	1.60				
*AQ * StrongLawCountry*			−0.034	−2.12**				
LTD/TA	0.618	3.81***	0.613	4.08***	0.643	4.49***	0.226	0.85
NI/TA	−1.743	−2.02*	−1.746	−1.92*	−1.314	−1.63	−4.608	−3.02**
NPPE/TA	−0.426	−4.58***	−0.418	−4.40***	−0.350	−4.63***	−0.635	−5.89***
MVE/BVE	0.000	0.51	0.000	0.50	0.000	0.59	−0.021	−1.47
LnSales (in $)	−0.166	−3.70***	−0.165	−3.68***	−0.149	−3.01***	−0.177	−3.07**
R&D/TA	−2.425	−1.65	−2.497	−1.71	−2.277	−1.60	−19.951	−3.24**
SeniorDebtRating	0.046	2.12**	0.046	2.06*	0.049	1.78*	0.012	0.37
LnMaturity	0.141	4.03***	0.144	4.21***	0.159	4.69***	0.075	1.44
LnNoLenders	−0.099	−1.82*	−0.101	−1.83*	−0.121	−1.74	−0.011	−0.22
LnTrancheSize	−0.122	−5.25***	−0.121	−5.11***	−0.136	−4.81***	−0.064	−3.53***
Year Indicators	Yes		Yes		Yes		Yes	
R-squared	0.555		0.556		0.566		0.669	
N	1349		1349		1074		275	

* Indicates statistical significance at 10%.
** Indicates statistical significance at 5%.
*** Indicates statistical significance at 1%.

based on La Porta et al., 1998), in an effort to explicitly control for the effect of country-specific protection of property rights on loan pricing, in accordance with past research (e.g. Bae & Goyal, 2009; Qian & Strahan, 2007). Finally, Eq. (2) is estimated with year indicators (not reported). Detailed variable definitions are provided in Appendix A, while results for Eq. (2) are reported in Table 5.

Judging from the coefficient of the interaction term between AQ and *StrongLawCountry*, it can be observed from Table 5 that AQ negatively and significantly associates with loan spread (at 5% significance level) only when legal enforcement is strong in a country. The effect of country enforcement on a stand-alone basis appears to be not statistically significant, and the same applies for AQ, when an interaction term between AQ and *StrongLawCountry* is included in the regression. However, without simultaneous controls for the combined effect of AQ and the strength of legal enforcement on spread, AQ appears to negatively and significantly relate to the magnitude of loan spread for the pooled sample. When dividing the sample, though, into firms from weaker vs. stronger enforcement countries, this significant association is the case only for stronger enforcement countries, indicating that AQ is rather inconsequential for the determination of loan spread in the case of weaker law environments. Overall, with respect to the effect of AQ on loan spread over the basic rate, AQ is observed to have a significant effect on spread determination only in combination with stronger vs. weaker legal enforcement in a country, which is not the case for countries with weaker enforcement.

Interestingly, after imposing controls for a number of firm and loan-specific variables, as well as AQ and its interaction with the strength of legal enforcement, the *PropertyRightsIndex* variable is observed to be not statistically significant. With respect to the behavior of the rest of the firm and loan-specific variables, there is generally observed a significantly positive association between financial leverage and loan spread, which is not the case, though, when isolating the analysis to weak law countries, and a significantly negative association between profitability and interest cost for all samples, while this result does not hold when isolating the analysis to strong law countries. Asset tangibility and firm size are found to negatively and significantly relate to loan tranche spread in every case, with limited evidence on the significance of R&D/TA (only for weak law countries), while *MVE/BVE* does not show signs of statistical significance. In this way, results on firm-specific variables from Table 5 lead to the rather intuitive conclusion that more highly levered, less profitable and smaller firms should be expected to face higher bank loan spreads.

With respect to the behavior of loan-specific variables, *SeniorDebtRating*, as one would naturally expect, positively and significantly relates to loan spread (given the way the variable is defined, a larger value for this variable indicates a lower credit rating, and vice versa), with the exception when isolating the analysis for firms from weak law countries. At the same time, loan maturity and syndicate size positively (negatively) and significantly associate to loan spreads, with relevant results to consistently hold for the pooled sample estimation. Tranche size is also found to negatively and significantly affect loan spread. In other words, spreads should be expected to increase for higher loan maturities, and when default risk is divided among fewer members of the lender syndicate, as well as for smaller, rather than larger loans (the borrowers of which could be expected to have lower bargaining strength), while these results appear to more strongly hold for firms from stronger law countries.

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Table 6
Accounting quality and loan spread for issues of different investment grades: strong and weak law countries.
The table reports estimation results for the following equation: $LoanPricing_{i,t} = \alpha_0 + \alpha_1 PropertyRightsIndex + \alpha_2 AQ_{i,t} + \alpha_3 StrongLawCountry_{i,t} + \alpha_{4-i,t} = \alpha_0 + \alpha_1 PropertyRightsIndex + \alpha_2 AQ_{i,t} + \alpha_3 StrongLawCountry_{i,t} + \alpha_4 AQ^{*} StrongLawCountry_{i,t} + \alpha_5 LTD/TA_{i,t} + \alpha_6 NI/TA_{i,t} + \alpha_7 NPPE/TA_{i,t} + \alpha_8 MVE/BVE_{i,t} + \alpha_9 LnSales_{i,t} + \alpha_{10-i,t} + \alpha_9 LnSales_{i,t} + \alpha_{10} SeniorDebtRating_{i,t} + \alpha_{11} LnMaturity_{i,t} + \alpha_{12} LnNoLenders_{i,t} + \alpha_{13} LnTrancheSize_{i,t} + YearIndicators_t + e_{i,t}$ estimated using OLS and standard errors clustered according to country during 2005–2012. *LoanPricingTerms* stands for the natural logarithm of loan spread. The equation is estimated separately for investment grade (*Rating Senior Debt:* 1 to 4) and non-investment grade or unrated issues (*Rating Senior Debt*: 5, 6 or 0), for the pooled sample, (including an interaction term between AQ and a variable indicating that the firm in question belongs to a strong enforcement country (*StrongLawCountry*), and for stronger and weaker enforcement countries separately (strong law vs. weak law countries). As results are estimated separately for investment vs. non-investment) grade issues, a debt rating indicator (*SeniorDebtRating)* is not included among regressors. Accounting quality (AQ) is defined according to the Dechow and Dichev (2002) methodology, as described in Section 3.1. Following Ahmed et al. (2013), high (low) enforcement countries are considered to be the ones with a Kaufmann et al. (2010) score above (below) 1.3. There are also included (untabulated) year indicators. The sample selection process is described in detail in Section 3.3. Detailed variable definitions are provided in Appendix A.

	Inv. grade		Non-investment grade/unrated (non-inv. grade/unrated)		Strong law — Inv. grade		Weak law — Inv. grade		Strong law — Non-inv. grade/Unrated		Weak law — Non-Inv. grade/unrated	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
c	7.632	8.04***	7.212	9.61***	10.215	9.05***	5.563	2.49**	7.330	8.24***	8.103	8.99***
PropertyRightsIndex	−0.042	−0.87	−0.032	−1.46	−0.079	−1.94*	−0.089	−1.31	−0.027	−0.91	−0.051	−1.81*
AQ	0.025	0.75	0.011	0.50	−0.018	−1.52	−0.003	−0.12	−0.030	−3.94***	0.020	1.45
StrongLawCountry	0.568	1.77*	0.452	2.81**								
*AQ * StrongLawCountry*	−0.049	−1.22	−0.042	−1.91*								
LTD/TA	0.317	0.66	0.668	5.99***	−0.192	−0.66	1.327	1.66	0.678	8.60***	0.466	1.72*
NI/TA	1.138	1.66	−2.006	−2.32**	0.585	0.70	1.168	0.31	−1.481	−4.68***	−5.590	−6.49***
NPPE/TA	−0.191	−0.90	−0.175	−1.15	−0.091	−0.56	−0.429	−0.66	−0.091	−0.79	−0.285	−1.77*
MVE/BVE	−0.036	−2.37**	0.001	1.73*	−0.037	−3.00***	−0.156	−1.17	0.001	0.53	−0.027	−1.00
LnSales (in $)	−0.157	−3.06***	−0.075	−1.55	−0.227	−7.12***	−0.081	−0.98	−0.044	−2.21**	−0.102	−2.84***
R&D/TA	−3.074	−1.21	−1.513	−0.97	−3.367	−2.56**	−9.187	−0.16	−1.282	−1.43	−20.133	−2.96***
LnMaturity	−0.049	−0.66	0.213	5.24***	−0.065	−1.22	−0.019	−0.21	0.247	6.01***	0.094	1.61
LnNoLenders	−0.037	−0.70	−0.094	−1.77*	−0.059	−1.45	0.110	1.20	−0.117	−3.97***	−0.005	−0.13
LnTrancheSize	−0.037	−1.29	−0.086	−2.81**	−0.018	−0.58	0.045	0.54	−0.111	−4.85***	−0.048	−1.51
Year Indicators	Yes		Yes		Yes		Yes		Yes		Yes	
R-squared	0.682		0.451		0.702		0.635		0.437		0.678	
N	390		959		299		91		775		184	
					Coefficient comparison test for AQ				*Coefficient comparison test for AQ*			
					χ^2	0.410	(0.533)		χ^2	7.220	(0.007)***	
					(p-value)				(p-value)			

* Indicates statistical significance at 10%.
** Indicates statistical significance at 5%.
*** Indicates statistical significance at 1%.

Next, Eq. (2) is estimated separately for investment grade (Rating Senior Debt: 1 to 4, as defined in Appendix A) and non-investment grade or unrated issues (Rating Senior Debt: 5, 6 or 0, following definition in Appendix A), for the pooled sample (including an interaction term between AQ and a variable indicating that the firm in question belongs to a strong enforcement country (*StrongLawCountry*), and for stronger and weaker enforcement countries separately.[21] As results are estimated separately for investment vs. non-investment grade issues, a debt rating indicator is not included among regressors to avoid double counting this factor. The scope of this estimation is control for difference in the quality of debt across sample countries, and mitigates concerns that the results obtained in Table 5 are attributed to variations in such quality, and resulting credit risk.

When repeating the analysis for bank loans of similar quality, there is observed that this result on a significant and differing impact of AQ on loan pricing for stronger vs. weaker enforcement countries is actually driven by and confirmed for non-investment grade or unrated loans, and not investment grade ones. When estimating Eq. (2) for the pooled sample (strong and weak enforcement countries together, differentiated according to the quality of issues), by making use of an interaction term between AQ and a dummy variable taking the value of 1 if the borrowing firm belongs to a stronger enforcement environment and zero otherwise (*AQ*StrongLawCountry*), this multiplicative term is negatively significant at 10% level only for non-investment grade or unrated issues, and not in the case of investment grade issues. Repeating the analysis for issues from strong vs. low enforcement countries, for investment grade vs. non-investment grade or unrated issues (2 by 2 analysis), indicates that again the AQ regressor is non-significant at any acceptable level of significance for the investment grade samples, from either strong or weak enforcement countries. When focusing on non-investment grade or unrated issues, the AQ variable is again non-significant for weak enforcement countries, while it is strongly negatively significant at 1% significance level for these issues for strong enforcement jurisdictions. At the same time, coefficient comparison tests for the AQ variable when the quality of issues is comparable (investment grade, as opposed to non-investment grade or unrated) in strong vs. weak enforcement countries result in a highly significant (at 1% level) χ^2 statistic value for non-investment grade or unrated bank loan issues, indicating strongly

[21] Special thanks should be expressed at this point to an anonymous reviewer for underlining the need to perform this estimation. For reasons of economy of space, results in Table 6 are not reported when excluding this interaction term as in Table 5, but nevertheless remain qualitatively similar.

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Table 7
Accounting quality and loan spread — robustness controls.
The table reports estimation results for the following equation: $LoanPricing_{i,t} = \alpha_0 + \alpha_1 PropertyRightsIndex + \alpha_2 AQ_{i,t} + \alpha_3 StrongLawCountry_{i,t} + \alpha_{4-i,t} = \alpha_0 + \alpha_1 PropertyRightsIndex + \alpha_2 AQ_{i,t} + \alpha_3 StrongLawCountry_{i,t} + \alpha_4 AQ^* StrongLawCountry_{i,t} + \alpha_5 LTD/TA_{i,t} + \alpha_6 NI/TA_{i,t} + \alpha_7 NPPE/TA_{i,t} + \alpha_8 MVE/BVE_{i,t} + \alpha_9 LnSales_{i,t} + \alpha_{10-i,t} + \alpha_9 LnSales_{i,t} + \alpha_{10} SeniorDebtRating_{i,t} + \alpha_{11} LnMaturity_{i,t} + \alpha_{12} LnNoLenders_{i,t} + \alpha_{13} LnTrancheSize_{i,t} + YearIndicators_t + e_{i,t}$ estimated using OLS and standard errors clustered according to country during 2005–2012 (basic specification). *LoanPricingTerms* stands for the natural logarithm of loan spread. Results are reported for all sample countries, with and without an interaction term between AQ and a variable indicating that the firm in question belongs to a strong enforcement country (*StrongLawCountry*), and for countries from strong and weak enforcement countries separately (strong law vs. weak law countries), and only tabulated for three key regressors (*AQ*, *StrongLawCountry*, *AQ * StrongLawCountry*). Panel A reports results when excluding the main financial crisis years from the analysis (2008–2009), Panel B when repeating the estimation for the period 2005–2007 only, Panel C when including controls for country macroeconomic performance (*External Balance* (as a % of GDP), *Deficit ratio* (as a % of GDP), *Inflation Rate*, *LnGDPperCapita*), and Panel D when measuring accounting quality using the performance-adjusted Modified Jones model (Dechow et al., 1995; Kothari et al., 2005) in decile rank form. Panel E reports results for facilities with/without covenants separately, Panel F when identifying three different levels of legal enforcement (as described in Section 4.3), and finally, Panel G according to three *GDPperCapita* groups for sample countries. With the exception of Panel D, accounting quality (AQ) is defined according to the Dechow and Dichev (2002) methodology, as described in Section 3.1. Following Ahmed et al. (2013), high (low) enforcement countries are considered to be the ones with a Kaufmann et al. (2010) score above (below) 1.3. The equation also includes (untabulated) year indicators. The sample selection process is described in detail in Section 3.3, while detailed variable definitions are provided in Appendix A.

Panel A: Excluding years 2008–2009

	Pooled sample				Strong law countries		Weak law countries	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
AQ	0.003	0.14	−0.035	−4.83***	−0.043	−5.56***	0.001	0.05
StrongLawCountry	0.194	1.24						
*AQ * StrongLawCountry*	−0.047	−2.30**						
Year Indicators	Yes		Yes		Yes		Yes	
R-squared	0.564		0.561		0.577		0.709	
N	1076		1076		854		222	

Panel B: Estimation for years 2005–2007 only

	Pooled sample				Strong law countries		Weak law countries	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
AQ	−0.013	−0.58	−0.053	−5.01***	−0.061	−4.76***	−0.005	−0.19
StrongLawCountry	0.220	0.85						
*AQ * StrongLawCountry*	−0.049	−1.99*						
Year Indicators	Yes		Yes		Yes		Yes	
R-squared	0.518		0.516		0.535		0.658	
N	630		630		507		123	

Panel C: Inclusion of controls for country macroeconomic performance

	Pooled sample				Strong law countries		Weak law countries	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
AQ	−0.002	−0.13	−0.031	−5.23***	−0.035	−6.16***	0.008	0.61
StrongLawCountry	0.205	1.33						
*AQ * StrongLawCountry*	−0.034	−1.84*						
ExternalBalance	0.017	1.58	0.017	1.63	0.008	0.81	0.070	2.74**
GovernmentDebt	−0.156	−1.46	−0.164	−1.48	−0.133	−0.56	−0.592	−2.63**
InflationRate	7.343	1.83*	7.228	1.84*	10.281	2.00*	−0.730	−0.30
LnGDPperCapita	−0.059	−0.25	−0.076	−0.37	0.090	0.26	0.122	0.34
Year Indicators	Yes		Yes		Yes		Yes	
R-squared	0.560		0.559		0.574		0.687	
N	1314		1314		1068		246	

Panel D: Measurement of AQ using the performance-adapted Modified Jones model (Dechow et al., 1995; Kothari et al., 2005)

	Pooled sample				Strong law countries		Weak law countries	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
AQ – ROA adjusted Modified Jones model	−0.027	−1.71	−0.032	−2.050*	−0.035	−2.11*	−0.0106	−0.63
StrongLawCountry	0.236	2.23**						
*AQ * StrongLawCountry*	−0.033	−5.74***						
Year Indicators	Yes		Yes		Yes		Yes	
R-squared	0.537		0.529		0.5353		0.6574	
N	1282		1282		1036		246	

Panel E: Loan facilities with/without covenants

	Pooled sample				Strong law countries		Weak law countries	
Facilities with covenants	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
AQ	0.004	0.44	−0.030	−5.78***	−0.028	−4.35***	−0.034	−0.97
StrongLawCountry	0.140	0.91						
*AQ * StrongLawCountry*	−0.038	−3.98***						

Table 7 *(continued)*

Panel E: Loan facilities with/without covenants

	Pooled sample				Strong law countries		Weak law countries	
Facilities with covenants	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
Year Indicators	Yes		Yes		Yes		Yes	
R-squared	0.519		0.568		0.563		0.922	
N	507		507		460		47	
Facilities without covenants	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
AQ	0.001	0.03	−0.028	−3.43***	−0.037	−6.18***	0.012	0.79
StrongLawCountry	0.026	0.08						
*AQ * StrongLawCountry*	−0.037	−1.74						
Year Indicators	Yes		Yes		Yes		Yes	
R-squared	0.555		0.552		0.595		0.675	
N	842		842		614		228	

Panel F: Identifying three different levels of legal enforcement — *Rule of Law* variable

	Top enforcement group		Middle enforcement group		Low enforcement group	
	Coef.	*t-stat*	Coef.	*t-stat*	Coef.	*t-stat*
AQ	−0.049	−2.74**	−0.022	−2.72**	0.009	0.70
Year Indicators	Yes		Yes		Yes	
R-squared	0.649		0.578		0.671	
N	306		778		265	
	Coefficient comparison test for AQ					
Top/Low — χ^2 (*p-value*)	2.780	(0.095)*				
Middle/Low — χ^2 (*p-value*)	4.740	(0.030)**				
Top/Low — χ^2 (*p-value*)	9.350	(0.002)***				

Panel G: Identifying three different levels of GDPperCapita

	Top GDPperCapita		Middle GDPperCapita		Low GDPperCapita	
	Coef.	t-stat	Coef.	t-stat	Coef.	t-stat
AQ	−0.027	−2.24**	−0.038	−4.26***	0.009	0.48
Year Indicators	Yes		Yes		Yes	
R-squared	0.562		0.570		0.729	
N	327		784		238	
	Coefficient comparison test for AQ					
Top/Middle — χ^2 (*p-value*)	0.720	(0.397)				
Middle/Low — χ^2 (*p-value*)	9.770	(0.002)***				
Top/Low — χ^2 (*p-value*)	4.880	(0.027)**				

* Indicates statistical significance at 10%.
** Indicates statistical significance at 5%.
*** Indicates statistical significance at 1%.

significant differences depending on the level of enforcement, while relevant differences are not observed to be significant for investment grade issues.[22]

This result is interpreted as an indication that the effect of AQ on loan spread is not significant, regardless of the quality or strength of enforcement at the country level, for bank loan issues of higher credit quality. It could be the case that for these issues in particular, information asymmetries and the projection of future cash flow generation prediction and default probability should not be that challenging to make due to the already acceptable quality of issues, so firm-level accounting quality may not be expected to work as a factor helping decision makers assess this type of risk. However, for non-investment grade or unrated issues, asymmetries between insiders and outsiders should be expected to be stronger, resulting in increased importance for the role of financial statement information in order to help prospective lenders assess this risk and derive loan pricing. In this case, for these loans in particular, it is observed that the efficiency of enforcement at the country level plays a significant role regarding whether AQ is incorporated or not into loan pricing, referring to whether borrowers consider it credible and informative enough for it to have a significant effect on loan pricing.

4.3. Robustness controls

Table 7 Panels A–G reports a series of results undertaken in order to validate the robustness of the results reported on Table 5. Following Chen et al. (2015), in order to control for the impact of the recent financial crisis, Panel A reports estimation results for Eq. (2)

[22] For the elaboration of this test, standard errors clustered by country were not used in the regression estimations immediately preceding this χ^2 coefficient comparison test, as this technique did not permit the statistical comparison of coefficients to be made. Nevertheless, estimation without standard error clustering by country resulted in qualitatively similar results.

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(for key variables of interest) when excluding the main financial crisis years from the analysis (years 2008 and 2009), while Panel B when the sample period ends at 2007, and thus performing the estimation for the period 2005–2007 only. In addition to the fact that standard errors are clustered by country throughout the analysis, Panel C reports results when including specific controls for country macroeconomic performance as of the year the loan was initiated (External Balance (as a % of GDP), Deficit ratio (as a % of GDP), Inflation Rate, logarithm of GDP per Capita), in an effort to perform more detailed controls for differences in risk between the sample countries. Panel D reports results for Eq. (2) when measuring accounting quality using the estimated absolute residuals from the performance-adjusted cross-sectional Modified Jones model (Dechow et al., 1995), by adding a return on assets (ROA) regressor in the model (Kothari, Leone, & Wasley, 2005). The industry breakdown used for this estimation is the same as in the case of the main AQ proxy specification based on Dechow and Dichev (2002), while decile rank values are used again as for the main AQ proxy. Panel E then reports results for facilities with/without covenants separately, Panel F when identifying three, instead of two, different levels of legal enforcement (*Rule of Law* variable) among sample countries, and finally, Panel G reports results for three different *GDPperCapita* groups in the sample.

The repetition of results for facilities with/without covenants (based on the existence of any covenant information from Dealscan) is justified under the expectation that accounting information should be more relevant and so useful for the monitoring of the borrowing firm in the presence of covenants, as such conventions are very often constructed through the use of accounting numbers. Regarding the breakdown of sample countries into three, rather than two groups, this is performed in the form of a sensitivity check for the cut-off point of 1.3 used in order to define stronger vs. weaker enforcement countries. As the country enforcement patterns for the *Rule of Law* variable reported in Table 2 do not linearly translate into facility observations used in subsequent analysis, the three enforcement group breakdown was performed for facilities falling in the lowest 20%, mid 60% and top 20%, for all sample observations with data available on loan spread (Dealscan item '*All-in Spread Drawn*'). The same applies for breaking down the sample and repeating the analysis according to three country size-income groups (based on *LnGDPperCapita*), in an effort to ensure that the strength of legal enforcement does not work as a proxy for country size and relevant income generated. In other words, alleviate eventual concerns that the efficiency of enforcement is mimicking relative differences in other macroeconomic country-specific factors, with lower levels of enforcement, for example, to be more often observed for smaller, rather than larger countries. With the exception of Table 7 Panel D, accounting quality (AQ) is defined according to the Dechow and Dichev (2002) methodology, as described in Section 3.1.

Results from Table 7 Panels A–D indicate that findings from Table 5 that AQ is consequential with respect to loan spread formation only when legal enforcement is stronger vs. weaker at the country level remain robust to controls for the time period chosen, the recent credit crunch, imposing controls for differences in macroeconomic risk among sample countries, or defining AQ under a different model specification.[23] Furthermore, results from Panel E indicate that the differential effect of AQ on loan pricing, depending on the strength of legal enforcement at the country level is stronger for facilities with covenants, which is intuitively explainable upon considering that such conventions are very often constructed by making use of information from financial statements. From Table 7 Panel F, it can be observed that identifying three (rather than two) different levels of enforcement provides results in the same direction as was the case in Table 5, while coefficient comparison tests for the effect of AQ on loan spread confirm a relatively stronger economic impact of AQ on loan pricing, as the strength of legal enforcement at the country level improves. Results from Table 7 Panel G additionally confirm that country size is not working as a factor mimicking the behavior of the strength of legal enforcement at the country level, as the effect of AQ on loan pricing is actually the strongest for the middle (as opposed to the top) size group, with relevant results to be confirmed by coefficient comparison tests for AQ in the different size groups. (Untabulated) results are further robust to the exclusion of countries significantly represented in the initial sample in terms of numbers of observations, but not in a way completely consistent with their relative representation in terms of size, such as the exclusion of Greece or the Philippines from the sample. Furthermore, (untabulated) results are robust to including additional audit quality-related controls, such as the existence of a BIG4 auditor, or the issuance of an unqualified auditor report, and risk-related controls, for example, by using the standard deviation of daily stock returns as an additional independent variable.

Finally, in order to examine whether the effect of AQ on loan pricing for weaker vs. stronger enforcement countries holds for other loan terms as well, Table 8 reports estimation results for Eq. (2) when the dependent variable is either loan tranche maturity (in months — Panel A),[24] or security status (Panel B). For results reported in Panel A, the equation is estimated using OLS, and for results in Panel B, it is estimated using maximum likelihood. Results are reported for all sample countries, by including an interaction term between AQ and a variable indicating that the firm in question belongs to a strong enforcement country (*StrongLawCountry*),[25] and for

[23] Results are in the same direction (although weaker) when replacing AQ with a firm and year-specific conservatism-timely loss recognition score based on Khan and Watts (2009), incorporating both the incremental timeliness of bad news and the timeliness of good news (G-Score + C-Score, Khan & Watts, 2009). At this point, it should be mentioned that accounting conservatism, reflecting asymmetric timeliness in the incorporation of bad vs. good news, is conceptually different from earnings management (García Osma, Mora, & Sabater, 2015) or accruals quality (measured by the Dechow and Dichev (2002) or the Modified Jones specifications), as conservatism is expected to naturally exist within some normal boundaries due to the differential way of news incorporation within financial statements. In the context of debt contracting, conservatism is intuitively considered to be beneficial for loan contracting because it reduces opportunistic behavior, while it is desirable to the extent that a failure to liquidate a bad project is more costly than inefficient liquidation of a good project (Christensen, Nikolaev, & Wittenberg-Moerman, 2016). In any case, the purpose of this study is to examine the effect of firm-specific accounting quality, rather than accounting conservatism or asymmetric timeliness on loan pricing depending on the strength of legal enforcement at the country level, so the baseline model used is intended in capturing the quality of accounting accruals (Dechow & Dichev, 2002) as a proxy for accounting quality, or the magnitude of discretionary accruals as a related proxy (Modified Jones model, Dechow et al., 1995), in accordance with past research examining a similar question in the single-country setting (Bharath et al., 2008).

[24] *LnMaturity* is not included as a separate regressor when *LoanPricingTerms* = loan maturity.

[25] For reasons of economy of space, results in Table 8 are not reported when excluding this interaction term as in Table 5, but nevertheless remain qualitatively similar. In addition, the *StrongLawCountry* variable sometimes gets a significantly positive coefficient in results in Table 8 Panel B and also Table 6. This is considered in accordance with higher loan spreads descriptively observed for stronger vs. weaker law countries in Table 3.

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Table 8
Accounting quality loan maturity and security.
The table reports estimation results for the following equation: $LoanPricingTerms_{i,t} = \alpha_0 + \alpha_1 PropertyRightsIndex + \alpha_2 AQ_{i,t} + \alpha_3 StrongLawCountry_{i,t} + \alpha_4$-$i,_t = \alpha_0 + \alpha_1 PropertyRightsIndex + \alpha_2 AQ_{i,t} + \alpha_3 StrongLawCountry_{i,t} + \alpha_4 AQ^{*} StrongLawCountry_{i,t} + \alpha_5 LTD/TA_{i,t} + \alpha_6 NI/TA_{i,t} + \alpha_7 NPPE/TA_{i,t} + \alpha_8 MVE/BVE_{i,t} + \alpha_9 LnSales_{i,t} + \alpha_{10}$-$i,t + \alpha_9 LnSales_{i,t} + \alpha_{10} SeniorDebtRating_{i,t} + \alpha_{11} LnMaturity_{i,t} + \alpha_{12} LnNoLenders_{i,t} + \alpha_{13} LnTrancheSize_{i,t} + YearIndicators_t + e_{i,t}$. *LoanPricingTerms* stands for the natural logarithm of loan maturity, expressed in months (Dealscan item 'Tenor/Maturity') (Panel A), and represents a dummy variable equal to 1 in case the Dealscan variable '*Secured/Unsecured*' takes the value of 1 for the facility in question, and 0 otherwise (Panel B). For results reported in Panel A, the equation is estimated using OLS, and for results in Panel B it is estimated using maximum likelihood, during 2005–2012. Standard errors clustered according to country. Accounting quality (AQ) is defined according to the Dechow and Dichev (2002) methodology, as described in Section 3.1. Results are reported for all sample countries, and for countries from strong and weak enforcement countries separately. *LnMaturity* is not included as a separate regressor when *LoanPricingTerms* = loan maturity). Following Ahmed et al. (2013), high (low) enforcement countries are considered to be the ones with a Kaufmann et al. (2010) score above (below) 1.3. The equation also includes (untabulated) year indicators. The sample selection process is described in detail in Section 3.3, while detailed variable definitions are provided in Appendix A.

	Panel A: Loan maturity						Panel B: Loan security					
	Pooled sample		Strong law countries		Weak law countries		Pooled sample		Strong law countries		Weak law countries	
	Coef.	*t-stat.*	Coef.	*t-stat.*	Coef.	*t-stat.*	Coef.	*z-stat*	Coef.	*z-stat*	Coef.	*z-stat*
c	4.665	5.88***	4.891	3.06***	4.175	9.64***	−6.235	−1.58	−10.033	−2.04**	−4.921	−1.77*
PropertyRightsIndex	0.008	0.27	−0.013	−0.23	0.062	2.69**	0.231	1.36	0.396	2.14**	−0.013	−0.16
AQ	−0.015	−1.06	0.010	1.87*	−0.011	−0.75	0.058	1.27	0.026	1.29	0.113	1.22
StrongLawCountry	−0.170	−0.95					−0.133	−0.19				
*AQ * StrongLawCountry*	0.026	1.73*					−0.042	−0.85				
LTD/TA	0.276	3.10***	0.329	3.20***	−0.138	−0.30	1.211	3.23***	1.150	2.95***	2.812	2.70***
NI/TA	0.673	2.26**	0.620	2.06*	1.890	2.98**	−1.252	−0.87	−0.235	−0.19	−15.057	−4.95***
NPPE/TA	0.079	0.58	0.062	0.43	0.102	2.83**	0.219	0.77	0.111	0.33	1.213	1.05
MVE/BVE	0.000	−0.68	0.000	−0.64	−0.035	-1.38	0.017	1.86*	0.015	1.62	0.003	0.02
LnSales (in $)	−0.032	−1.76*	−0.033	−1.45	−0.069	−5.49***	−0.056	−0.93	−0.145	−2.39**	0.462	11.67***
R&D/TA	1.459	1.97*	1.516	1.88*	1.218	0.33	−4.138	−1.04	−5.535	−1.51	−58.798	-0.85
SeniorDebtRating	−0.014	−1.22	−0.005	−0.47	−0.041	−2.02*	0.039	0.86	0.102	3.23***	−0.231	−4.22***
LnMaturity							0.443	3.08***	0.523	2.36**	0.294	1.89*
LnNoLenders	0.014	0.45	0.038	1.37	−0.074	−1.76	−0.185	−2.85***	−0.151	−2.06**	−0.198	−3.31***
LnTrancheSize	−0.021	−1.22	−0.014	−0.65	−0.016	−0.73	−0.137	−2.96***	−0.147	−3.34***	−0.340	−2.06**
Year Indicators	Yes		Yes		Yes		Yes		Yes		Yes	
R-squared	0.099		0.119		0.141		0.194		0.228		0.335	
N	1349		1074		275		1349		1074		275	

* Indicates statistical significance at 10%.
** Indicates statistical significance at 5%.
*** Indicates statistical significance at 1%.

countries from strong and weak enforcement countries separately. Interestingly, there can be observed from Panel A that findings on the significance of AQ for the determination of loan maturity are in the same direction as relevant results for loan spread from Table 5, although weaker. It is observed that the interaction term between AQ and the strength of legal enforcement variable indicates a positive and significant (at 10% significance level) impact on loan maturity, indicating that AQ combined with efficient enforcement contributes to lenders granting loans with longer maturities. However, neither the AQ regressor nor the strength of enforcement variable *StrongLawCountry* appear to significantly relate to loan maturity, indicating that only the combined effect of the two positively affects maturity. At the same time, there is observed that AQ has a positive and significant (again at 10% significance level) effect on loan maturity when isolating the analysis for firms from strong law countries, but not in the case of weaker enforcement jurisdictions, providing further evidence that such information is inconsequential for this group.

With respect to the behavior of *PropertyRightsIndex*, this variable does not exhibit evidence of significance for the pooled sample or for firms from strong law countries, however, its coefficient is positively significant when isolating the analysis for firms from weaker law countries. Regarding firm-specific variables, results indicate that more profitable firms are granted loans with longer maturities, as one would intuitively expect, and the same occurs for more highly levered firms, as larger amounts of debt would naturally require a longer time period for repayment, but only in countries with strong law enforcement, while there is very limited evidence observed on the significance of loan-specific variables.

It is then observed from Table 8 Panel B that AQ does not appear to significantly associate with the probability for a loan to be secured, and this result holds for both the pooled sample, as well as for the individual samples of firms from stronger vs. weaker law countries. The interaction term between AQ and *StrongLawCountry* is also observed to not significantly associate with loan security, while the strong law country indicator *StrongLawCountry* again is not observed to be statistically significant even in a stand-alone basis. These results lead to the conclusion that AQ and its combined effect with the strength of enforcement in a country do not significantly associate with loan collateralization for the sample in question, in contrast for relevant results for the US (Bharath et al., 2008), and also previous results on the effect of AQ on loan spread reported in Table 5. Interestingly, the *PropertyRightsIndex* is positively and significantly associated with the probability of loan collateralization for firms from strong law countries separately estimated. This finding could be in accordance with the expectation that better property rights protection at the country level might induce lenders from strong law countries to ask for collateral, feeling probably more protected, also

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giving them the possibility to become more competitive by reducing, for example, loan spread, in case the borrower pledges loan collateral. At the same time, better property rights protection is observed to have no impact at all on asking borrowers to pledge collateral for the weaker law country group. However, in results reported in Panel A of the table, the *PropertyRightsIndex* was observed to get a positively significant coefficient when isolating the analysis for firms from *weaker* law countries, which could be considered as a lack of efficiency from lenders from weak law countries, in a sense that the degree of protection of property rights is inconsequential for deciding whether a loan is going to be secured or not, but has significant consequences with respect to deciding on loan maturity, when this last loan term is not so closely related to property rights protection.

With respect to the statistical behavior of the rest of the variables, their coefficient signs and obtained values are observed to be more or less intuitive, as, for example, the probability for a loan to be secured is positively and significantly related to corporate financial leverage. Profitability is found to negatively and significantly affect the probability for a loan to be secured only for weaker enforcement countries, so borrowers are observed to more strongly rely on this factor, in order to determine whether a loan should be secured or not, for this subsample in particular. Finally, there are indications that collateral requirements are more probable for smaller syndicate sizes (with a lower diversification of risk) and smaller loans, which is explainable in case loan size is proportional to firm size, and risk incurred by the borrower.

5. Conclusion

The scope of this paper is to investigate the effect of the efficiency of legal enforcement at the country level with respect to the value-relevance of accounting quality for loan pricing determination. Past research has consistently shown that accounting quality is a factor incorporated into loan pricing (e.g. Bharath et al., 2008; Graham et al., 2008), while this quality has seen as factor which is, to a great extent, endogenously determined by national institutional factors (Ball, 2006). However, there has been observed significant cross-country variation in the value-relevance of accounting information depending on the strength of legal enforcement and institutional efficiency within a country (e.g. Ali & Hwang, 2000; Haw et al., 2012; Hope, 2003). In this context, the hypothesis is in favor of stronger, rather than weaker enforcement at the country level to be associated with a stronger influence of accounting quality on loan pricing, expecting that financial statement users will view this information as more credible and reliable in order to project the future cash flows and probability of default of borrowers, and thus, such information be incorporated into loan pricing.

By making use of an international sample of firms of 25 EU and non-EU countries reporting under uniform accounting rules (mandatory adoption of IFRS by 2005), with bank loan data available from the Dealscan database during 2005–2012, it is first observed that AQ negatively and significantly affects bank loan spreads over the basic rate, but this result only holds combined with the level of enforcement, which is the case for stronger legal enforcement countries. When the analysis is repeated for investment grade vs. non-investment grade or unrated issues, it is observed that this result is mainly driven by non-investment grade or unrated loans, rather than investment grade ones. This finding is considered to be an indication that the effect of AQ on loan pricing is not significant, regardless of the strength of enforcement, in the case for issues which are of higher credit quality, as information asymmetries and the projection of future cash flow generation prediction and default probability should not be that challenging to make for firms issuing such loans, due to the already acceptable quality of issues. However, for non-investment grade or unrated issues, asymmetries between insiders and outsiders should be expected to be more serious, and this results in increased importance for the role of financial statement information in order to derive loan pricing, provided that this information is viewed as credible. Thus, for these issues in particular, it is observed that the efficiency of enforcement at the country level plays an important role as to whether the firm-specific quality of financial statements is considered to be credible enough so that it can be incorporated or not into loan pricing. In this way, this result is considered not to be attributable to differences in the quality of debt between higher vs. lower enforcement institutional environments, and is robust to a number of controls, such as differences in macroeconomic conditions among the sample countries, the effect of the recent financial crisis, defining the strength of enforcement under more detailed country groupings, or alternative definition for AQ. Finally, evidence indicates that AQ positively and significantly relates to loan maturity, but again only when taking the strength of legal enforcement in a country into account, with this result to be weaker compared to the previous result on spread, while there is no significant impact of AQ observed (with and without accounting for the level of enforcement) on loan collateralization status. This weaker link between AQ and non-price loan terms for differing levels of enforcement is considered to be explainable upon considering that loan spread directly prices risk and translates it into monetary terms, in contrast to non-price loan terms.

The findings by this study are consistent with the argument that the same set of accounting rules on paper may have in reality different valuation implications across countries, depending on the strength of legal enforcement and institutional efficiency at the country level, with reference to bank loan pricing. Accounting regulation used by sample countries is IFRS, so this evidence is consistent with AQ not being completely uniform and comparable among adopting countries, and thus points towards the importance of forces shaping accounting quality other than the mere accounting standards or rules. These forces could be managerial incentives, and more importantly, the economic and institutional environment at the country level (Ahmed et al., 2013), and evidence by this study indicates that there should not exist the expectation that rules on paper prescribed by any set of standards would be resulting in similar value-relevance of accounting quality across countries, in case the international enforcement environment exhibits significant dissimilarities (Ball, 2006; Ball et al., 2003). Such findings, with reference to loan pricing, are considered to be important to address given the size of debt markets, and, as a result, the information needs of their participants, with reference to the size of capital provided to firms through equity markets. However, it should be noted that this study does not provide a reply with respect to the relative importance of factors shaping accounting quality across countries, with a corresponding effect on loan pricing. Such factors could represent a combination of managerial incentives, with influence received from the

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economic and institutional environment, by differentiating, for example, between the efficiency of the institutions vs. pure accounting standard enforcement in a country, leaving room for related future research.

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Appendix A. This appendix contains variable definitions for firm, loan and country-specific variables

Financial variable	Description	Worldscope/Dealscan item calculation
Firm-specific variables		
NI/TA	Net Income before Extraordinary Items and Preferred Dividends/Total Assets	WC01551/WC02999
NPPE/TA	Net Property, Plant, and Equipment/Total Assets	WC02501/WC02999
LnSales (in $)	Natural logarithm of Sales (in $ millions)	Ln(WC07240)
LTD/TA	Long Term Debt/Total Assets	WC03251/WC02999
MVE/BVE	Market Value of Equity/Book Value of Equity	WC08001/WC03501
R&D/TA	R&D Expense/Total Assets (the variable takes the value of zero if no R&D expense exists for a particular firm-year observation)	WC01201/WC03501
Loan-specific variables		
LnSpread	Facility spread over basic rate, equal to the natural logarithm of Dealscan item '*All-in Spread Drawn*'	Dealscan item '*All-in spread Drawn*'
LnNoLenders	Natural logarithm of the tranche number of lenders, as provided by Dealscan	Dealscan item '*Number of Lenders*'
LnMaturity	Facility (tranche) maturity, equal to the natural logarithm of loan maturity in months, as provided by Dealscan	Dealscan item '*Tenor/Maturity*'
LnTrancheSize	Facility (tranche) size, equal to the natural logarithm of loan tranche size (in $ millions), as provided by Dealscan	Dealscan item '*Tranche Amount* (*Converted*) ($)'
Guarantor	Loan guarantor indicator, or variable taking value of 1 if there exists data on a specific guarantor firm from Dealscan variable '*Borrower-Guarantor*', and 0 otherwise	Dealscan item '*Borrower-Guarantor*'
Performance pricing	Performance pricing indicator, or a variable taking value of 1 if Dealscan variable '*Performance Pricing*' contains any relevant information, and 0 otherwise	Dealscan item '*Performance Pricing*'
Secured loan	Secured loan indicator, or taking value of 1, if Dealscan variable Secured/Unsecured = '*Secured*', and 0 otherwise	Dealscan item '*Secured/Unsecured*'
Senior loan	Loan seniority indicator, or variable taking value of 1 if Dealscan variable Seniority = '*Senior*', and 0 otherwise	Dealscan item '*Senior*'
Sponsored loan	Loan sponsor indicator, or variable taking value of 1 if there exists data on a specific guarantor firm from Dealscan variable '*Borrower-Sponsor*', and 0 otherwise	Dealscan item "*Borrower-Sponsor*'
Syndicated loan	Syndicated loan indicator, or variable taking value of 1 if Dealscan variable Distribution Method = '*Syndication*', and 0 otherwise	Dealscan item '*Syndication*'
Rating Senior Debt (*SeniorDebtRating*)	Ordinal variable taking values from 1 to 6, depending on the credit rating of the firm (in descending order). There is made use of the Dealscan item for ratings at the end of the loan, following Qian and Strahan (2007), with data from Moody's or S&P (if Moody's rating data is not available, then data is complemented by using relevant S&P data, in case available) for senior debt ratings (Qian & Strahan, 2007). The variable takes the value of 1 if senior debt rating = Aaa (or the S&P equivalent), 2 for ratings until Aa3, 3 for rating values below Aa3 but above A3 (inclusive), 4 for ratings below A3 but higher than Baa3 (inclusive), 5 for a rating lower than Baa3 but higher than Ba3 (inclusive) and 6 for a rating below Ba3. The variable is set equal to 0 if an abovementioned rating does not exist.	Dealscan item '*Ratings-All At Close*'
Country-specific variables		
PropertyRightsIndex	Aggregate index on property rights protection in a country, calculated from the aggregation of separate indexes on corruption, risk of expropriation, risk of contract repudiation, based on La Porta et al. (1998)	
ExternalBalance	External balance on goods and services (% of GDP) — source: World Bank.	
GovernmentDebt	Central government debt, total (% of GDP) — source: World Bank.	
InflationRate	Inflation, consumer prices (annual %) — source: World Bank.	
LnGDPperCapita	GDP per capita is gross domestic product divided by midyear population — source: World Bank.	

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