Country-level corruption and accounting choice: research & development capitalization under IFRS

Francesco Mazzi

Richard Slack

Ioannis Tsalavoutas*

Fanis Tsoligkas

Acknowledgements

We gratefully acknowledge helpful comments received from Audrey Paterson (Guest Editor), two anonymous reviewers, Paul André, Diogenis Baboukardos, Darren Duxbury, Richard Jackson, Andreas Kreß, Stergios Leventis, Giovanni Liberatore, Theodore Sougiannis, Christian Stadler, Ian Tonks and the participants of the EUFIN Workshop (Fribourg, September 2016), BAFA Scottish Area Group Conference (Glasgow, August 2016) FRBC Conference (Bristol, July 2016) and seminar participants at the University of Bath (November, 2016), HEC Lausanne (February, 2017), Newcastle University Business School (March, 2017), 40th Annual EAA Conference (Valencia, May 2017), XII Workshop on Empirical Research in Financial Accounting (Exeter, June 2017).

*Corresponding author.

Francesco Mazzi is at the University of Florence (Economics and Management School, Accounting and Finance Division, Via delle Pangette 9, Building D6, 50127, Florence, Italy, E-mail: francesco.mazzi@unifi.it).

Richard Slack is at Durham University (Durham University Business School, Mill Hill Lane, Durham, DH1 3LB, UK. E-mail: richard.slack@durham.ac.uk).

Ioannis Tsalavoutas is at the University of Glasgow (Adam Smith Business School, West Quadrangle, Main Building, Room G683, University Avenue, Glasgow, G12 8QQ, Scotland, UK. E-mail: ioannis.tsalavoutas@glasgow.ac.uk).

Fanis Tsoligkas is at the University of Bath (School of Management, Wessex House, Room 9.52, Claverton Down, Bath, BA2 7AY, UK. E-mail: F.Tsoligkas@bath.ac.uk).

Country-level corruption and accounting choice: research & development capitalization under IFRS

Abstract

International Accounting Standard 38 Intangible Assets mandates that development costs must be capitalized if certain conditions specified in the standard are met. However, this requires managerial judgement and hence may be subject to opportunism. Corruption is a permeable informal country characteristic that penetrates firms' behaviour, influencing corporate misconduct. We conjecture that an environment with high corruption facilitates management in their justification of meeting the capitalization criteria of assets that should have been expensed, either partly or entirely. Effectively, these capitalized assets will not generate the future economic benefits implicitly conveyed by their recognition. This recognition, however, sends positive (albeit distorted) market signals for future earnings and increases current year reported earnings. We find that there is a positive relation between country-level corruption and the amount of development costs capitalized in a given year. Moreover, the higher the levels of country corruption, the lower the contribution of capitalized development costs in a given year to future profitability. Finally, this association is moderated by companies' levels of internationalization.

Keywords: R&D; IFRS; corruption; accounting choice; future performance; internationalization.

JEL Classifications: M40, M41, M48.

1. Introduction

Companies invest in research and development (hereafter R&D) to compete in continuously evolving business environments. R&D investments have a long-term effect on earnings, facilitate corporate growth and long-term sustainability (Dugan, McEldowney, Turner, & Wheatley, 2016) as well as value creation (e.g. Chan, Lakonishok, & Sougiannis, 2001; Duqi, Jaafar, & Torluccio, 2015; Sougiannis, 1994). Along these lines, some argue that the most valuable corporate assets are created through R&D (Boujelben & Fedhila, 2011).

Under International Financial Reporting Standards (hereafter IFRS), International Accounting Standard (hereafter IAS) 38 Intangible Assets sets out a number of restrictive conditions for the capitalization of development costs. Hence, one would expect that only those development expenditures from R&D projects which are highly likely to be successful are capitalized and in doing so convey future value creation (Chen, Gavious, & Lev, 2016). However, the application of these conditions requires managers to exercise judgement over proprietary and subjective information. Thus, the capitalization decision is open to managerial discretion, leading to potential earnings management, such that its reliability and faithful representation can be questioned (Cazavan-Jeny, Jeanjean, & Joos, 2011; Dinh, Kang, & Schultze, 2016). This paper responds to the call from Hoque and Monem (2016) to address the potential link between accounting and corruption and investigates the extent to which corruption is associated with the capitalization of R&D under IFRS.

Being a permeable and informal country characteristic, corruption is pervasive in individuals' and companies' day to day business activities and dealings (Rodriguez, Uhlenbruck, & Eden, 2005) with negative consequences. Corruption adversely impacts the allocation of resources with a negative effect on the level of investment and economic growth (Bryant & Javalgi, 2015; Voyer & Beamish, 2004). At a business level, aggregate measures of quality of accounting have also been found to be susceptible to country-level corruption.

This includes information transparency (Dirienzo, Das, Cort, & Burbridge, 2007), perceived levels of accounting and audit quality amongst business people (Malagueño, Albrecht, Ainge, & Stephens, 2010), earnings management (Lourenço, Rathke, Santana, & Branco, 2018), and earnings opacity (Picur, 2004; Riahi-Belkaoui, 2004).

We focus on the capitalization of development costs, an important IFRS-specific accounting treatment, which is at the heart of the accounting choice literature (Kreß, Eierle, and Tsalavoutas, 2019). We also draw on business and management literature and conjecture that in countries with high levels of corruption, managers can exploit the features of such an environment and capitalize development costs which ordinarily should have been expensed (Hypothesis 1). In this way, managers appear as signaling their inside information about the firm's future R&D related income generation. However, in reality, they provide an inflated signal about such future economic benefits. Confirmation of this distorted signal will be evidenced if the amounts capitalized in a given year have a lower contribution to future earnings compared to those assets recognized by firms in countries with lower levels of corruption (Hypothesis 2).

Building on these two hypotheses, we next consider whether a firms' internationalization level moderates the association between corruption and the level of capitalized development costs. As firms become more international, the trait of domestic corruption may subside as it becomes more exposed to international norms (Reid, 1983). Prior literature shows that internationalization positively influences management attitudes towards stewardship and accountability (Murtha, Lenway, & Bagozzi, 1998; Segaro, Larimo, & Jones, 2014), compared to more domestically-orientated firms (Nadkarni & Perez, 2007) and serves to lessen the effect of domestic corruption (Sandholtz & Gray, 2003). Thus, the more international a firm is, the weaker will be the association between domestic corruption and the magnitude of development costs capitalized (Hypothesis 3). Consistently, the moderating role of corruption in the association between capitalized costs and future earnings should be weaker for those firms that are more international compared to more domestically-orientated firms (Hypothesis 4).

To test our hypotheses, we employ a longitudinal sample of almost 3,200 firm-year observations, across 20 countries, which were mandated to adopt IFRS in 2005. Our findings show the following. First, after controlling for various firm and other country institutional characteristics, we find a positive relation between country-level corruption and the amount of development costs capitalized. Further, we find that capitalized amounts in a given year contribute materially to future earnings. However, the higher the level of corruption, the lower the association of the capitalized development costs to future profitability, compared to countries with lower levels of corruption. Additionally, in more international companies, the association between the amount of capitalized development costs and domestic corruption is less pronounced as compared to those companies that are more domestically orientated. Finally, the contribution of capitalized development costs to future profitability is negatively associated with the level of domestic corruption only in less international firms.

In additional analyses, we explore whether firms that capitalize development costs in countries with lower levels of corruption earn superior abnormal returns relative to those in countries with higher levels of corruption. Our results show that, in the short-term (i.e., one year ahead), firms in both sub-samples exhibit similar and non-significant abnormal returns. However, we find that, in the long term (i.e., five years ahead), capitalizing firms in countries with lower levels of corruption do earn superior stock returns relative to firms in countries with higher levels of corruption. This is consistent with the evidence that the capitalized amounts in countries with higher levels of corruption have lower contribution to future earnings in the long-run. Thus, stock-market participants price capitalizers differently across countries with higher and lower corruption levels. Taken together, equity market participants appear unable to discern the benefits associated with the amounts of development costs capitalized in the short-term. This is corrected in the longer term as more information becomes available and is not surprising as it takes time for the benefits of R&D investments to unravel (Nadiri & Prucha, 1996; Lev & Sougiannis, 1996).

By examining the association between corruption and capitalized development costs and the capitalized development costs' respective contribution to future firm earnings, we contribute to the literature as follows. Firstly, we respond to Shah, Liang, and Akbar (2013 p. 168) who call for 'analysis regarding capitalizing R&D expenditures'. Only one single country-study examines the determinants of R&D capitalization under IFRS (i.e., Dinh et al., 2016) and neither corruption nor internationalization as country- and firm-level contextual factors respectively were considered. Unlike our research which employs an international dataset, that study is restricted to Germany, and thus its findings are country specific and do not shed light on the potential disparity of accounting and managerial choice in a cross-country context. Second, whilst Cazavan-Jeny et al. (2011) and Ahmed and Falk (2006) provide mixed evidence regarding the relationship between capitalized development costs and a firm's future earnings, these are again single country studies (France and Australia, respectively) and significantly both focus on pre-IFRS adoption. Third, by drawing on corruption as a possible factor associated with accounting choice, we provide one hitherto unexamined aspect of that analysis. In doing so, we specifically address the call by Houqe and Monem (2016, p. 3) who note that 'literature linking corruption with accounting is sparse'. Fourth, we contribute to the literature which examines the association between R&D expenditure and subsequent stock returns (e.g. Duqi, Jaafar, & Torluccio, 2015; Chambers, Jennings, & Thomson, 2002; Chan, Lakonishok & Sougiannis, 2001; Lev & Sougiannis, 1996) by considering the market returns earned by firms which capitalize R&D expenditure. This is the first study to examine whether firms which capitalize R&D expenditure under

IFRS earn excess stock returns and this evidence is provided across sub-samples of countries with high versus low levels of corruption. Finally, we provide empirical findings in support of Ball (2006), Nobes (2006), Weetman (2006) and Zeff (2007) suggesting that country specific characteristics result in an uneven application of IFRS worldwide, and arguably, with adverse effects on the comparability of financial statements. Specifically, we demonstrate that a highly pervasive country characteristic affects managers' decision making with regards to the recognition of intangible assets. Even though formal institutional mechanisms such as enforcement and monitoring powers are in place, corruption still permeates accounting choices and thus raises concerns regarding the resultant reliability of information in companies' financial statements.

The remainder of the paper is organized as follows. Section 2, discusses the relevant literature and the hypotheses development. Section 3 describes the sample selection process and the methods employed. Section 4 presents and discusses the empirical findings. Section 5 discusses the sensitivity analyses. Section 6 concludes the paper by also discussing limitations and avenues for further research.

2. Background, literature review and hypotheses development

2.1 R&D reporting under IFRS

Since 2005, all publicly traded firms in the European Union (EU) need to report consolidated financial statements under IFRS.[1] In line with this development, many countries outside the EU either adopted IFRS or converged their national standards to IFRS. IAS 38 is the standard governing the accounting treatment of intangible assets. IAS 38 requires the capitalization of development expenditures which meet a specific set of criteria. In order to capitalize the development costs a company should assess: the technical feasibility of the

[1] In some jurisdictions (e.g. Greece and Italy) this requirement applied also to listed companies which published only individual accounts (Tsoligkas & Tsalavoutas, 2011).

intangible asset; the intention to complete the asset and with the ability to sell (or use) it; the availability of resources, technical or financial, to complete it; the ability to reliably measure the expenditure and the ability to justify that the asset will generate future economic benefits (paragraph 57).

If these conditions are met, a company must then capitalize development expenditure. However, in establishing whether all these criteria are met, there is, necessarily, reliance on managerial judgement and hence discretion over the capitalization decision (PricewaterhouseCoopers, 2010, p. 7). Effectively, if the company decides that one of the conditions is not met, then it must expense the relevant cost incurred. Alternatively, and consistent with an earnings management and noisy signalling approach (Ahmed & Falk, 2006, 2009; Cazavan-Jeny & Jeanjean, 2006; Cazavan-Jeny et al., 2011; Ciftci, 2010; Dinh et al., 2016; Markarian, Pozza, & Prencipe, 2008; Prencipe, Markarian, & Pozza, 2008), a company may judge that all of the conditions have been met and hence capitalize development costs which ordinarily should have been expensed and may not generate the future economic benefits signalled by their capitalization.

2.2 The R&D capitalization debate and academic evidence

The accounting treatment of R&D has been a controversial issue among standards setters, financial statement preparers and users as well as academics. In contrast to IAS 38, under US Generally Accepted Accounting Principles (GAAP) (Statement of Financial Accounting Standards (hereafter SFAS) 2), all R&D costs are expensed. One of the reasons behind this differential treatment are the concerns of the Financial Accounting Standards Board (FASB) regarding the uncertainty of future benefits expected from the capitalized assets. Additionally, they are concerned that management may use their discretion to capitalize R&D, resulting in a misrepresentation of the expected benefits (Davies & Wallington, 1999;

Healy & Wahlen, 1999). This is why Ahmed and Falk (2006 p. 234) conclude that, standard setters, such as FASB, are concerned that 'the cost of possible misstatement to exceed the benefits of signalling' (and thus mandate expensing all R&D costs as a result).[2] However, Amir, Guan, and Livne (2007) conclude that uniform expensing of R&D costs is 'overly conservative' (p. 245).

In summary, within this debate, two opposing views dominate. On the one hand, development costs effectively constitute investments which will result in future economic benefits and as a result they should be capitalized (i.e., not expensed) to recognize their current value to the business and to provide a signal for future earnings arising from successful development expenditure (Lev, Nissim, & Thomas, 2008). On the other hand, capitalization can effectively be used as an earnings management vehicle (Dinh et al., 2016; Ciftci, 2010).

In relation to signalling, there is mixed evidence within the literature on the link between capitalization and future earnings. For instance, in relation to French companies in the pre-IFRS period in which firms were permitted to capitalize some research and development costs under certain conditions, Cazavan-Jeny and Jeanjean (2006) find a significant and negative relationship of total capitalized development costs and share price. They explain this surprising finding as '…an indication that the standard is [was] not properly applied by French managers' (p. 39) stemming from weak legal enforcement in France (with reference to La Porta, Lopez-de-Silanes, Shleifer, & Vishny (1998)). This is consistent with the view that managers are more likely to take a more opportunistic approach to capitalization. Further, Cazavan-Jeny et al. (2011), again in the French pre-IFRS context, find that capitalized development costs in a given year are generally associated with a negative or

[2] Under US GAAP, the only exception to this relates to software development (SD) costs which can be capitalised once technological feasibility is established (SFAS 86 Accounting Standards Codification Topic 985).

neutral impact on future performance (indicative of aggressive accounting), and hence inconsistent with a genuine signaling effect.

In contrast, Ahmed and Falk (2006) in an Australian pre-IFRS context, where companies were permitted to capitalize research and development costs under certain conditions find that, 'R&D capitalized expenditure [in a given year] is positively and significantly associated with the firm's future earnings' (p. 231). Thus, they argue that managers are able 'to credibly signal their superior information by either capitalizing successful R&D investment or expensing unsuccessful R&D investment' (p. 259). The value relevance of capitalized development cost, and hence the signalling of managerial information, is also noted by Shah et al. (2013) using UK data covering pre and post IFRS adoption. They find that total capitalized development costs are value relevant and conclude 'that investors perceive the capitalization of R&D to be related to successful R&D projects' (ibid, p. 168) (and see Oswald & Zarowin, 2007; Tsoligkas & Tsalavoutas, 2011).

With respect to the potential manipulation of capitalization associated with aggressive reporting or earnings management, whilst much of the prior literature is based upon national GAAP rather than IFRS, consistent findings have been reported. Overall, managers capitalize development costs to meet or beat earnings thresholds/targets or to avoid reporting losses (Cazavan-Jeny et al., 2011) or as forming part of earnings management for earnings smoothing (Markarian et al., 2008 in relation to Italian companies). Finally, Dinh et al. (2016), in their study on Germany, which covers companies reporting under IFRS, found that 'pressure to beat past year's earnings and analysts' forecast of earnings, increases the probability of a firm capitalizing R&D in the current period. This evidence is in line with the notion of firms opportunistically managing earnings via R&D capitalization' (p. 3).

Given that these are single country studies, they do not allow for the consideration of country-level pervasive and informal institutional factors which may be associated with managers' decision and behaviour towards capitalization of development costs. We conjecture that, after controlling for incentives to meet earnings thresholds and other institutional factors (such as enforcement and external monitoring), corruption facilitates aggressive capitalization. This informal contextual mechanism enables managers to justify capitalization of development costs that do not necessarily meet the capitalization criteria, and will subsequently contribute less to future earnings.

2.3 Country-level corruption and its pervasiveness on business practices

Corruption is described as '…an abuse of power and a deviance from the regular duties of individual actors' (Aßländer, 2017, p. 210). Where corruption is prevalent, business cheating and scandals are merely one manifestation of a much broader and more insidious acceptance of corruption within society (Zuckerman, 2006, cited in Ashforth, Gioia, Robinson, & Trevino, 2008). In such settings, corruption is collectively 'normalized' (Ashforth & Anand, 2003) leading to a gradual erosion of moral agency over time (Ashforth et al., 2008; Brief, Buttram, & Dukerich, 2001; Fleming & Zyglidopoulos, 2008). Within a corrupt society, Aßländer (2017, p. 213) states that corruption is not just a phenomenon of the governmental sector (i.e., a private-to-public phenomenon) but has increasingly become a phenomenon in private-to-private business relations (Rodriguez et al., 2005), even among more developed economies with stronger governmental regulations and oversight mechanisms in place.

Spence (2017, p. 456) outlines five features that characterise corruption: possession of power, a disposition to exercise that power, an opportunity to exercise that power, invisibility or concealment, and self-regarding gain. Within a corrupt political-economic system, issues such as bribery and personal favours are common place, referred to as 'crony capitalism' (Nielsen, 2017, p. 120). Thus, personal gain is any gain, not-necessarily financial, which accrues to the agent or to a group, as a result of his or the group's actions (Spence 2017, p. 456).

The business ethics literature distinguishes between venal and institutional corruption (Lessig, 2011, p. 233-235). Venal corruption is defined as '…the illegal use of public resources for private gain, especially by government bureaucrats who trade favours and contracts with private interests for money or some other kind of benefit or politicians who simply raid public treasuries' (Youngdahl, 2017, p. 279). Institutional corruption, on the other hand, is often subtler. Although 'generally not technically illegal, this form of corruption has been described as a systemic 'gaming' to subvert the intent of society's rules by the use of means that are technically legal' (Youngdahl, 2017, p. 280). Hence, in a business context, firms may violate private sector standards and codes of conduct. This is operationalised through a sixth condition that characterises corruption: '…breach of a socially pre-established and widely acknowledged fiduciary relationship of trust that exists between the corrupt person or group and the person or group(s) that are harmed in some way by the corrupt actions' (Spence, 2017, p. 458). This may include companies misinforming shareholders and other stakeholders such as customers and employees. A key feature of institutional corruption is that managers are perceived as 'active rationalisers' or, in extreme cases, 'guilty perpetrators' (c.f., Zyglidopoulos & Flemming, 2008) and exploit the 'opportunities' arising in the business environment within which they operate.

2.4 Hypotheses development

A combination of venal and institutional corruption enables managers to exploit such an external environment and provide evidence to auditors and other stakeholders that *prima facie* justifies capitalization of development costs which ordinarily should have been partly or fully expensed. With reference to facets of venal and institutional corruption, we provide a number of illustrative examples to illustrate how managers may justify capitalization of costs in meeting the criteria outlined in IAS 38.

In relation to the availability of resources, where high institutional and venal corruption exist, the business environment is conducive to the ability to secure asset-based financing through non-arm's length relationships with providers of debt. For example, Fan, Rui, and Zhao (2008) find that politically connected or bribing firms in China have a comparative advantage in obtaining access to debt, and in particular long-term debt. A more extreme form of this is when political officials require state-owned banks and private banks to make large loans or refinancing to businesses, which may ordinarily fail lending conditions. Further, politicians and regulators within the country may even encourage the lending cycles to continue with the help of state bailouts. Moreover, political officials may assign natural resources, development licenses and contracts to their associates. These would allow companies to access the necessary technical or other resources needed for a project's completion. In exchange of these favours (contracts, licences, loans), associates often agree to hire and promote people recommended by the political officials (see Nielsen, 2017, p. 121-122 for more details). Conveniently, this background allows companies to evidence the availability of human, financial and/or other resources required for the successful completion of the project.

In relation to the ability to sell (or use) the asset, this could be evidenced with assurances about its quality and appropriateness of its specification. Corrupt relationships between contractors and supervisory authorities would allow the former to persuade the latter to approve or overlook poor quality workmanship and materials or to ignore safety breaches. For instance, it is commonly reported that counterfeit drugs and substandard medical devices enter the healthcare system in environments where inspection and registration procedures by relevant authorities are flawed by venal facets of corruption i.e., bribery and kick-back payments (see discussion in Stepurko, Pavlova, & Groot, 2017, (p. 319) and Kohler & Ovtcharenko, 2013).

Similarly, 'slotting fees' and 'introductory allowances' have been criticised as an abuse of market power and a kind of institutional bribery given that such payments are not illegal (Murphy, Laczniak, Bowie, & Klein, 2005, p. 128). Aßländer & Storchevoy (2017, p. 485) refer to these as '…a hidden form of corruption'. In an environment with high levels of such institutional corruption at the private-to-private level, these 'fees' facilitate advantageous market positioning of products, which may be of inferior quality (White, Troy, & Gerlich, 2000) but nonetheless help managers demonstrate future product sales and thus earnings potential.

Stemming from this, evidencing future economic benefits can be more readily manipulated in an institutionally corrupt environment via two additional mechanisms. First, through engaging with dubious marketing practices, companies effectively misinform customers about product probity as well as supporting an artificial level of demand. For example, in the media industry, 'cash for comment' involves false endorsements of products (Spence, 2017, p. 464).[3] In the pharmaceutical sector, 'clinical trials have often be found to be fabricated, exaggerated or negative results hidden' (Martinez, Kholer, & McAlister, 2017, p. 335; with reference to Lexchin, 2012).[4] Further, a large proportion of pharmaceuticals companies spend more on marketing than on research and development (Olson, 2015). These marketing costs include tangible gifts including, sponsorship, consultancy contracts, as well as intangible gifts such as conferences in vacation destinations. The industry argues that these marketing activities help with the dissemination of information about new drugs (Martinez et

[3] A well-known example is the strategy employed in Australia by a PR firm advocating an anti-obesity drug for its client, Abbott Australasia, who overstated the medical support for the drug (see Spence, 2017: 470-473 for a detailed discussion of the case).

[4] For example, a study reported that 94% of Randomised Control Tests results dealing with antidepressants where framed in a way that suggested positive results. An analysis of the underlying trials by food and drug administration found that only 51% had positive results (Turner, Matthews, Linardatos, Tell, & Rosenthal, 2008).

al., 2017, p. 336). Indirectly, this creates demand. Because of this, from an accounting perspective, the related costs are classified as health education or in fact R&D expenditures (Martinez et al., 2017, p. 336), although the value of this information is questionable (Avorn, 2015), especially in cases where the information is misleading regarding the efficacy and safety of the drug promoted (Fischer, 2014).

The second mechanism is through illicit payments to government officials to secure contracts or engagement with local agents and sub-contractors who place products from preferential suppliers (with kick-backs). For example, Ferrostaal paid about a billion euros in bribes to a large number of Greek officials in relation to a contract for submarine building and delivery.[5] Other examples include Siemens which was found to have made 'more than 2.3 billion euros of suspicious payments for securing oversees contracts in China, Russia, Argentina, Israel, Greece, Iraq and Venezuela' (Aßländer, 2017, p. 216, with reference to Boehme & Murphy, 2007; Shuburt & Miller, 2008). Finally, the Cyprus Ministry of Health were found in 2009 of tailoring tenders for radiotherapy equipment in favour a selected company. Similar to the introduction of lower quality products in the market via slotting fees, many of these cases involved the promotion of deficient products.[6]

Providing evidence that substantiates meeting the remaining three conditions for capitalization primarily relies on the management's judgement and the company's internal information. Hence, the role of independent audit and appropriate verification becomes more onerous. However, auditors have limited knowledge of the nature, extent, and technical features of their client's R&D activities. Thus, to become more informed, auditors rely on external experts and on the assurances of the management team (Cheng, Lu, & Kuo, 2016).

Nevertheless, in a corrupt environment, the role, integrity and quality of audit performance can fall short of the expected standards, by not robustly challenging the

[5] A summary of this case can be found at the blog of Tufts University: https://sites.tufts.edu/corruptarmsdeals/2017/05/05/the-greek-submarine-scandal/

[6] For example, the Hellenic Navy refused to accept the vessels and the expected benefits never materialised.

management so as to maintain a long-lasting audit relationship and income (through fees). Under such condition, institutional corruption prevails and this subverts norms of expected sector standards and impairs the auditor's fiduciary duty as they become more captured by management (c.f., Levitt, 2000). This can be exacerbated especially if higher fees are paid as a result of capitalization (see the findings of Cheng et al., 2016 and Kreß et al., 2019). This is why Youngdahl (2017, p. 279) argues that auditors '…have too often served as handmaidens of corruption'. Given the embeddedness of corruption within a society (Rodriguez et al., 2005), the external information auditors may require could be biased or unreliable and hence provide false assurance (see examples of flawed clinical trial data or corruption in the media industry discussed earlier). In line with this, it is not surprising that Malagueño et al. (2010) find that perceived auditing quality is negatively related to the level of corruption.

Based upon the preceding discussion, we formulate the following hypothesis:

H1: There is a positive relationship between country-level corruption and the amount of development costs capitalized.

Ceteris paribus, the amounts capitalized should generate economic benefits in the future, translated into higher future earnings streams. Effectively, if indeed the amount capitalized delivers higher benefits from the cost values that will be expensed in the income statement via amortization, the effect in the income statement will not be the same – it will be higher.[7] On this basis, the capitalized development costs which should ordinarily be capitalized to a lesser extent or expensed entirely, would not deliver as high as signalled future earnings.

Relating to H1, in environments where corruption prevails, companies do not operate efficiently and according to the principles most consistent with fair, market-based outcomes (Rodriguez, 2017, p. 174-175). More specifically, Tanzi (1998) discusses how corruption might skew the allocation of critical resources and even the acquisition of human capital

[7] IAS 38 permits the revaluation model but evidence suggests that companies do not apply it (see Tsalavoutas André, & Dionysiou, 2014: Chapter 3).

towards unproductive activities (Rodriguez, 2017, p. 153). Concern regarding unproductive activities in corrupt environments has also been found in prior accounting and finance literature (e.g., Murphy, Shleifer, & Vishny, 1991). For instance, stemming from H1, the preferential and sub-optimal allocation of resources and contracts to cronies (Nielsen, 2017, p. 120; Edwards, Bowen, & Cattell, 2017: 395) and the introduction and marketing of 'low quality' products and services in more corrupt business environments (c.f., Stepurko et al., 2017, p. 319; Kohler & Ovtcharenko, 2013) impairs the creation of longer-term benefits, and thus earnings for the firm. In addition, the people hired as an exchange of favours are frequently 'ghost employees' and often cannot be fired. They may also not have necessarily the technical skills required for the job (c.f., Nielsen, 2017, p. 122), which would again depress future earnings compared to that signalled by capitalization. Indeed, future benefits will further dissipate if the corrupt contracts are exposed in the longer term.[8] In line with this, Shakantu (2006) argues that direct and indirect costs through corruption become significantly higher, leading to lower returns on investment.

On that basis, we conjecture that the association between development costs capitalized in a given year and cumulative future earnings in the long-run would not be as high for firms in countries with higher corruption levels. Hence, we test the following hypothesis:

H2. The higher the corruption in a country, the lower the association of the capitalized development costs to future profitability.

We are primarily interested in the association between corruption and capitalization of development costs (H1) and the moderating role of corruption in the relationship between capitalized development costs and future earnings (H2). However, these relationships may be moderated by the extent to which a particular firm is exposed to foreign norms and behaviours. Thus, we are posing that the association between domestic corruption and this

[8] An example of these happening is the Ferrostaal case. In fact, the reputation of the company was severely tarnished because of this deal and other investigations in relation to contracts with Portugal and Turkmenistan.

discretionary financial reporting choice should diminish as firms become more international. Following on from this, the influence of corruption upon the association between capitalized development costs and future profitability will be weaker in more international firms as compared to less international firms. The rationale of these additional hypotheses is as follows.

One of the strategic choices that firms undertake is the internationalization of their business activity. Reid (1983) highlights the importance of export market characteristics, such as economic and social norms, becoming recognized and part of a firm’s decision-making processes. As such, firms will adapt and adopt an increasingly multi-market centred, as opposed to domestic, approach to international business (see also Johanson and Vahlne's (1990) process model of internationalization). Moreover, Murtha et al. (1998) and Segaro et al. (2014) argue that managerial thinking and attitudes towards issues such as accountability and global values are critical for strategic change associated with internationalization. Further, the resource diversity of internationalization, compared to the domestic environment, positively influences management attitudes and mindsets in a global environment (Nadkarni & Perez, 2007; O'Grady & Lane, 1996). From this, it derives that the more international the firm is, the more long term-orientation and stronger elements of stewardship it has (Murtha et al., 1998; Segaro et al., 2014).

With regard to corruption in particular, Sandholtz and Gray (2003) assert that as international trade augments international norms, the effect of corruption is reduced on those involved with trade, consistent with a ‘significant inverse relationship between international trade and corruption levels’ (p. 765). From the foregoing, it follows that the more international a firm becomes, compared to those more domestic firms, the less it will be influenced by local corruption (c.f., Ades & Di Tella, 1999).

These arguments are also informed by the evidence in the accounting literature which provide wider evidence that the impact of country-level corruption and managerial opportunism at a firm-level is reduced through internationalization. For example, Dauth, Pronobis, and Schmid (2017, p. 71) provide evidence that, ‘top management internationalization mitigates the level of managerial discretion in financial reporting’. Additionally, Hope, Kang, Thomas, and Yoo (2008) argue that if a domestic firm derives most of its revenues from overseas operations, or if the firm is cross-listed, then the firm ‘is less likely affected by domestic norms’ (p. 361) than other, less internationally-oriented firms.

Lang, Lins, and Miller (2003) and Lang, Raedy, and Yetman (2003) employ cross-listing as a measure of internationalization and find that cross-listed firms have better, more transparent, information environments and would appear to be less aggressive in their reporting. Moreover, ‘multinationals tend to carry out less income-increasing earnings management than domestic firms’ (Prencipe, 2012, p. 693). This is particularly relevant to our context given that capitalization of development costs, instead of expensing them, results in increased reporting earnings in a given year.

From the foregoing, we would argue that companies with an international focus are less driven by local factors, and as a result, the influence of domestic corruption would diminish. Thus, we hypothesise that the association between corruption and the amount of capitalized development costs would be weaker for those companies that are more international.

H3. The positive relation between country-level corruption and the amount of development capitalized is stronger in firms with lower levels of internationalization compared to firms with higher levels of internationalization.

From this and on reflection of H2, it derives that the expected positive influence of capitalized development costs to future earnings is moderated by the extent of domestic corruption when the company is less international. Thus, we also test the following hypothesis:

H4. The influence of corruption upon the association of the capitalized development costs and future profitability is stronger in firms with lower levels of internationalization compared to firms with higher levels of internationalization

3. Research design

3.1 Sample selection process

Table 1 (Panel A) reports the sample selection process. The starting point is the countries that adopted IFRS on a mandatory basis in 2005, as reported in Daske, Hail, Leuz, and Verdi (2008).[9] We obtain data from Worldscope/Datastream and include all companies in the research lists of dead and active firms constructed by Datastream for each country in our sample. To avoid double counting, firms that are cross-listed in more than one market are included in our sample once, based only on the country of primary listing. In addition, we eliminate financial instruments that are not classified as equity.[10] The sample period starts in 2006 and ends in 2010 because we require five years of data subsequent to that (i.e., 2011-2015) to measure subsequent future performance (hypotheses H2 and H4). Similarly to Schleicher, Tahoun, and Walker (2010) and Daske, Hail, Leuz and Verdi (2013), we eliminate all firm-year observations if the Worldscope item 'accounting standards followed' (WC07536) is missing or returns a non-IFRS related code for the current year or subsequent five years. We also exclude the first year of IFRS adoption to reduce the potential for any misreporting due to low familiarity with IFRS at the time. Further, we drop firms in the Oil &

[9] We do not consider voluntary adopters to alleviate possible bias introduced from firm specific reasons to adopt IFRS. We also exclude Switzerland and Venezuela which are included in Daske et al. (2008). Switzerland did not implement IFRS at that time; it gave companies the option to adopt IFRS or US GAAP instead. Venezuela is excluded due to it being an economy with hyper-inflation and as such only fully adopted IFRS in 2008 with some modifications for inflation.

[10] We require Datastream item 'Type' to be equal to 'EQ'.

Gas industry due to extraction costs, which could be classified as development costs.[11] From that point, we follow prior literature (e.g., Chen et al., 2017; Cazavan-Jenny et al., 2011, Dinh et al., 2016), and maintain firms which are R&D active, i.e., we exclude firm-year observations which do not report either R&D expense or R&D asset, where both the R&D asset and R&D expense are zero, and firm-year observations where either the R&D asset or R&D expense are negative (the latter are obvious errors in the database).[12] Following García Lara, García Osma, & Mora (2005), we also exclude firms with accounting periods of more than 380 or less than 350 days and firm-year observations with insufficient data. Subsequently, the sample is restricted due to data unavailability for various variables needed for our tests. This process results in our sample consisting of 3,186 firm-year observations corresponding to 1,077 firms, across 20 countries. We classify firm-year observations as a capitalizer if a company capitalizes some or all of the R&D expenditure during the year, otherwise we consider the company as an expenser. In total, we have 1,491 capitalizers and 1,695 expensers.

TABLE 1 ABOUT HERE

Panels B and C of Table 1 show the sample distribution by industry classification using ICB Super Sector (ICB Level 1) and country, respectively. We observe a variation of our sample firms across industries, with most of the firms being from the Industrials (997), Consumer Goods (563), Technology (553), Health Care (471), and Basic Materials (333) industry sectors. Moreover, there is also a variation of the sample observations across countries (e.g., UK (768), Germany (546), France (367), Australia (264), Sweden (230), Finland (212), Italy (165)).

[11] These firms are permitted but not required to capitalize some exploration and extraction costs. The treatment of these costs is governed by IFRS 6 Exploration for and Evaluation of Mineral Resources. We exclude these firms to avoid introduction of any biases in our analyses given that capitalization of such costs is voluntary, their treatment is governed by a standard other than IAS 38 and that they have a distinct nature.

[12] Observations with missing R&D expense or R&D asset have been replaced with zero as this is common in this stream of literature. Our sample, thus, includes those firm-year observations reporting either a non-zero R&D expense or a non-zero R&D asset.

3.2 Corruption as a determinant of development costs capitalized (H1 & H3)

Prior literature models the capitalization of R&D as a function of a firm's life cycle and whether the firm meets the conditions for capitalization of development costs in a given year (Cazavan-Jeny et al., 2011; Dinh et al., 2016; Markarian et al., 2008; Oswald, 2008; Oswald & Zarowin, 2007; Tutticci, Krishnan, & Percy, 2007; Ahmed & Falk, 2006).[13] Informed by the research designs in this literature, we first test H1 (i.e., the association between corruption and the amount of R&D capitalized), by estimating the following left censored Tobit model:

$$RDCap = b_0 + b_1 Corruption + b_2 \sum Controls + Industry\ fixed\ effects + Year\ fixed\ effects + \varepsilon \quad (1)$$

where, *RDCap* is the amount of R&D capitalized during the year, scaled by market value of equity;[14] *Corruption* is the measure of country-level corruption. Our measure of corruption is based on the Corruption Perception Index (CPI) calculated from Transparency International (TI) and has been extensively used by prior literature as a proxy for corruption in a country (e.g. DeBacker, Heim, & Tran, 2015; Liu, 2016; Mazzi, Slack, & Tsalavoutas, 2018).[15] CPI is calculated annually and scores countries based on the perceived level of corruption among public officials and politicians. Given that the index captures the informed views of analysts, businesspeople and other experts in countries around the world, it proxies for pervasiveness of corruption in individuals' and companies' day to day business activities and dealings (Rodriguez et al., 2005). TI records countries which are less corrupt as top scorers. Therefore, a higher CPI rank indicates a less corrupt country and vice versa. To assist the interpretation of our findings, we construct *Corruption* as the difference between the highest possible CPI

[13] Although we briefly outline the reasoning for the inclusion of the various variables in our model, more details on the theoretical justifications for the inclusion of the control variables can be found in: Cazavan-Jeny et al., 2011; Dinh et al., 2016; Markarian et al., 2008; Oswald, 2008; Oswald and Zarowin, 2007; Tutticci et al., 2007; Ahmed and Falk, 2006.

[14] We scale by market value so that we retain consistency with the scale used in the regression model examining the future economic benefits (see below). In that model, the dependent variable, sum of future earnings, is also scaled by market values which in effect is an average forward looking EPS measure.

[15] The CPI is a combination of polls drawing on corruption-related data collected by a variety of reputable institutions. It is calculated each year and scores countries on how corrupt their public sectors are seen to be. The CPI has been validated in 2012 by the European Commission's Joint Research Centre (ECJRC) which stated that CPI is 'conceptually and statistically coherent and with a balanced structure' (ECJRC, 2012, p. 21).

score (i.e., 10) minus each country's corruption level. Thus, in line with H1, we expect the coefficient b_1 to be positive indicating that firms in more corrupt countries capitalize higher amounts of development costs.

To avoid the *Corruption* proxy capturing the underlying effect of other country-level factors which could also have an influence on managerial accounting choice, country-level controls include the following: *RDdivergence* is a dummy variable that takes the value of 1 if capitalization of development or research costs was permitted or required prior to 2005 and 0 if no such capitalization was permitted. *CivCom* is a dummy variable that takes the value of 0 if the country is characterised with common law and 1 if with civil law. *InvProtection* is a measure of investor protection calculated as principal component analysis of disclosure, liability standards, and anti-director rights (La Porta, Lopez-de-Silanes, & Shleifer, 2008). *Enforcement* is an index capturing the quality of audit function and degree of accounting enforcement in each country developed by Brown, Preiato, and Tarca, (2014). *MrktDev* is the market capitalization of listed companies as a % of GDP and *AntiselfDeal* is the Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008) anti self-dealing index, which is another proxy for invertor protection.[16]

In addition, we include a battery of firm level control variables namely: book to market ratio (*BM*), as a measure of risk and growth; having a big 4 auditor (*Big4AR*), as a monitoring mechanism; reporting frequency (*RepFreq*), as a proxy for companies' transparency in reporting; *RDValue* which is a proxy for the success of a firm's R&D expenditure; R&D intensity (*RDInt*) which determines whether the magnitude of R&D expenditure affects the decision to capitalize R&D; the natural logarithm of market value of the company (*Size*); beta (*Beta*) as a proxy for risk because riskier firms are more likely to engage in basic research which is expensed than less risky firms (Aboody & Lev, 1998); and finally, total debt to book

[16] Including numerous country-level characteristics may enhance multicollinearity. Thus, in all our models we check that the Variance Inflation Factor (VIF) is below the conventional level of 10 (cf. Gujarati, 2003: 262).

value of equity (*Leverage*), as a proxy for financial health. Additionally, we include the ratio of foreign sales to total sales (*IntSalesPerc*) to capture whether internationalization is associated with the level of capitalization through synergies with international partners.

We also create dummy variables which capture the likelihood of a company managing earnings in an attempt to achieve certain earnings targets. Following Dinh et al. (2016), we introduce *PastBeat* which takes the value of 1 if prior year's earnings are greater than this year's earnings, assuming full expensing and smaller than this year's earnings assuming full capitalization, and 0 otherwise. In addition, we include a similar dummy variable for the zero earnings threshold *(ZeroBeat)*. Specifically, this takes the value of 1 if the zero earnings threshold is greater that this year's earnings assuming full expensing and smaller than this year's earnings assuming full capitalization, and 0 otherwise. We also combine the latter two proxies and construct a benchmark beating earnings management variable, *BenchBeat*. With all these controls, we minimize any concerns of correlated omitted variables and we are effectively able to isolate and capture the effect of corruption itself.

Subsequently, for testing H3, we estimate the same regression across the sub-samples of low and high internationalization. Internationalization is measured by the ratio of foreign sales to total sales (Dauth et al., 2017; Glaum, Baetge, Grothe, & Oberdörster, 2013; Hamori & Koyuncu, 2011). Based upon this measure, we then calculate the median value which determines the two sub-samples of high and low international firms respectively. We then use Wald tests to compare the magnitude of the coefficients of the variable *Corruption* to infer the differential association between domestic corruption and the amounts capitalized across the two sub-samples.

3.3 Capitalized development costs, corruption, and future performance (H2 & H4)

Nadiri and Prucha (1996) and Lev and Sougiannis (1996) suggest that, on average, the benefits of R&D have a useful life of five to nine years and that earnings is deemed as a more direct measure of the benefits associated with R&D. Informed by this, we employ an adaptation of the regression models employed by Kothari, Laguerre, & Leone (2002), Amir et al. (2007) and Ahmed and Falk (2009) as follows:[17]

$$NI = a_0 + b_1 RDCap + b_2 RDCap*Corruption + b_3 RDExp + b_4 RDExp*Corruption + b_5 Corruption + b_6 \sum Controls + Industry\ fixed\ effects + Year\ fixed\ effects + \varepsilon \quad (2)$$

where, *NI* is one measure of future earnings, being the sum of future earnings measured from year t+1 to year t+5 (e.g., for capitalization in 2010 sum of future earnings relates to the period 2011 to 2015) scaled by the market value of equity. Earnings are defined as operating income plus the R&D expense and depreciation and amortisation. As an alternative, we also employ *NI2* which is the sum of future earnings defined as the net profit before extraordinary items, R&D expenditure, depreciation and amortisation measured from t+1 to t+5 scaled by the market value of equity. For both *NI* and *NI2*, we add back R&D expenditure and depreciation and amortisation to avoid the mechanical association in earnings that may affect our inferences (Amir et al., 2007; Lev & Sougiannis, 1996). The time lag of five years for future earnings is common in prior literature (see Kothari et al., 2002; Amir et al., 2007; Ahmed & Falk, 2009).

RDCap is the amount of R&D capitalized during the year and *RDExp* is the amount of R&D expensed during the year, both scaled by the market value of equity. To test H2, and subsequently H4, we introduce our measure of corruption both as a main determinant as well

[17] Although we briefly outline the reasoning for the inclusion of the various variables in our model, more details on the justifications for the inclusion of the control variables can be found in: Kothari et al. (2002), Amir et al. (2007) and Cazavan-Jeny et al. (2011.)

as an interaction term with the R&D asset (*RDCap*) and R&D expense (*RDExp*).[18] We also include an indicator variable equal to 1 if the company capitalizes development costs during the year (*CAP*). This is included in order to capture the effect of capitalization decision on cumulative future earnings and, in this way, we can isolate inferences about the future profitability of capitalizers compared to expensers (i.e. differences in the constant). Following Kothari et al. (2002) and Amir et al. (2007) controls include capital expenditure (*Capex*), *Leverage* and *Size* (both defined as in the previous regression model).[19] Moreover, we include the ratio of foreign sales to total sales (*IntSalesPerc*) to capture whether internationalization is associated with firms' future profitability through greater market access. In addition, we include the same country controls as in the previous regression model.

A positive coefficient of b_1 will indicate that the capitalized amount of development costs in a given year is associated with future economic benefits which would be in line with the asset recognition criteria in IAS 38. The coefficient b_2 captures the incremental effect of corruption on this relation. Consistent with H2, we expect the coefficient b_2 to be negative and b_1 to be positive indicating that the capitalized amount of R&D is associated with lower future economic benefits in countries with higher levels of corruption. Considering that this is the first study to analyze the consequences of R&D expenditure to future profits under IFRS, while considering expensed and capitalised amounts separately, we do not have an ex-ante prediction for the coefficient of R&D expense (i.e., b_3 and b_4).

[18] An alternative research design would be to use a three-way interaction (between: R&D expenditure, CAP (the indicator variable for capitalizers) and Corruption). However, we abstain from using a three way interaction considering the associated complexity in interpreting the corresponding coefficient. Given that our setting allows us to separate Expenditure into two components (i.e., *RDCap* and *RDExp*), we opt for interacting the two separate components with Corruption instead.

[19] We note that the main difference between our model and the model in Kothari et al. (2002) and Amir et al. (2007) is the dependent variable. These studies focus on the uncertainty of the future economic benefits associated with R&D and use the volatility of future earnings as the dependent variable. We are interested on the future economic benefits arising from R&D expenditure and use the sum of future earnings instead. A second, but rather subtle, difference is that both Kothari et al. (2002) and Amir et al. (2007) control for advertising costs. However, there is no data item for advertising costs in Datastream.

Similar to Oswald and Zarowin (2007) and Cazavan-Jenny et al. (2011), we control for the endogenous decision to capitalize R&D using the two-stage approach of Heckman (1979) and use the Inverse Mills Ratio (*IMR*) retrieved from estimating a probit model. The results of these estimations are presented in Appendix I.[20]

In estimating all regressions (equations 1, and 2), we add industry dummy variables based on the ICB Level 1 industry classification. Further, we also control for cross-sectional and time series correlation by adding year fixed effects and clustering by country (c.f., Barth & Israeli, 2013; Christensen, Hail, & Leuz 2013). We winsorise all the continuous variables at the 1 percent level on both tails of the distribution. We report all the variables employed in our models along with their definitions and source in Appendix II.

Finally, for testing H4, we estimate model (2) across the sub-samples of low and high internationalization as described earlier and compare the size of the coefficients, and the significance of any difference, of the variable *RDCap*Corruption.* This allows inferences about the differential influence of domestic corruption on the association between capitalized development costs and future profitability across the two sub-samples.

4. Results

4.1 Descriptive statistics

Table 2 shows descriptive statistics of institutional characteristics such as corruption (*Corruption*), market development (*MrktDev*) and quality of audit function and degree of accounting enforcement (*Enforcement)* for the countries included in our sample. This reveals a range of values for corruption and other country-level relevant variables. For example, Australia, Sweden, Denmark and Finland have the lowest levels of corruption (ranging from

[20] In untabulated tests, which are available upon request, we find that capitalisers differ significantly from expensers in almost all variables with exemption to the presence of a big 4 auditor (*Big4_AR*), financial reporting frequency (*RepFreq*), investor protection (*InvProtection*) and anti-self-dealing index (*AntiselfDeal*). These results are indicative of the importance to control for the endogenous decision to capitalize R&D expenditure.

0.639 to 1.323). At the other extreme, Italy, South Africa, Greece, Portugal and Spain have the highest levels of corruption (ranging from 3.554 to 5.925). Additionally, for the same sets of countries, values of enforcement range from 32 to 52 for those countries with low corruption levels and between 26 to 46 for the countries with higher levels of corruption, depicting a large overlap in enforcement levels. The overlaps in enforcement and variations in corruption could indicate that enforcement should not be used as a substitute for corruption. Finally, it is noted that, in the majority of countries in our sample, an option or a requirement to capitalize development costs and/or even some research costs was present under local accounting standards before adoption of IFRS (i.e., *RDdivergence* equals 1 for most countries). This indicates that most firms should have had some prior experience around development costs' capitalization.

TABLE 2 ABOUT HERE

Table 3 shows descriptive statistics for all the variables used in our models for the full sample. These reveal that 46.8% of firm-year observations in our sample capitalize some development costs while the remaining expense all R&D costs in the income statement. While the capitalized development costs (*RDCap*) accounts for 1.3% of market value on average, the expensed R&D (*RDExp*) is around 5.6% of *MV*. The average firm-year observation in our sample has also a book value to market value of equity (BM) of 0.68, shows a material R&D intensity (*RDInt*) of 6.2%, and has a *Leverage* ratio of around 64.3%.

TABLE 3 ABOUT HERE

Further, untabulated analyses on the time-series properties of R&D and corruption indicates that corruption is time variant albeit it changes marginally from year to year. Further, we do not identify any systematic trend or variation in R&D and/or corruption.

To get a better understanding of the underlying data across countries with high and low corruption levels, we estimate the sample median corruption value at any given year and then split the sample across these median values. We provide descriptive statistics across the resulting sub-samples in Table 4.

TABLE 4 ABOUT HERE

First, we draw attention on the underlying relations between R&D intensity (*RDInt*) and R&D costs capitalized and expensed (*RDCap* and *RDExp*, respectively).[21] The results show that companies operating in countries with higher levels of corruption are significantly less R&D intense and expense significantly lower R&D expenditures, relative to their total assets, compared to companies in countries with lower levels of corruption (mean *RDInt*: 0.057 vs 0.067, p-value of difference<0.01; mean *RDExp_TA*: 0.053 vs 0.056, p-value of difference<0.05). These descriptive statistics also reveal no significant difference across the two sub-samples with regards to the amounts of capitalized (*RDCap_TA*: 0.009 vs 0.010, p-value of difference>0.10). These findings are in support of our hypothesis that companies in countries with higher levels of corruption tend to capitalize higher amounts of their total R&D expenditure.

Second, we note that firms in countries with higher levels of corruption are less likely to employ a Big 4 auditor (mean *Big4AR*: 0.778 vs 0.855, p-value of difference<0.01). Interestingly, enforcement, investor protection and anti-self dealing are significantly higher in countries with more corruption (mean *Enforcement*: 46.588 vs 43.326; mean *InvProtection* 0.476 vs 0.440; mean *AntiselfDeal*: 0.597 vs 0.513; all p-values of differences<0.01). These indicate that corruption is not necessarily the same as the lack of formal monitoring. Thus, corruption appears to be indeed a distinct institutional characteristic.

[21] In this table, R&D variables are scaled by total assets so that we can make more direct comparisons between a firms' R&D intensity and the amount capitalised and expensed.

4.2 Univariate analysis

We present Pearson correlation coefficients between all variables in Table 5. The correlations between the key variables of interest (i.e., *RDCAP, Corruption, NI and NI2*) and other variables indicate the following. As hypothesized, the amount capitalized is positively and significantly correlated with *Corruption* (0.074; p<0.01). Additionally, as expected, the amount capitalized is also positively and significantly correlated with future earnings *(NI* and *NI2* exhibit positive correlation of 0.301 and 0.310 respectively, at 1% level) and, in line with prior literature, earnings benchmark beating (*PastBeat*, *ZeroBeat* and *BenchBeat*, all exhibit a positive correlation of 0.184, 0.336, 0.259 respectively, at 1% level), *BM* (i.e., growth) (0.254; p<0.01), *RDInt* (0.243; p<0.01), *Leverage* (0.042, p<0.05), and *Enforcement* (0.094; p<0.05).

From this univariate analysis, we can infer that companies in environments with higher corruption levels capitalize higher amounts of development costs and that development costs capitalized in a given year are associated with future earnings. However, these statistics are unable to shed light on the remaining three hypotheses as they are based on a univariate correlation and cannot bring into light the moderating effect of corruption and internationalization. Thus, results are further explored with multivariate analyses in the following section.

TABLE 5 ABOUT HERE

4.3 Multivariate analysis and discussion

Table 6 reports results for multivariate analysis testing the effect of corruption on the magnitude of development costs capitalized. Models 1, 3 and 5 differ from 2, 4 and 6 respectively only for the measures used to proxy earnings benchmark beating.

Focusing on the full sample, the results support H1: firms in countries with higher levels of corruption capitalize higher amounts of development costs. The coefficient for *Corruption* is positive as expected (0.004) and statistically significant across both models 1 and 2 (always at the 1% level). When reflecting on the underlying data, this suggests that, *ceteris paribus*, a one point increase in *Corruption* (10% of the scale) induces a 0.004 increase in *RDCap*. This is approximately 75,383 euros additional development costs capitalized.[22] Confirming univariate analysis, our results also indicate that the amount of capitalized development costs is positively associated with R&D intensity (*RDInt* reports coefficients of 0.082 and 0.098, $p<0.01$), growth (*BM* reports coefficients of 0.016 and 0.018, $p<0.01$), and leverage (*Leverage* reports coefficients of 0.009, $p<0.01$). Internationalization (*IntSalesPerc*) also loads significantly at the 1%, albeit its economic significance is marginal given that the coefficients are close to zero. In addition, we report that *Size* is negatively related to the amount of development costs capitalized (*Size* reports coefficients of -0.002 and -0.003, $p<0.05$ and $p<0.01$ respectively). Further, our multivariate analysis confirms that amount of development costs capitalized is significantly affected by earnings management incentives, as the coefficients for the measures derived from Dinh et al. (2016) are always positive and statistically significant at the 1% level (*PastBeat*, *ZeroBeat*, and *BenchBeat* report coefficients of 0.018, 0.035, and 0.026, respectively).

When focusing on the country control factors, *RDdivergence* is positively associated with the amount of development costs capitalized. This suggests that firms with prior experience in capitalizing such intangible assets have a higher tendency to capitalize (*RDdivergence* reports a coefficient of 0.021, $p<0.01$ and $p<0.05$ respectively). Further, capitalized development costs are positively associated with enforcement (*Enforcement* yields a coefficient of 0.001, $p<0.01$). We interpret this finding as an indication that when quality of audit function and accounting compliance is high, companies follow the standard and do capitalize the development costs. Finally, we find that companies capitalize less

[22] Recall that *Corruption* can vary between zero and ten. Thus, a one point increase equates to 10%. From our unscaled data, the mean value of development costs capitalised in a given year is 18,845,780 euros. Thus, holding market value constant, a 0.004 increase equates to 75,383 euros.

development costs in countries that impose stricter rules to protect shareholders from expropriation by insiders (*AntiselfDeal* has a coefficient of -0.044, $p<0.01$). This finding indicates that firms would be less inclined to capitalize development costs for self-serving purposes.

Models 3 to 6 report the multivariate analyses testing H3. These tests report that the coefficient for *Corruption* is positively and significantly associated with the amount of development costs capitalized, only for the sub-sample of firms with lower international exposure (0.005, $p<0.01$). Moreover, the size of the coefficients of the variable *Corruption* across all models indicate that these are significantly higher for the sub-sample of firms with lower international exposure (Wald = 3.99, $p<0.05$, for Model 3 vs model 5; Wald = 3.97, $p<0.05$, for Model 4 vs Model 6). This is in support of H3. When reflecting on the underlying data for this sub-sample, this finding suggests that, *ceteris paribus,* a one point increase in *Corruption* (10% of the scale) induces a 0.005 increase in *RDCap*. This is approximately 41,200 euros additional development costs capitalized for companies in this sub-sample in a given year.[23]

TABLE 6 ABOUT HERE

Table 7 reports results for multivariate analysis testing the association between development costs capitalized in a given year and cumulative earnings five years ahead. Further, these tests provide insights regarding the moderating role of corruption on this association, both for the full sample and across the sub-samples of firms with lower and higher levels of internationalization. These analyses test hypotheses H2 and H4. As previously, Models 7, 9 and 11 differ from 8, 10 and 12 respectively, only for the measures used to proxy earnings management incentives.

[23] From our unscaled data, the mean value of development costs capitalised in a given year is 8,238,013 euros. Thus, holding market value constant, a 0.005 increase equates to 41,190 euros.

First, these results confirm the expectation that capitalized development costs are mirrored in future economic benefits. The coefficient for *RDCap* is positive and statistically significant across all model specifications and for both sub-samples. To demonstrate the economic significance of this contribution as an example, the coefficient of *RDCap* for the full sample for model 7 is 9.958 (p<0.01). This suggests that, holding MV constant to scale both variables, an one point increase in *RDCap* in a given year induces a 9.96 points increase in cumulative earnings five years ahead.[24]

Additionally, this analysis illustrates the moderating role of corruption in the relationship between R&D and future earnings, supporting H2. In both models 7 and 8 the coefficient of the interaction between *RDCap* and *Corruption* is negative (coefficients: -2.275 and -1.913, p<0.01 and p<0.10, respectively). Given the positive coefficient of *RDCap*, this result suggests that the benefits from the capitalized development costs and future earnings are significantly lower in countries with higher corruption (the benefit in these countries is about eight times higher, not ten). Additionally, expensed R&D (*RDExp*) is also positively correlated with future earnings (coefficients: 2.696 and 2.820, p<0.05 in both cases). The latter suggests that there is still an element in the amounts expensed that contributes to future earnings. Further, we note that the effect of corruption upon the association between expensed R&D and future earnings is consistently insignificant. This result suggests that corruption has an adverse effect on the future economic benefits arising from the capitalized R&D alone. This finding further corroborates our underlying argument in the hypotheses development that corruption facilitates *prima facie* justification of meeting the capitalization criteria and eliminates a potential alternative explanation that firms in countries with higher levels of corruption invest in R&D which creates less value.

TABLE 7 ABOUT HERE

[24] Similar conclusions can be inferred when using the coefficient of capitalized R&D (*RDCap*, Model 1, Table 8) in Kreß et al., (2019).

Further, the results across the sub-samples of firms with higher and lower levels of internationalization provide a clearer picture of the role of domestic corruption. The tests across Models 9 and 12 reveal that the contribution of capitalized development costs to future earnings varies with the levels of corruption only for the sub-sample of firms with lower levels of internationalization. The coefficient for the interaction between *RDCap* and *Corruption* is negative (coefficients: -3.146 and -2.373, $p<0.01$ and $p<0.05$, respectively) for this sub-sample. Moreover, the size of the coefficients of the interaction variable *RDCap* and *Corruption* across all models indicate that these are significantly higher for the sub-sample of firms with lower international exposure (Wald = 4.83, $p<0.05$, for Model 9 vs model 11; Wald = 2.80, $p<0.10$, for Model 10 vs model 12). These results are in support of H4.

Table 7 also shows that larger firms tend to be more profitable (coefficients of *Size*: 0.046 and 0.047, $p<0.01$ for both). This result is primarily driven by more international companies (coefficients: 0.055 and 0.065, $p<0.05$). Capital expenditure is positively related to future earnings indicating that investment in fixed assets contribute positively to future earnings (coefficients: 4.317 and 3.104, $p<0.01$). This finding holds across both sub-samples of companies with higher and lower level of internationalization.

On reflection of our hypotheses and informed by prior literature, the following inferences can be drawn from the combined results of these tests and those presented in Table 6. Whilst the level of development cost capitalization is positively associated with a number of firm-level characteristics, for instance, R&D intensity, growth, leverage and incentives to beat earnings benchmarks, it is also associated with corruption as a country characteristic. Corruption is positively associated with the amount of development costs capitalized by companies in a given year. This results in lower contribution of the capitalized development costs to future earnings. This finding is particularly associated with the sub-sample of firms with low internationalization. For firms with high internationalization, domestic corruption does not impair the benefit from the amounts capitalized, suggesting that these amounts more genuinely represent future economic benefits which are mirrored in companies' future profitability.

The examination of corruption as a country factor influencing a specific albeit very important accounting outcome and our corresponding findings provide new insights into the accounting literature. Further, these findings bridge the evidence from the wider business and management literature by demonstrating that a highly pervasive country characteristic trickles down to managers' decision making with regards to the recognition of materially important assets signaling companies' value. Even though formal institutional mechanisms such as enforcement and monitoring powers are in place, corruption still permeates accounting choices and the resultant reliability of information on companies' financial statements.

4.4 Market performance of capitalizers and expensers

We hypothesised that, an environment with higher corruption facilitates managers to justify the capitalization of development costs. In turn, these development costs do not deliver as high as expected future earnings and our findings corroborate these hypotheses. However, it is an open question whether or not equity market participants can see through the distorted signals associated with higher levels of capitalized development costs in countries with higher levels of corruption. In order to explore this, we examine whether capitalizers, in countries with higher levels of corruption, exhibit lower or equal stock returns to those in countries with lower levels of corruption. We use two windows to measure abnormal returns:

one year and five years following the recognition of an R&D asset, respectively.[25] If the market is unable to see through these distorted signals, abnormal returns for both sub-samples should not be significantly different. In contrast, given the evidence in prior literature that it takes on average five years for the benefits of R&D expenditure to accrue (e.g., Nadiri & Prucha, 1996; Lev & Sougiannis, 1996) and our findings that capitalized development costs contribute positively to cumulative earnings five years ahead, albeit less in countries with higher levels of corruption, we should expect abnormal returns in the long-term to be lower for companies in countries with higher corruption levels. We present the findings of these analyses in Table 8. Panel A (Panel B) of Table 8 presents the results using the short (long) window.

TABLE 8 ABOUT HERE

The results reported in Table 8 (Panel A) indicate that one-year excess returns of capitalizers, across countries with high and low corruption levels, are not statistically different (*t*-stat: 0.981). Further, we find insignificant abnormal returns for either of the sub-samples, arguably because of the uncertainty around the delivery of the benefits of the capitalized amounts. In contrast, the results in Panel B, show that both sub-samples report significantly positive five-year ahead abnormal returns. However, these are significantly lower for the sub-sample of the capitalizers in countries with higher corruption levels (*t*-stat: 4.368). In addition, we find that capitalizers earn excess returns relative to expensers only in

[25] We measure abnormal returns using a "June strategy" approach following prior literature on R&D (e.g. Chan et al., 2001, for the US; Duki et al., 2015, for European firms). Specifically, we rank all companies in each country every year in June based on their market capitalisation and allocate them to five portfolios based on their market capitalisation. Following Loughran and Ritter (2000) and Gregory, Guermat, and Al-Shawawreh (2010), we do not consider book to market controls. Portfolios are rebalanced annually. Then, we calculate buy and hold returns abnormal returns from July and for one and five years measured as the difference between the return of the firm and the return of the match size portfolio. Firm monthly returns are measured using the datastream's Return Index (RI) which is subsequently screened following Ince and Porter (2006). Further, we treat returns as missing when Rt or Rt-1 are greater than 300% and (1+ Rt)(1+ Rt-1) is less than 50%. Returns are value-weighted according to their market capitalisations. The advantage of this approach is that the returns are implementable since at the time of portfolio formation all companies should have published their financial statements (implicitly this is because we allow December year end firms until June to publish their financial statements). We note that, in these tests, due to missing data on returns we lose a small proportion of our sample.

the long term and for firms in countries with lower corruption levels (*t*-stat: 4.293). These findings indicate that capitalizers in countries with higher corruption levels not only perform similarly to expensers in these countries in the long-term (*t*-stat: 1.229) but also enjoy lower abnormal returns compared to capitalizers in countries with lower corruption levels.

Taken together, the evidence is indicative of the distortive signal of capitalization in countries with higher levels of corruption. In the short-term, investors are unable to recognize the future earnings implications of R&D capitalized, since abnormal returns are indifferent among capitalizers across the two sub-samples. However, this is corrected in the longer term as more information becomes available and capitalizers in countries with lower corruption levels perform better than expensers in these countries as well as capitalizers in countries with higher corruption levels. This is not surprising as it takes time for the benefits of R&D investments to unravel. Effectively, these findings, from a market perspective, reflect the findings regarding H2 that, in the long-term, the economic benefits from capitalised development costs in countries with higher corruption levels contribute less to future earnings compared to those in countries with lower corruption levels.

5. Sensitivity analyses

To examine the robustness of our multivariate analysis, we conducted a battery of sensitivity analyses.[26] These are summarised below.

The findings presented earlier suggest that, in countries where corruption levels are high, companies engage with more aggressive capitalization of development costs. However, our research design does not allow us to distinguish whether companies capitalize more than they would be *a priori* expected to capitalise. To address this concern and to shed more light on our main findings, we proceed as follows. We draw on the earnings management via

[26] Tables reporting these results are available on request.

discretionary accruals literature and in the spirit of Jones (1991), Boynton, Dobbins, and Plesko (1992) and DeFond and Jiambalvo (1994) and we perform additional analyses intended to estimate the unexpected amount of development costs capitalized. A similar approach has been recently applied by Cheng et al. (2016) who focus on capitalized development costs as a determinant of audit fees in China. Subsequently, we test the association between this unexpected amount with the country-level of corruption, while controlling for all other country factors.

More specifically, we create industry-year clusters and estimate our model (1), used to test H1, with fixed effects, excluding all country controls cross-sectionally for each cluster. Then, we generate *RDCAPexpected* and *RDCAPunexpected* by estimating the fitted values and residuals respectively. Subsequently, we replace *RDCAPexpected* and *RDCAPunexpected* equal to zero for Expensers, given that we are only interested in splitting *RDCap*, not in identifying a measure of potential capitalization for Expensers. Then, we replicate our main analysis for H1 and H3 by decomposing *RDCap* to *RDCAPExpected* and *RDCAPunexpected*. Consistent with our prediction, results show that corruption drives *RDCAPUnexpected* and the difference across the two subsamples for this coefficient is significant. In fact, the coefficients for corruption in these regressions are significantly higher for those reported in our main test (e.g., it is 0.008 for the sub-sample of companies with low internationalization exposure). Further we see that corruption is associated with *RDCAPExpected*. However, the coefficient is 0.001 and there is no difference among the two subsamples of high and low internationalization. Overall, these findings confirm the trend we identify in our main analyses that the higher the domestic corruption the higher the amounts capitalized.

As a next step, we replicate our main analysis for H2 and H4 by introducing both *RDCAPExpected* and *RDCAPUnexpected* in the future earnings model and also interact these variables with corruption. The results from these tests show that both *RDCAPExpected* and *RDCAPUnexpected* contribute positively to future earnings. Further, the unexpected element has a significantly lower contribution to future earnings, compared to the expected. With respect to our focal variable of interest, corruption results in a significantly larger reduction to the association between *RDCAPUnexpected* and future earnings compared to the expected element. Additionally, the difference across the two subsamples of internationalization levels for this coefficient is significant.

Beyond these tests, we consider the potential concern to our results that the measure of corruption may not capture country corruption in an efficient way. To alleviate this concern, we repeat all our tests by using an alternative measure of corruption. More specifically, we examine whether our results hold when we measure corruption based on 'Bribery and Corruption' provided by the International Institute for Management Development (IMD) Yearbooks. Our main results are robust to substitution of corruption 'Bribery and Corruption'.

Moreover, we have acknowledged some, albeit little, variation in the scores of country corruption levels over time (see discussion in sub-section 4.1). On reflection of this, we have performed yearly regressions as an alternative to the pooled regression results. The results from these tests show that our findings are qualitatively similar to those presented earlier.

It is known that managers tend to decrease discretionary spending (e.g., R&D) to improve short run performance. Following this reasoning, corruption could be associated with lower amounts of development costs capitalized due to lower levels of R&D expenditures in the first place. In order to be assured that that omitting reduction in R&D investments from our tests does not drive the associations we are capturing in our main analysis, we calculate *RDcut* as a dummy variable that takes the value of 1 if R&D expenditure at time t is lower than R&D expenditure at time *t*-1, and 0 otherwise. Then, we introduce it as control variable both in equations 1 and 3. The results obtained are qualitatively similar to those presented earlier in the paper.

For testing H1 and H3, we employ development costs capitalized scaled by market value of equity for consistency with the research design for testing H2 and H4. Arguably, employing the amount of capitalized development costs to total R&D expenditure as a dependent variable for these tests would be a more appropriate proxy. Such a design could provide assurances that our tests capture a decision effect and not the outcome of an effect driven by the fact that firms in more corrupted countries are potentially more R&D intense and then mechanically capitalize more. Even though the descriptive statistics in Table 4 indicate that this is not the case, we have implemented such an approach as a sensitivity test and results for both hypotheses hold as reported earlier. However, both in these tests and in our main tests for testing H1 and H3, we introduce R&D intensity as a control variable, effectively controlling for the concerns discussed earlier. We note that this design may induce a mechanical association between the dependent and this independent variable. To alleviate such a concern, we repeat this sensitivity tests by dropping R&D intensity and the results remain the same.

Moreover, in our main tests, we do not control for the effect of firm governance. In additional analyses, we include the percentage of closely held shares (WC08021), as a proxy for governance, and re-run our analysis.[27] Although the sample size decreases because of data unavailability, our conclusions remain qualitatively similar.

For testing H1 and H3, it could be argued that corruption captures the potential influence of low audit quality instead. On reflection of this, we capture audit fees (Worldscope item: WC01801) for our sample firms and repeat the relevant analysis by including in equation 1

[27] We have considered alternative proxies for a firm's corporate governance: governance score (GOVSCORE) available from ASSET 4 or a measure of holdings by pension funds and institutional investors (Datastream codes: NOSHPF and NOSHIC, respectively). However, requiring this data would result in significant reduction in the sample.

the log of audit fees as an additional control variable. Although the sample size decreases because of data unavailability, the results from this analysis are very similar with those presented in the paper.

For the analyses presented in Table 7 with regards to H2 and H4, one could argue that economic growth may be lower in countries with higher levels of corruption compared to those countries with lower levels of corruption. Thus, it could be argued that it is not surprising that development costs capitalized would then produce lower levels of future profit flows. To account for this, we estimate country GDP growth for the entire five-year periods which we use to measure cumulative future earnings. These tests reveal that five-year change in GDP is positively but only marginally significantly associated with firm-level future profitability. The results with regard to the hypotheses tested are qualitatively similar to those presented earlier.

Further, in our main tests, we control for level differences in enforcement across countries although we do not control for actual regulatory changes that potentially moderate the observed relationship. For example, Daske, Luzi, Christian, and Verdi (2013) point out that changes in enforcement are an important driver of the benefits of mandatory IFRS reporting. On reflection of this, we consider that changes in enforcement may be correlated with our corruption measure, resulting in biased findings. Thus, we endeavour to control for changes in enforcement. In doing so, we consider the study by Christensen et al. (2013) who examine mandatory IFRS reporting and changes in enforcement. According to Table 1 in Christensen et al. (2013), the only countries in our sample period (2006-2010) which experienced a substantive change in enforcement are Ireland (2007), Sweden (2007), and Hong Kong (2008). Consequently, we exclude Ireland, Sweden, and Hong Kong and replicate our main analysis. Our conclusions based on these tests remain the same with those presented earlier in the paper.

Additionally, we note that our inferences are similar when we estimate the Inverse Mills Ratio from a probit model which includes country fixed effects instead of country variables. Further, to alleviate any concerns that we introduce biases in our analysis by including financial firms, we replicate all our tests by dropping firms from the Financial sector (i.e., 37 observations). Our main results are robust to this additional test, showing that inclusion of financial firms does not influence our inferences.

In addition, we replicate all our analysis by excluding countries with less than 20 firm-year observations. Following this approach, we drop firms from Philippines, Portugal, and Singapore. Our main results are also robust to this additional test, showing that less represented countries do not influence our inferences.

Further, our main tests control for the cross-sectional and time series correlation by adding year fixed-effects and clustering by country, following Barth and Israeli (2013) and Christensen et al., (2013). Whilst clustering at the country-level may yield more reliable inferences, we replicate our tests by clustering standard errors at the firm level and obtain qualitatively similar results.

Moreover, we note that, for testing H3 and H4, we split the sample based on the median of the ratio of foreign sales to total sales. As a sensitivity test, we estimate the industry medians on the ratio of foreign sales to total sales and we re-run our tests accordingly. We choose the industry given that R&D expenditure varies significantly across industries. The results remain qualitatively unchanged.

Finally, we note that all values of any pairs of independent variables should be well below the critical range of 0.8, above which multicollinearity could cause a threat to the regression results (Gujarati, 2003: 359). From the Pearson correlation matrix it appears that, only the correlations between anti-self-dealing index and two other control variables (i.e., civil law and investor protection) could be problematic. Considering this and that the 'anti-self-dealing index exhibits some of the same properties as the anti-director rights index as well as of the indices of shareholder protection through securities laws presented in La Porta, Lopez-de-Silanes, and Shleifer (2006) (Djankov et al., 2008, p. 461), we replicate all tests by excluding anti-self-dealing. Our conclusions remain the same following this analysis.

6. Conclusions

The accounting treatment of R&D has been a controversial issue among standards setters, financial statement preparers and users as well as academics. Advocates for capitalizing some of these costs argue that such costs constitute investments which will generate future economic benefits and hence should be capitalized (e.g., Lev & Sougiannis, 1996). In line with this premise, IFRS prescribe that, when certain criteria are met development costs must be capitalized. Arguably, by imposing restrictive conditions, IAS 38 reduces managerial opportunism that may result from discretion involved in the capitalization of development costs (Markarian et al., 2008; Matolcsy & Wyatt, 2006). Thus, one would expect that only development expenditures from those R&D projects, which are highly likely to be successful, are capitalized. As a consequence, managers can signal their private information about the expected success of R&D ventures and their related future benefits (Abrahams & Sidhu, 1998; Oswald & Zarowin, 2007; Ritter & Wells, 2006).

However, since the application of the conditions in IAS 38 requires managers to make judgements, capitalization of development costs under IAS 38 remains subject to managerial discretion. Such premise finds support in academic research which reports that the discretion involved in capitalization of development costs can be used for opportunistic earnings management (Cazavan-Jeny & Jeanjean, 2006, Dinh et al., 2016). This is why the reliability and comparability of such information can be questioned (c.f., Kothari et al., 2002), with this argument substantiating FASB's decision to require expensing of all R&D expenditure. This debate, in part, gives rise to this research.

We employ a large sample of listed firms, reporting under IFRS, across the world and draw on prior business and management literature to explore the potential effect of corruption on the capitalization of development costs. More specifically, we consider that, in environments with high levels of corruption, managers can exploit the features of the environment and capitalize of development costs which ordinarily should have been expensed. If this holds, managers provide an inflated signal about the future economic benefits expected from the amounts capitalized in a given year. Indicative of this inflated signal would be evidence that the association of the development costs capitalized in a given year has a lower contribution (i.e., association) to future profitability. Our empirical findings support both hypotheses. Further our results show that the effect of corruption is moderated by the level of companies' international exposure. Our results remain robust to a number of sensitivity tests. Finally, we conduct further tests which suggest that in the short-term firms in countries with higher corruption levels earn similar stock returns to firms from countries with lower corruption levels. In contrast, we find that capitalizers in countries with higher corruption exhibit lower positive abnormal returns in the long-term. This suggests that investors are unable to discern the future economic benefits associated with the capitalized R&D expenditure in the short-term but this is corrected in the long-term, as more information becomes available.

Beyond the academic contributions arising from this study, our findings have wider policy implications. In an attempt to minimize venal corruption, anti-corruption initiatives concentrate at public-sector levels. However, corruption can also be of an institutional form (i.e., generally not technically illegal, but a systemic 'gaming' to subvert the intent of society's rules by the use of means that are technically legal' (Youngdahl, 2017, p. 280). In this study, we demonstrate that a combination of facets of venal and institutional forms of corruption can effectively trickle down even to the accounting choices listed companies make. Such a behaviour results in providing company stakeholders with distorted signals for future profitability and current asset values. Importantly, this permeable, subtle and informal country characteristic is associated with accounting choices even after controlling for formal institutional characteristics such as investor protection, anti-self-dealing index, accounting enforcement and law type.

As is the case with every study, the present paper is also subject to several caveats. First, our main tests for the second hypothesis are based on a five-year horizon. While the choice is motivated by the evidence in prior literature, it may not be sufficiently long to capture all of the benefits arising from the R&D expenditure. Further, the measure of country-level corruption we employ (i.e. Corruption Perceptions Index) is determined by expert assessments and opinion surveys. While we attempt to address this by using 'Bribery and Corruption' provided by the International Institute for Management Development (IMD) Yearbooks as a sensitivity test, the limitation that the corruption measure is based upon surveys remains. Further, our market-based tests assume an equal level of market efficiency across firms from low and high corruption which may not be the case. Future research could investigate in depth whether this indeed an issue or not. Additionally, whilst we demonstrate that corruption permeates accounting choices this is not to dismiss other forms of informal institutional country influences such as societal trust. Reflecting upon evidence that country-level societal trust influences the perceived reliability of accounting numbers by investors (Papanastasopoulos & Tsiritakis, 2015), future researchers could explore the potential joint effect of societal trust and corruption on the market performance of capitalizers and expensers. Finally, interview-based research could examine financial statement preparers' and users' views on the discretion involved with regard to capitalization of development costs under IAS 38 and how this can be manifested differently across different countries.

Appendix I

Probit model employed for estimation of IMR: Decision to capitalize development costs

Dependent variable: CAP	
VARIABLES	
Constant	-2.128**
	(-2.52)
Corruption	0.132***
	(2.86)
BM [a]	0.033
	(0.55)
RDValue [a]	0.000
	(0.06)
RDInt [a]	-0.402
	(-0.59)
Size	-0.050*
	(-1.72)
Beta [a]	0.040
	(1.16)
Leverage [a]	0.172*
	(1.94)
IntSalesPerc [a]	0.003***
	(3.16)
BenchBeat	0.530***
	(11.88)
Big4AR	0.064
	(0.63)
RepFreq	0.127**
	(2.00)
MrktDev	0.000
	(0.03)
Enforcement	0.027***
	(2.85)
RDdivergence	0.917***
	(3.76)
InvProtection	-0.501
	(-0.92)
AntiselfDeal	-1.462**
	(-2.01)
CivCom	-0.528
	(-1.09)
Industry f.e.	Included
Year f.e.	Included
N	*3,186*
Mean VIF	*3.48*
Pseudo R-squared	*0.129*

CAP is an indicator variable equal to 1 if company capitalizes R&D during the year. *, ** and *** denote significance at the 10%, 5% and 1% respectively. *t*-statistics in brackets. Standard errors clustered by country. [a] Variables winsorised by year at 1% and 99%.

Appendix II

Variables definition

VARIABLE	DEFINITION	DATASTREAM CODE OR OTHER SOURCE
CAP	is an indicator variable equal to 1 if company capitalizes R&D during the year	Net development costs: WC02504
NI	is the sum of future earnings measured from year t+1 to year t+5 scaled by the market value of equity. Earnings are defined as operating income plus the R&D expense and depreciation and amortisation.	Operative income: WC01250 R&D expense: WC01201 Depreciation, depletion and amortisation: WC01151
NI2	is the sum of future earnings measured from year t+1 to year t+5 scaled by the market value of equity. Earnings are defined as income before extraordinary items plus the R&D expense and depreciation and amortisation.	Income before extraordinary items: WC01551 R&D expense: WC01201 Depreciation, depletion and amortisation: WC01151
RDExp	is the research and development expense scaled by the market value of equity	R&D expense: WC01201 Market Capitalization: WC08001
RDCap	is the capitalized amount of R&D measured as the change in net R&D assets plus amortisation of R&D scaled by the market value of equity	Net development costs: WC02504 Amortisation of R&D: WC01153 Market Capitalization: WC08001
BM	is the book to market ratio	Common equity: WC03501 Market Capitalization: WC08001
RDValue	is R&D value measured as the difference between the market value of equity and book value of equity less amount of R&D capitalized during the year divided by the sum of current and lagged annual R&D expenditure	Common equity: WC03501 Market Capitalization: WC08001 R&D expenditure: *RDExp+RDCap*
RDInt	is the R&D intensity measured as R&D expenditure divided by total assets less amount of R&D capitalized during the year	R&D expenditure: *RDExp+RDCap* Total assets: WC02999
Size	is the natural logarithm of market value of the company measured at the fiscal year end	Market Capitalization: WC08001
Beta	is the firm beta estimated using 12 months returns over each firm local index	Datastream regression formula
Leverage	is the total debt to book value of equity	Total debt: WC03255 Common equity: WC03501
IntSalesPerc	is the percentage of international sales if total sales	IntSalesPerc: WC07101

(continued next page)

VARIABLE	DEFINITION	SOURCE
PastBeat	equals to 1 if prior year's earnings are higher than earnings assuming full expensing and prior year's earnings are lower than earnings assuming full capitalization and 0 otherwise (see also Dinh *et al.*, 2016). Earnings refer to net income before extra items.	Income before extraordinary items: WC01551
ZeroBeat	equals to 1 if earnings assuming full expensing are negative and earnings assuming full capitalization are positive and 0 otherwise (see also Dinh *et al.*, 2016). Earnings refer to income before extra items	Income before extraordinary items: WC01551
BenchBeat	equals to 1 if either *PastBeat* or *ZeroBeat* equals to 1, and 0 otherwise	
Big4AR	equals to 1 if the annual report is audited by a Big4 firm, and 0 otherwise	Balance Sheet Auditor Code: BSAuditorCode
RepFreq	represents how often interim earnings are reported by the company during its fiscal year	Earnings Reporting Frequency: WC05200
Capex	is the capital expenditure for year t scaled by the market value of equity	Capital Expenditure: WC04601 Market Capitalization: WC08001
IMR	is the Inverse Mills Ratio. IMR is calculated from the probit model for the amount of R&D capitalized in which *CAP* is the dependent variable.	
Corruption	is the reverse of Corruption Perceptions Index (CPI). The higher the Corruption the more corrupt a country is perceived	Transparency International
MrktDev	is the market capitalization of listed companies as a % of GDP	World bank
Enforcement	is an index capturing the quality of audit function and degree of accounting enforcement in each country measured in 2008	Brown *et al.* (2014)
RDdivergence	is a dummy variable that takes the value of 1 if capitalization of development or research costs was permitted or required prior to 2005; 0 if no such capitalization was permitted.	Self-constructed, based on Nobes (2001) survey and communication with academics/experts from each country
InvProtection	is a measure of investor protection calculated as principal component analysis of disclosure, liability standards, and anti-director rights	La Porta et al. (2006)
AntiselfDeal	is a measure of legal protection of minority shareholders against expropriation by corporate insiders (anti self-dealing index)	La Porta et al. (2008)
CivCom	is a dummy variable that takes the value of 0 if common law and 1 if civil law	La Porta et al. (1998)

References

Aboody, D., & Lev, B. (1998). The value relevance of intangibles: The case of software capitalization. *Journal of Accounting Research*, 36: 161-191.

Abrahams, T., & Sidhu, B. K. (1998). The role of R&D capitalizations in firm valuation and performance measurement. *Australian Journal of Management*, 23: 169-183.

Ades, A., & Di Tella, R. (1999). Rents, competition, and corruption. *The American Economic Review*, 89: 982-993.

Ahmed, K., & Falk, H. (2006). The value relevance of management's research and development reporting choice: Evidence from Australia. *Journal of Accounting and Public Policy*, 25(3), 231-264.

Ahmed, K., & Falk, H. (2009). The riskiness of future benefits: The case of capitalization of R&D and capital expenditures. *Journal of International Accounting Research*, 8: 45-60.

Amir, E., Guan, Y., & Livne, G. 2007. The association of R&D and capital expenditures with subsequent earnings variability. *Journal of Business Finance & Accounting*, 34: 222-246.

Ashforth, B. E., Gioia, D., Sandra, A., Robinson, L., & Trevino L. K. (2008). Re-viewing organizational corruption. *Academy of Management Review*, 33: 670-684.

Ashforth, B.E, & Anand, V. (2003). The normalization of corruption in organizations. *Research in Organizational Behavior*, 25: 1-52.

Aßländer, S., M. & Storchevoy, A. M. (2017). Corruption in the Retail Industry. In M.S Aßländer & S. Hudson (Eds.), *The handbook of business corruption: cross-sectoral experiences* (pp. 481-506). Croydon: Emerald Publishing Limited.

Aßländer, S.M. (2017). Corruption in the IT Branch – The example of Siemens. In M.S Aßländer & S. Hudson (Eds.), *The handbook of business corruption: cross-sectoral experiences* (pp. 209-236). Croydon: Emerald Publishing Limited.

Avorn, J. (2015). The $2.6 billion pill – methodologic and policy considerations. *New England Journal of Medicine*, 372(20), 1877–1879.

Ball, R. (2006). International financial reporting standards (IFRS): Pros and cons for investors. *Accounting and Business Research*, 36: 5-27.

Barth, M. E., & Israeli, D. (2013). Disentangling mandatory IFRS reporting and changes in enforcement. *Journal of Accounting and Economics*, 56(2-3), 178-188.

Boehme, D., & Murphy, J. (2007). No place to hide: Early lesson from the Siemens case. Ethikos, 21/3. Retrieved from http://compliancestrategists.com/csblog/wp-content/uploads/2014/01/NovemberDecember-2007-Ethikos-PDF-Download.pdf. Accessed on March 1, 2018.

Boujelben, S & Fedhila H. (2011). The effects of intangible investments on future OCF. *Journal of Intellectual Capital*, 12(4), 1–20.

Boynton, C. E, Dobbins, P. S., & Plesko, G. A., (1992). Earnings management and the corporate alternative minimum tax. *Journal of Accounting Research*: 131-153.

Brief, A. P., Buttram, R. T & Dukerich, J. M. (2001). Collective corruption in the corporate world: Toward a process model. *Groups at work: Theory and research*, 471: 499.

Brown, P., Preiato, J., & Tarca, A. (2014). Measuring country differences in enforcement of accounting standards: An audit and enforcement proxy. *Journal of Business Finance & Accounting*, 41(1-2), 1-52.

Bryant, E., C. & Javalgi. R. G. (2016). Global economic integration in developing countries: The role of corruption and human capital investment. *Journal of Business Ethics*, 136: 437-450.

Cazavan-Jeny, A., & Jeanjean, T. (2006). The negative impact of R&D capitalization: A value relevance approach. *European Accounting Review, 15*: 37-61.

Cazavan-Jeny, A., Jeanjean, T. & Joos, P. (2011). Accounting choice and future performance: The case of R&D accounting in France. *Journal of Accounting and Public Policy*, 30: 145-165.
Chambers, D., Jennings, R., & Thompson, R. B. (2002). Excess returns to R&D-intensive firms. *Review of Accounting Studies*, 7(2-3), 133-158.
Chan, L.K., Lakonishok, J. and Sougiannis, T. (2001). The stock market valuation of research and development expenditures. *The Journal of Finance*, *56*(6), pp.2431-2456.
Chen, E., Gavious, I., & Lev, B. (2017). The positive externalities of IFRS R&D capitalization: enhanced voluntary disclosure. *Review of Accounting Studies*, 22(2), 677-714.
Cheng, J. C., Lu, C. C., & Kuo, N. T. (2016). R&D capitalization and audit fees: Evidence from China. *Advances in Accounting*, 35, 39-48.
Christensen, H. B., Hail, L., & Leuz, C. (2013). Mandatory IFRS reporting and changes in enforcement. *Journal of Accounting and Economics*, 56(2-3), 147-177.
Ciftci, M.. (2010). Accounting choice and earnings quality: The case of software development. *European Accounting Review*, 19: 429-459.
Daske, H., Hail, L., Leuz, C., & Verdi, R. (2013). Adopting a label: Heterogeneity in the economic consequences around IAS/IFRS adoptions. *Journal of Accounting Research*, 51(3), 495-547.
Daske, H., Luzi, H., Christian, L., & Verdi, R. (2008). Mandatory IFRS reporting around the world: Early evidence on the economic consequences. *Journal of Accounting Research*, 46: 1085-1142.
Dauth, T., Pronobis, P. & Schmid, S. (2017). Exploring the link between internationalization of top management and accounting quality: The CFO's international experience matters. *International Business Review*, 26: 71-88.
Davies, J, & Wallington, A. (1999). The R&D paradox. *Accountancy*, (April) 86.
Debacker, J., Heim, B. T. & Tran, A. (2015). Importing corruption culture from overseas: Evidence from corporate tax evasion in the United States. *Journal of Financial Economics*, 117: 122-138.
Defond, M. L., & Jiambalvo, J. (1994). Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics*, 17: 145-176.
Dinh, T., Kang, H., & Schultze, W. (2016). Capitalizing research & development: Signaling or earnings management?. *European Accounting Review*, 25(2), 373-401.
Dirienzo, C. E, Das, J. Cort, K. T. & Burbridge J. Jr. (2007). Corruption and the role of information. *Journal of International Business Studies*, 38: 320-332.
Djankov, S, La Porta, R. Lopez-De-Silanes, F. & Shleifer, A. (2008). The law and economics of self-dealing. *Journal of Financial Economics*, 88: 430-465.
Dugan, M. T., McEldowney, J. E., Turner, E. H., & Wheatley, C. M. (2016). The Impact of Different Accounting Reporting Methods on the Informativeness of Research and Development Costs: IFRS Compared to US GAAP. *Review of Pacific Basin Financial Markets and Policies*, 19(04), 1650025.
Duqi, A., Jaafar, A. and Torluccio, G. (2015). Mispricing and risk of R&D investment in European firms. *The European Journal of Finance*, *21*(5), pp.444-465.
Edwards, J. P., Bowen, A. P., & Cattell, S., K. (2017). We can fix it – corruption in the Construction Industry. In M.S Aßländer & S. Hudson (Eds.), *The handbook of business corruption: cross-sectoral experiences* (pp. 391-422). Croydon: Emerald Publishing Limited.
European Commission Joint Research Centre. 2012. Corruption perceptions index 2012 statistical assessment. In. Online document available at:
http://publications.jrc.ec.europa.eu/repository/bitstream/JRC77239/lbna25623enn.pdf.

Fan, J. P., Rui, O. M., & Zhao, M. (2008). Public governance and corporate finance: Evidence from corruption cases. *Journal of Comparative Economics*, *36*(3), 343-364.

Fischer, C. (2014). Corruption in healthcare: A problem in Germany, too. *Indian Journal of Medical Ethics*, 11(2), 110–117.

Fleming, P., & Zyglidopoulos, C. S. (2008). The escalation of deception in organizations. *Journal of Business Ethics*, 81: 837-850.

García Lara, J. M., García Osma, B., & Mora, A. (2005). The effect of earnings management on the asymmetric timeliness of earnings. *Journal of Business Finance & Accounting*, 32(3-4), 691-726.

Glaum, M., Baetge, J., Grothe, A. & Oberdörster, T. (2013). Introduction of international accounting standards, disclosure quality and accuracy of analysts' earnings forecasts. *European Accounting Review*, 22: 79-116.

Hamori, M., & Koyuncu, B. (2011). Career advancement in large organizations in Europe and the united states: Do international assignments add value?. *The International Journal of Human Resource Management*, 22: 843-862.

Healy, P.M., & Wahlen J. M. (1999). A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, 13: 365-383.

Heckman, James J. 1979. Sample selection bias as a specification error. *Econometrica*, 47: 153-161.

Hope, O-K, Kang, T. Thomas, W. & Yoo Y. K. (2008). Culture and auditor choice: A test of the secrecy hypothesis. *Journal of Accounting and Public Policy*, 27: 357-373.

Houqe, M. N., & Monem, R. M. (2016). IFRS adoption, extent of disclosure, and perceived corruption: A cross-country study. *The International Journal of Accounting*, 51: 363-378.

Johanson, J., & Vahlne, JE. (1990). The mechanism of internationalization. *International marketing review*, 7, 11-24.

Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 29: 193-228.

Kohler, J. C. & Ovtcharenko, N. (2013). *Good governance for medicines initiatives: Exploring lessons learned (U4 Issue, 3)*. Bergen: Chr. Michelsen Institute.

Kothari, S. P., Laguerre, T. & Leone, A. (2002). Capitalization versus expensing: Evidence on the uncertainty of future earnings from capital expenditures versus R&D outlays. *Review of Accounting Studies*, 7: 355-382.

Kreß, A., Eierle, B. and Tsalavoutas, I. (2019) Development costs capitalization and debt financing, *forthcoming in Journal of Business Finance & Accounting.* https://doi:10.1111/jbfa.12370

La Porta, R., Lopez‐ de‐ Silanes, F. and Shleifer, A. (2006). What works in securities laws?. *The Journal of Finance*, *61*(1), pp.1-32.

La Porta, R., Lopez-De-Silanes, F. & Shleifer, A. (2008). The economic consequences of legal origins. *Journal of Economic Literature*, 46: 285-332.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny, R.W. (1998). Law and finance. *Journal of Political Economy*, *106*(6), pp.1113-1155.

Lang, M., Lins, K. & Miller, D. (2003). ADRs, analysts, and accuracy: Do ADRs improve a firm's information environment and lower its cost of capital. *Journal of Accounting Research*, 41: 317-345.

Lang, M., Raedy, S. J., & Yetman H. M. (2003). How representative are firms that are cross-listed in the United States? An analysis of accounting quality. *Journal of Accounting Research*, 41: 363-386.

Lessig, L. (2011). *Republic, lost: How money corrupts Congress – and a plan to stop it*. New York: Hachette.

Lev, B., & Sougiannis, T. (1996). The capitalization, amortization, and value-relevance of R&D. *Journal of Accounting and Economics*, 21(1), 107-138.
Lev, B., Nissim, D. & Thomas, K. J. (2008). On the informational usefulness of R&D capitalization and amortization. In S. Zambon & G. Marzo (Eds.), *Visualising intantigbles: Measuring and reporting in the knowledge economy*: Ashgate Publising Limited.
Levitt, A. (2000). The public's profession. *CPA Journal*, 70(12), 8-11.
Lexchin, J. (2012). Those who have the gold make the evidence: How the pharmaceutical industry biases the outcomes of clinical trials of medications. *Science and Engineering Ethics*, *18*(2), 247-261.
Liu, X. (2016). Corruption culture and corporate misconduct. *Journal of Financial Economics*, 122: 307-327.
Lourenço, I.C., Rathke, A., Santana, V. and Branco, M.C. (2018). Corruption and earnings management in developed and emerging countries. *Corporate Governance: The International Journal of Business in Society*, *18*(1), pp.35-51.
Malagueño, R., Albrecht, C., Ainge, C., & Stephens, N. (2010). Accounting and corruption: A cross-country analysis. *Journal of Money Laundering Control*, 13: 372-393.
Markarian, G., Pozza, L. & Prencipe, A. (2008). Capitalization of r&d costs and earnings management: Evidence from Italian listed companies. *The International Journal of Accounting*, 43: 246-267.
Markarian, G., Pozza, L. & Prencipe, A. (2008). Capitalization of R&D costs and earnings management: Evidence from Italian listed companies. *The International Journal of Accounting*, 43: 246-267.
Martinez G. M., Kholer., C. J., & McAlister, H. (2017). Corruption in the Pharmaceutical Sector. In M.S Aßländer & S. Hudson (Eds.), *The handbook of business corruption: cross-sectoral experiences* (pp. 305-328). Croydon: Emerald Publishing Limited.
Matolcsy, Z., & Wyatt A. (2006). Capitalized intangibles and financial analysts. *Accounting & Finance*, 46: 457-479.
Mazzi, F., Slack, R. and Tsalavoutas, I. (2018). The effect of corruption and culture on mandatory disclosure compliance levels: goodwill reporting in Europe. *Journal of International Accounting, Auditing and Taxation*, (Accepted for Publication)
Murphy, K. M., Shleifer, A., & Vishny, R. W. (1991). The allocation of talent: Implications for growth. *The Quarterly Journal of Economics*, 106(2), 503-530.
Murphy, P. E., Laczniak, G. R., Bowie, N. E., & Klein, T. A. (2005). *Ethical marketing*. Upper Saddle River, NJ: Prentice Hall.
Murtha, P. T., Lenway, A. S. & Bagozzi, P. R. (1998). Global mind-sets and cognitive shift in a complex multinational corporation. *Strategic Management Journal*: 97-114.
Nadiri, M.I. and Prucha, I.R. (1996). Estimation of the depreciation rate of physical and R&D capital in the US total manufacturing sector. *Economic Inquiry*, *34*(1), pp.43-56.
Nadkarni, S., & Perez, D. P. (2007). Prior conditions and early international commitment: The mediating role of domestic mindset. *Journal of International Business Studies*, 38: 160-176.
Nielsen, P.R. (2017). Viable and non-viable methods for corruption reform. In M.S Aßländer & S. Hudson (Eds.), *The handbook of business corruption: cross-sectoral experiences* (pp. 119-150). Croydon: Emerald Publishing Limited.
Nobes, C. (2001). *GAAP 2001: A survey of national accounting rules benchmarked against international accounting standards*. Andersen.
Nobes, C. (2006). The survival of international differences under IFRS: Towards a research agenda. *Accounting and Business Research*, 36: 233-245.

O'grady, S., & Lane, W. H. (1996). The psychic distance paradox. *Journal of International Business Studies*, 27: 309-333.
Olson, R. (2015). Design critique: Putting Big Pharma spending in perspective. Retrieved from http://www.randalolson.com/2015/03/01/design-critique-putting-big-pharma-spending-in-perspective/. Accessed on March 1, 2018.
Oswald, D. R. (2008). The determinants and value relevance of the choice of accounting for research and development expenditures in the united kingdom. *Journal of Business Finance & Accounting, 35*: 1-24.
Oswald, D. R., & Zarowin P. (2007). Capitalization of R&D and the informativeness of stock prices. *European Accounting Review, 16*: 703-726.
Papanastasopoulos, G. A., & Tsiritakis, E. (2015). The accrual anomaly in Europe: The role of accounting distortions. *International Review of Financial Analysis*, 41, 176-185.
Picur, R. D. (2004). Quality of accounting, earnings opacity and corruption. *Review of Accounting and Finance*, 3: 103-114.
Prencipe, A. (2012). Earnings management in domestic versus multinational firms: Discussion of “where do firms manage earnings?”. *Review of Accounting Studies*, 17: 688-699.
Prencipe, A., Markarian, G. & Pozza, L. (2008). Earnings management in family firms: Evidence from R&D cost capitalization in Italy. *Family Business Review*, 21: 71-88.
PricewaterhouseCoopers. 2010. *Accounting for innovation the impact on technology companies of accounting for R&D activity under IFRS*. In Pwc (Ed.).
Reid, S. (1983). Firm internationalization, transaction costs and strategic choice. *International Marketing Review*, 1: 44-56.
Riahi-Belkaoui, A. (2004). Effects of corruption on earnings opacity internationally. *Advances in International Accounting, 17*: 73-84.
Ritter, A., & Wells, P. (2006). Identifiable intangible asset disclosures, stock prices and future earnings. *Accounting & Finance*, 46: 843-863.
Rodriguez, P., Uhlenbruck, K., & Eden, L. (2005). Government corruption and the entry strategies of multinationals. *Academy of management review*, 30(2), 383-396.
Rodriguez., P. (2017). Why does corruption persist in governments across the world?. In M.S Aßländer & S. Hudson (Eds.), *The handbook of business corruption: cross-sectoral experiences* (pp. 151-178). Croydon: Emerald Publishing Limited.
Sandholtz, Wayne, & Gray M M. 2003. International integration and national corruption. International Organization, 57: 761-800.
Schleicher, T., Tahoun, A., & Walker, M. (2010). IFRS adoption in Europe and investment-cash flow sensitivity: Outsider versus insider economies. *The International Journal of Accounting*, 45(2), 143-168.
Segaro, L, E., Larimo, J. & Jones, V. M. (2014). Internationalization of family small and medium sized enterprises: The role of stewardship orientation, family commitment culture and top management team. *International Business Review*, 23: 381-395.
Shah, S. A. Z., Liang, S. & Akbar, S. (2013). International financial reporting standards and the value relevance of R&D expenditures: Pre and post IFRS analysis. *International Review of Financial Analysis*, 30: 158-169.
Shakantu, W. (2006). Corruption in the construction industry: forms, susceptibility and possible solutions. *Civil Engineering*, 14(7), 43-47.
Sougiannis, T. (1994). The accounting based valuation of corporate R&D. *The Accounting Review*, 44-68.
Spence, H.E. (2017). Corruption in the Media. In M.S Aßländer & S. Hudson (Eds.), *The handbook of business corruption: cross-sectoral experiences* (pp. 453-480). Croydon: Emerald Publishing Limited.

Stepurko, T, Pavlova, M. & Groot, W. (2017). Informal payments in Health Care. In M.S Aßländer & S. Hudson (Eds.), *The handbook of business corruption: cross-sectoral experiences* (pp. 305-328). Croydon: Emerald Publishing Limited.

Tanzi, V. (1998). Corruption around the world: Causes, consequences, scope, and cures. *International Monetary Fund Staff Papers*, 45(4), 559-594.

Transparency International. 2009. Global corruption report: Corruption and the private sector. In Cambridge Press.

Tsalavoutas, I., André, P., & Dionysiou, D. (2014). *Worldwide application of IFRS 3, IAS 38 and IAS 36, related disclosures, and determinants of non-compliance*. ACCA Research Report 134. Available at SSRN: https://ssrn.com/abstract=2603572.

Tsoligkas, F., & I. Tsalavoutas. (2011). Value relevance of R&D in the UK after IFRS mandatory implementation. *Applied Financial Economics*, 21: 957-967.

Turner, E. H., Matthews, A. M., Linardatos, E., Tell, R. A., & Rosenthal, R. (2008). Selective publication of antidepressant trials and its influence on apparent efficacy. *New England Journal of Medicine*, *358*(3), 252-260.

Tutticci, I., Krishnan, G., & Percy, M. (2007). The role of external monitoring in firm valuation: The case of R&D capitalization. *Journal of International Accounting Research*, 6(2), 83-107.

Voyer, A, P. & Beamish, W. P. (2004). The effect of corruption on Japanese foreign direct investment. *Journal of Business Ethics*, 50: 211-224.

Weetman, P. (2006). Discovering the 'international' in accounting and finance. *The British Accounting Review*, 38: 351-370.

White, J. C., Troy, L. C., & Gerlich, R. N. (2000). The role of slotting fees and introductory allowances in retail buyers' new-product acceptance decisions. *Journal of the Academy of Marketing Science*, *28*(2), 291-298.

Youngdahl, J. (2017). Corruption in Finance – The role of the investment consulting and the financial auditing industries. In M.S Aßländer & S. Hudson (Eds.), *The handbook of business corruption: cross-sectoral experiences* (pp. 279-304). Croydon: Emerald Publishing Limited.

Zeff, A. S. (2007). Some obstacles to global financial reporting comparability and convergence at a high level of quality. *The British Accounting Review*, 39: 290-302.

Zuckerman, B. M. (2006). *Our cheating hearts*. US News & World Report, 6: 88.

Zyglidopoulos, S. C., & Fleming, P. J. (2008). Ethical distance in corrupt firms: How do innocent bystanders become guilty perpetrators?. *Journal of Business Ethics*, *78* (1-2), 265-274.

Table 1 – Sample selection process and sample distribution across industries and year

Panel A: Sample selection process

47,999	We focus on the countries adopting IFRS on a mandatory basis in 2005 as reported in Daske et al. (2008) excluding Switzerland and Venezuela and obtain data between 2006 and 2010.
(12,753)	Firm-year observations for which data item indicating accounting standards is missing or reporting standards are not IFRS
(3,555)	First time IFRS adopters
(1,618)	Firms from Oil&Gas industry
(19,195)	Firm-year observations reporting neither R&D expense nor R&D asset
(1,880)	Firm-year observations where both the R&D asset and R&D expense are zero
(965)	Firm-year observations where either the R&D asset or R&D expense are negative
(3,110)	Firm-year observations with missing data for future earnings or future cash flows estimation
(109)	Firm-year observations that have had their financial year-end changed
(1,577)	Firm-year observations with missing firm-specific data
(51)	Firm-year observations with missing country-specific data
3,186	**final sample *[t = 2006, 2010] [1,077 firms]***
1,695	reporting expensed R&D only (expensers)
1,491	reporting a capitalized amount of R&D (capitalizers)
347	reporting capitalized R&D only (full capitalizers)
1,144	reporting both capitalized and expensed R&D (non-full capitalizers)

Panel B: Sample distribution by Industry (ICB level 1) and Year

	2006	*2007*	*2008*	*2009*	*2010*	*Total*
Basic Materials	53	65	71	73	71	*333*
Consumer Goods	84	122	119	117	121	*563*
Consumer Services	19	25	26	27	26	*123*
Financials	7	8	7	6	9	*37*
Health Care	54	82	100	116	119	*471*
Industrials	143	201	213	221	219	*997*
Technology	81	105	123	123	121	*553*
Telecommunications	9	14	10	9	12	*54*
Utilities	9	9	12	12	13	*55*
Total	*459*	*631*	*681*	*704*	*711*	*3,186*

Panel C: Sample distribution by Country and Year

	2006	*2007*	*2008*	*2009*	*2010*	*Total*
Australia	6	60	68	66	64	*264*
Austria	15	17	16	16	12	*76*
Belgium	10	11	17	16	15	*69*
Denmark	21	24	23	19	21	*108*
Finland	42	48	41	39	42	*212*
France	65	85	78	68	71	*367*
Germany	98	112	105	113	118	*546*
Greece	9	5	7	11	12	*44*
Hong Kong	4	7	10	11	13	*45*
Ireland	3	5	6	7	6	*27*
Italy	25	30	41	34	35	*165*
Netherlands	15	10	11	13	14	*63*
Norway	8	11	8	11	10	*48*
Philippines	0	1	0	0	0	*1*
Portugal	2	4	2	2	2	*12*
Singapore	3	3	4	2	1	*13*
South Africa	4	18	15	11	11	*59*
Spain	13	14	16	13	13	*69*
Sweden	47	45	43	48	47	*230*
UK	69	121	170	204	204	*768*
Total	*459*	*631*	*681*	*704*	*711*	*3,186*

Table 2 – Country characteristics at the country-level

Country	*Corruption*	*MrktDev*	*Enforcement*	*RDdivergence*	*InvProtection*	*AntiselfDeal*	*CivCom*
Australia	1.323	119.267	52	1	0.784	0.757	0
Austria	1.875	33.671	27	0	0.104	0.213	1
Belgium	2.822	59.520	44	1	0.068	0.544	1
Denmark	0.639	67.507	49	1	0.363	0.463	1
Finland	0.769	83.642	32	1	0.465	0.457	1
France	2.938	81.094	45	1	0.473	0.379	1
Germany	2.082	44.985	44	0	0.000	0.282	1
Greece	5.925	39.851	26	0	0.319	0.217	1
HongKong	1.740	502.254	52	1	0.851	0.963	0
Ireland	2.226	34.741	41	1	0.478	0.789	0
Italy	5.406	28.427	46	1	0.197	0.421	1
Netherlands	1.154	81.910	43	1	0.537	0.203	1
Norway	1.460	64.213	47	1	0.436	0.421	1
Philippines	7.500	69.111	27	0	0.812	0.215	1
Portugal	3.750	43.534	29	1	0.574	0.444	1
Singapore	0.723	154.175	32	1	0.770	1.000	0
South Africa	5.171	222.296	29	1	0.599	0.813	0
Spain	3.554	89.542	42	1	0.553	0.374	1
Sweden	0.762	106.956	34	1	0.386	0.333	1
UK	2.135	114.845	54	1	0.776	0.950	0

Corruption and *MrktDev* represent sample means. The remaining variables are time invariant.
See Appendix II for variables' definitions.

Table 3 – Sample descriptive statistics

Variable	Mean	St. Dev.	Min	Median	Max
CAP	0.468	0.499	0	0	1
NI [a]	1.211	1.273	-2.131	0.953	11.015
NI2 [a]	0.937	1.103	-2.304	0.746	8.955
RDExp [a]	0.056	0.098	0.000	0.021	0.807
RDCap [a]	0.013	0.035	0.000	0.000	0.332
BM [a]	0.681	0.640	-1.563	0.514	4.768
RDValue [a]	58.154	248.349	-299.272	6.667	2513.377
RDInt [a]	0.062	0.098	0.000	0.026	0.701
Size	12.826	2.360	4.187	12.755	18.818
Beta [a]	0.947	0.812	-1.490	0.891	4.066
Leverage [a]	0.643	0.864	-2.040	0.408	6.356
IntSalesPerc [a]	54.497	29.935	0.000	57.125	100.000
PastBeat	0.225	0.417	0	0	1
ZeroBeat	0.097	0.296	0	0	1
BenchBeat	0.276	0.447	0	0	1
Big4AR	0.816	0.387	0	1	1
RepFreq	3.006	1.009	1	4	4
Capex [a]	0.074	0.111	0.000	0.038	0.949
IMR	0.894	0.376	0.030	0.854	2.362
Corruption	2.195	1.249	0.400	2.100	7.500
MrktDev	91.154	66.849	13.476	73.206	606.004
Enforcement	44.968	8.046	26	45	54
RDdivergence	0.791	0.407	0	1	1
InvProtection	0.458	0.289	0.000	0.473	0.851
AntiselfDeal	0.555	0.275	0.203	0.421	1.000
CivCom	0.631	0.483	0	1	1

See Appendix II for variables' definitions. [a] Variables winsorised at 1% and 99%.

Table 4 – Sample descriptive statistics for across countries with low and high corruption

	Low corruption (*n=1,582*)			High corruption (*n=1,604*)			T - test		Mann-Whitney test	
Variable	**Mean**	**SD**	**Median**	**Mean**	**SD**	**Median**	**Mean Diff.**	**t - stat**	**Median Diff.**	**z-stat**
RDExp_TA [a]	0.056	0.101	0.023	0.053	0.119	0.019	0.003**	1.661	0.019***	5.810
RDCap_TA [a]	0.010	0.039	0.000	0.009	0.026	0.000	0.001	0.895	-0.001***	-3.572
CAP	0.427	0.495	0.000	0.509	0.500	1.000	-0.082***	-4.655	0.082***	-4.640
NI [a]	1.088	1.167	0.870	1.333	1.359	1.026	-0.245***	-5.462	1.115***	-6.098
NI2 [a]	0.863	1.065	0.698	1.010	1.134	0.793	-0.147***	-3.756	0.845***	-4.408
BM [a]	0.623	0.549	0.475	0.738	0.714	0.548	-0.115***	-5.109	0.591***	-5.286
RDValue [a]	45.290	199.228	7.375	70.842	288.228	5.802	-25.552***	-2.907	32.926**	2.412
RDInt [a]	0.067	0.102	0.028	0.057	0.095	0.024	0.010***	2.906	0.018***	4.220
Size	13.030	2.267	12.911	12.625	2.432	12.575	0.405***	4.857	12.506***	4.967
Beta [a]	0.954	0.823	0.908	0.940	0.802	0.880	0.014	0.494	0.894	1.368
Leverage [a]	0.595	0.799	0.372	0.690	0.921	0.438	-0.095***	-3.106	0.467***	-3.354
IntSalesPerc [a]	56.943	29.959	60.520	52.085	29.724	54.570	4.858***	4.594	55.662***	4.743
PastBeat	0.233	0.423	0.000	0.217	0.412	0.000	0.016	1.059	-0.016	1.059
ZeroBeat	0.090	0.286	0.000	0.105	0.306	0.000	-0.015*	-1.426	0.015	-1.426
BenchBeat	0.277	0.448	0.000	0.274	0.446	0.000	0.003	0.161	-0.003	0.161
Big4AR	0.855	0.353	1.000	0.778	0.416	1.000	0.077***	5.603	0.924***	5.576
RepFreq	3.293	0.964	4.000	2.723	0.972	2.000	0.571***	16.639	3.429***	15.963
Capex [a]	0.065	0.102	0.033	0.083	0.119	0.044	-0.018***	-4.637	0.051***	-6.503
IMR	0.979	0.358	0.924	0.809	0.375	0.778	0.170***	13.113	0.754***	12.912
Corruption	1.332	0.530	1.300	3.048	1.166	2.400	-1.716***	-53.369	3.016***	-47.740
MrktDev	97.907	82.885	81.642	84.493	44.878	72.780	13.415***	5.691	68.227***	2.883
Enforcement	43.326	8.496	44.000	46.588	7.223	45.000	-3.262***	-11.681	47.262***	-13.423
RDdivergence	0.750	0.433	1.000	0.831	0.375	1.000	-0.081***	-5.671	1.081***	-5.643
InvProtection	0.440	0.293	0.465	0.476	0.283	0.473	-0.035***	-3.458	0.501***	-3.480
AntiselfDeal	0.513	0.256	0.457	0.597	0.286	0.421	-0.085***	-8.785	0.542***	-8.666
CivCom	0.668	0.471	1.000	0.594	0.491	1.000	0.074***	4.339	0.926***	4.327

Countries with high (low) corruption are defined as those countries of which corruption score is above (below) the median corruption score of all countries in our sample in a given year. Firms with high (low) capitalization intensity are defined those of which the ratio of capitalized R&D over R&D expenditure is above (below) the industry-year median. *RDCap_TA* and *RDExp_TA* are scaled by total assets less amount of R&D capitalized during the year for comparison with *RDInt*.
See Appendix II for all other variables' definitions.*, ** and *** denote significance at the 10%, 5% and 1% respectively. [a] Variables winsorised at 1% and 99%.

Table 5 – Pearson's correlation coefficients

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1)	*CAP*	1									
(2)	*NI* [a]	0.103***	1								
(3)	*NI2* [a]	0.118***	0.918***	1							
(4)	*RDExp* [a]	0.033*	0.384***	0.387***	1						
(5)	*RDCap* [a]	0.393***	0.301***	0.310***	0.269***	1					
(6)	*BM* [a]	0.058***	0.488***	0.417***	0.205***	0.254***	1				
(7)	*RDValue* [a]	-0.025	-0.108***	-0.093***	-0.127***	-0.081***	-0.178***	1			
(8)	*RDInt* [a]	0.02	-0.086***	-0.029	0.513***	0.243***	-0.173***	-0.127***	1		
(9)	*Size*	-0.08***	-0.045**	-0.044**	-0.267***	-0.227***	-0.252***	0.165***	-0.292***	1	
(10)	*Beta* [a]	0.035*	0.064***	0.04**	0.044**	0.019	0.078***	-0.013	-0.016	0.071***	1
(11)	*Leverage* [a]	0.096***	0.223***	0.157***	-0.072***	0.042**	0.067***	0.102***	-0.252***	0.209***	0.037**
(12)	*IntSalesPerc* [a]	0.032*	0.085***	0.083***	-0.004	0.023	-0.031*	-0.104***	-0.018	0.224***	0.092***
(13)	*PastBeat*	0.17***	0.081***	0.122***	0.193***	0.184***	-0.007	-0.107***	0.234***	-0.047***	-0.02
(14)	*ZeroBeat*	0.148***	0.137***	0.17***	0.279***	0.336***	0.111***	-0.072***	0.277***	-0.163***	0.02
(15)	*BenchBeat*	0.189***	0.124***	0.165***	0.274***	0.259***	0.035*	-0.125***	0.292***	-0.11***	-0.008
(16)	*Big4AR*	0.009	0.06***	0.062***	-0.02	-0.116***	-0.02	0.055***	-0.086***	0.386***	0.081***
(17)	*RepFreq*	0.005	-0.008	0.004	-0.023	-0.064***	-0.001	-0.048***	-0.074***	0.278***	0.042**
(18)	*Capex* [a]	0.054***	0.519***	0.442***	0.143***	0.216***	0.522***	-0.045**	-0.178***	0.004	0.109***
(19)	*IMR*	-0.401***	-0.199***	-0.184***	-0.17***	-0.261***	-0.133***	0.063***	-0.056***	0.212***	-0.072***
(20)	*Corruption*	0.124***	0.080***	0.044**	-0.017	0.074***	0.125***	0.09***	-0.141***	0.002	-0.003
(21)	*MrktDev*	-0.061***	-0.124***	-0.102***	-0.092***	-0.065***	-0.139***	0.087***	0.023	-0.001	-0.009
(22)	*Enforcement*	0.054***	0.045**	0.026	0.081***	0.094***	-0.024	-0.043**	0.152***	-0.195***	-0.024
(23)	*RDdivergence*	0.102***	-0.064***	-0.083***	-0.016	0.032*	-0.033*	0.058***	0.08***	-0.087***	-0.002
(24)	*InvProtection*	0.002	-0.075***	-0.092***	-0.008	0.038**	-0.06***	0.08***	0.126***	-0.224***	-0.051***
(25)	*AntiselfDeal*	-0.017	-0.007	-0.024	0.012	0.053***	-0.055***	0.048***	0.126***	-0.243***	-0.036**
(26)	*CivCom*	0.045**	0.02	0.037**	0.001	-0.046***	0.063***	-0.063***	-0.123***	0.256***	0.044**

(continued next page)

		(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(11)	*Leverage* [a]	1									
(12)	*IntSalesPerc* [a]	0.023	1								
(13)	*PastBeat*	-0.019	0.006	1							
(14)	*ZeroBeat*	-0.008	0.002	0.199***	1						
(15)	*BenchBeat*	-0.02	0.001	0.873***	0.532***	1					
(16)	*Big4AR*	0.084***	0.098***	0.009	0	0.008	1				
(17)	*RepFreq*	0.151***	0.118***	0.004	0.007	0.002	0.159***	1			
(18)	*Capex* [a]	0.321***	0.005	-0.012	0.025	0	0.059***	0.076***	1		
(19)	*IMR*	-0.216***	-0.068***	-0.374***	-0.257***	-0.44***	-0.01	0.005	-0.064***	1	
(20)	*Corruption*	0.167***	-0.119***	-0.044**	-0.01	-0.042**	-0.063***	-0.058***	0.172***	-0.274***	1
(21)	*MrktDev*	-0.136***	-0.061***	-0.036**	-0.035**	-0.048***	0.031*	-0.36***	-0.145***	0.139***	-0.16***
(22)	*Enforcement*	-0.153***	-0.045**	0.029	0.022	0.038**	-0.11***	-0.577***	-0.104***	-0.153***	-0.019
(23)	*RDdivergence*	-0.048***	-0.015	0.009	0.021	0.017	0.08***	-0.423***	-0.109***	-0.249***	-0.051***
(24)	*InvProtection*	-0.141***	-0.084***	-0.006	0.009	0.005	-0.059***	-0.664***	-0.156***	-0.02	-0.148***
(25)	*AntiselfDeal*	-0.154***	-0.052***	0.003	0.006	0.011	-0.099***	-0.665***	-0.136***	0.024	-0.056***
(26)	*CivCom*	0.167***	0.08***	0.007	0.008	0.002	0.13***	0.683***	0.143***	-0.09***	0.073***

		(21)	(22)	(23)	(24)	(25)	(26)
(21)	*MrktDev*	1					
(22)	*Enforcement*	0.195***	1				
(23)	*RDdivergence*	0.368***	0.263***	1			
(24)	*InvProtection*	0.546***	0.491***	0.756***	1		
(25)	*AntiselfDeal*	0.504***	0.661***	0.535***	0.836***	1	
(26)	*CivCom*	-0.498***	-0.638***	-0.394***	-0.813***	-0.952***	1

See Appendix II for variables' definitions.
*, ** and *** denote significance at the 10%, 5% and 1% respectively.
[a] Variables winsorised by year at 1% and 99%

Table 6 – Development costs capitalized and the role of corruption

Dependent Variable: RDCap	*Full Sample*		*Low International Exposure*		*High International Exposure*	
VARIABLES	*Model 1*	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*
Constant	-0.093***	-0.097***	-0.089***	-0.092***	-0.089**	-0.090**
	(-3.10)	(-2.99)	(-2.58)	(-2.69)	(-2.17)	(-2.08)
Corruption	**0.004*** **	**0.004*** **	**0.005*** **	**0.005*** **	**0.002**	**0.001**
	(2.74)	**(2.64)**	**(2.86)**	**(2.80)**	**(1.02)**	**(0.92)**
BM [a]	0.016***	0.018***	0.008	0.010*	0.027***	0.028***
	(4.53)	(4.76)	(1.54)	(1.79)	(8.16)	(7.99)
RDValue [a]	0.000	0.000	0.000	0.000	0.000*	0.000*
	(0.94)	(1.31)	(0.50)	(0.79)	(1.73)	(1.92)
RDInt [a]	0.082***	0.098***	0.035	0.050	0.139***	0.157***
	(2.94)	(3.22)	(0.99)	(1.23)	(4.81)	(5.10)
Size	-0.002**	-0.003***	-0.004***	-0.004***	-0.001	-0.001
	(-2.46)	(-2.64)	(-3.05)	(-3.35)	(-0.74)	(-0.87)
Beta [a]	0.001	0.001	0.003**	0.003**	-0.002	-0.002
	(0.78)	(1.01)	(2.48)	(2.57)	(-1.38)	(-1.26)
Leverage [a]	0.009***	0.009***	0.007***	0.008***	0.010***	0.011***
	(3.51)	(3.53)	(2.76)	(2.77)	(3.67)	(3.74)
IntSalesPerc[a]	0.000***	0.000***	0.000**	0.000**	-0.000	-0.000
	(4.68)	(4.57)	(2.45)	(2.55)	(-0.22)	(-0.13)
PastBeat	0.018***		0.015***		0.019***	
	(7.13)		(3.66)		(8.20)	
ZeroBeat	0.035***		0.038***		0.033***	
	(13.46)		(5.38)		(6.52)	
BenchBeat		0.026***		0.024***		0.026***
		(10.22)		(8.02)		(10.20)
Big4AR	-0.007*	-0.007	-0.001	-0.001	-0.015***	-0.014**
	(-1.75)	(-1.49)	(-0.17)	(-0.12)	(-2.59)	(-2.28)
RepFreq	0.002	0.002	0.005***	0.005***	0.002	0.001
	(1.57)	(1.57)	(2.61)	(2.79)	(0.66)	(0.59)
MrktDev	0.000	0.000	-0.000	-0.000	0.000*	0.000*
	(0.15)	(0.17)	(-1.03)	(-1.18)	(1.78)	(1.71)
Enforcement	0.001***	0.001***	0.001***	0.001**	0.001***	0.001***
	(2.96)	(2.81)	(2.59)	(2.40)	(3.13)	(3.14)
RDdivergence	0.021***	0.021**	0.018*	0.019**	0.036***	0.037***
	(2.62)	(2.45)	(1.94)	(2.05)	(3.14)	(3.03)
InvProtection	-0.008	-0.008	0.007	0.008	-0.050**	-0.055**
	(-0.48)	(-0.47)	(0.39)	(0.45)	(-2.02)	(-2.10)
AntiselfDeal	-0.044*	-0.041*	-0.033	-0.028	-0.062**	-0.064**
	(-1.88)	(-1.66)	(-1.31)	(-1.10)	(-2.22)	(-2.08)
CivCom	-0.016	-0.014	-0.010	-0.006	-0.041*	-0.043*
	(-1.00)	(-0.84)	(-0.62)	(-0.38)	(-1.86)	(-1.80)
Industry f.e.	Included	Included	Included	Included	Included	Included
Year f.e.	Included	Included	Included	Included	Included	Included
N	*3,186*	*3,186*	*1,593*	*1,593*	*1,593*	*1,593*
Pseudo R-squared	*0.398*	*0.367*	*0.322*	*0.287*	*0.571*	*0.541*
Mean VIF	*3.40*	*3.48*	*3.32*	*3.39*	*3.81*	*3.90*

*, ** and *** denote significance at the 10%, 5% and 1% respectively. Standard errors clustered by country.
[a] Variables winsorised by year at 1% and 99%. See Appendix II for variables' definitions. *t*-statistics in brackets.
Coefficients for *Corruption* in model 3 and 5 are different at 5% level (Wald chi-squared = 3.99).
Coefficients for *Corruption* in model 4 and 6 are different at 5% level (Wald chi-squared = 3.97).

Table 7 – Development costs and future benefits

VARIABLES	*Full Sample*		*Low International Exposure*		*High International Exposure*	
	NI	*NI2*	*NI*	*NI2*	*NI*	*NI2*
	Model 7	*Model 8*	*Model 9*	*Model 10*	*Model 11*	*Model 12*
Constant	1.181*	1.015**	1.866**	1.828**	1.380**	1.198**
	(1.81)	(2.14)	(2.12)	(2.66)	(2.14)	(2.17)
RDCap [a]	9.958***	9.149***	11.608***	8.793**	5.672***	6.297*
	(4.96)	(3.20)	(3.99)	(2.49)	(3.68)	(1.96)
RDCap* Corruption[a]	**-2.275*** **	**-1.913***	**-3.146*** **	**-2.373** **	**-0.182**	**-0.033**
	(-4.14)	**(-2.08)**	**(-4.37)**	**(-2.66)**	**(-0.27)**	**(-0.03)**
RDExp [a]	2.696**	2.820**	0.718	0.898	5.443**	5.353***
	(2.27)	(2.14)	(0.90)	(0.58)	(2.83)	(3.80)
RDExp Corruption*[a]	0.499	0.226	0.794**	0.570	0.186	-0.123
	(1.06)	(0.49)	(2.59)	(0.97)	(0.24)	(-0.26)
CAP	-0.055	-0.000	-0.070	-0.018	-0.014	0.027
	(-0.85)	(-0.01)	(-0.92)	(-0.29)	(-0.19)	(0.46)
Size	0.046***	0.047***	0.026	0.014	0.055**	0.065**
	(3.03)	(3.75)	(0.93)	(0.47)	(2.54)	(2.83)
Leverage [a]	0.116*	0.031	0.118	0.033	0.128***	0.031
	(1.83)	(0.56)	(1.50)	(0.47)	(3.17)	(0.65)
IntSalesPerc[a]	0.001	0.001	0.005**	0.005**	-0.009***	-0.008***
	(1.30)	(0.89)	(2.45)	(2.74)	(-3.95)	(-5.13)
Big4AR	0.108	0.104	-0.016	0.040	0.270*	0.198
	(1.37)	(1.61)	(-0.32)	(0.87)	(1.74)	(1.50)
RepFreq	-0.103**	-0.115***	-0.091	-0.134***	-0.121***	-0.105***
	(-2.45)	(-3.48)	(-1.62)	(-2.95)	(-3.37)	(-2.88)
Capex [a]	4.317***	3.104***	4.297***	3.348***	3.813***	2.304***
	(6.13)	(7.92)	(5.00)	(5.81)	(5.85)	(5.21)
IMR	-0.668***	-0.639***	-0.751***	-0.747***	-0.578***	-0.539***
	(-4.77)	(-5.52)	(-5.19)	(-6.51)	(-3.70)	(-3.41)
Corruption	-0.072***	-0.079***	-0.102***	-0.121***	-0.036	-0.035
	(-2.89)	(-4.38)	(-3.33)	(-5.14)	(-1.10)	(-1.16)
MrktDev	0.000	0.000	0.001	0.001*	-0.001*	-0.000
	(0.06)	(1.52)	(1.05)	(2.03)	(-1.96)	(-0.38)
Enforcement	-0.004	-0.008	-0.002	-0.009	-0.012	-0.015**
	(-0.54)	(-1.50)	(-0.25)	(-1.26)	(-1.51)	(-2.49)
RDdivergence	-0.342	-0.445*	-0.281	-0.376	-0.499*	-0.583***
	(-1.31)	(-1.96)	(-0.93)	(-1.36)	(-1.95)	(-3.13)
InvProtection	-0.474	-0.420	-0.576	-0.531	-0.057	-0.100
	(-1.17)	(-1.09)	(-1.31)	(-1.27)	(-0.16)	(-0.31)
AntiselfDeal	1.086	1.308**	0.713	1.148	1.590*	1.572***
	(1.32)	(2.13)	(0.74)	(1.40)	(1.85)	(3.16)
CivCom	0.158	0.365	-0.066	0.303	0.426	0.423
	(0.34)	(1.06)	(-0.12)	(0.65)	(0.89)	(1.44)
Industry f.e.	Included	Included	Included	Included	Included	Included
Year f.e.	Included	Included	Included	Included	Included	Included
N	*3,186*	*3,186*	*1,593*	*1,593*	*1,593*	*1,593*
Adj. R-squared	*0.454*	*0.385*	*0.396*	*0.334*	*0.561*	*0.482*
Mean VIF	*5.18*	*5.18*	*5.19*	*5.19*	*5.63*	*5.63*

*, ** and *** denote significance at the 10%, 5% and 1% respectively. Standard errors clustered by country.
[a] Variables winsorised by year at 1% and 99%. See Appendix II for variables' definitions. *t*-statistics in brackets.
Coefficients for *RDCap*Corruption* in model 9 and 11 are different at 5% level (Wald = 4.83).
Coefficients for *RDCap*Corruption* in model 10 and 12 are different at 10% level (Wald = 2.80).

Table 8 – Market performance of capitalizers and expensers across countries with low and high corruption

Average abnormal returns				
	Corruption			
	Low	High	Comparison	t-stat
Panel A: 1-year abnormal returns				
Capitalizers	-0.011	-0.040	0.029	0.981
	(746)	(741)		
Expensers	-0.032***	-0.018	-0.014	-0.569
	(1,056)	(633)		
Comparison	0.021	-0.022		
t-stat	-1.085	0.608		
Panel B: 5-year abnormal returns				
Capitalizers	0.770***	0.275***	0.495***	4.368
	(736)	(721)		
Expensers	0.376***	0.410***	-0.034	-0.384
	(1,032)	(621)		
Comparison	0.394***	-0.135		
t-stat	4.293	1.229		

Number of observations in brackets. Countries with high (low) corruption are defined as those countries of which corruption score is above (below) the median corruption score of all countries in our sample in that year. *, ** and *** denote significance at the 5% and 1% respectively. Differences in mean returns are tested with a *t*-test.