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Religiosity and Corporate Financial Reporting: Evidence from an European Country

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Abstract

Using a sample of Portuguese privately-held firms, I examine the association between religiosity and financial reporting quality. The results suggest that firms headquartered in Portuguese areas with strong religious adherence and in the core area of the Portuguese religious cult (the district where the *Fátima* Sanctuary is located) generally experience lower incidence of earnings management. I provide further evidence that the results are robust to alternative measures of religiosity, and that are not driven by firms headquartered in rural areas. I also conclude that religious social norms, together with other forms of external financial monitoring, represent a mechanism for reducing costly agency conflicts. While the religious practice declined in the last decades in Portugal, I provide evidence that, even in a such context, religiosity is associated with reduced acceptance of unethical business practices, in particular, with reduced acceptance of aggressive accounting practices.

Keywords: earnings management; earnings quality; financial reporting; religion; religious social norms; Portugal.

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Introduction

The debate on the association between religiosity and economic development began early in the twentieth century, with Max Weber. Weber (1905) argued that the Protestantism was an important force behind the development of capitalism in the Northern Europe. He defended that the Protestant ethic fostered the individual's rational search for economic gains. Since then, while the modern economic theory has revisited the analysis of religions and, in particular, psychology and management literature has examined the influence of religion on personal behavior, the extent to which religious attitudes affect corporate behavior is not well understood (McGuire *et al.* 2012).

Recently, Andy Wicks, Professor of Business Administration at Darden School of Business and director of the Olsson Center for Applied Ethics, highlighted that religion and spirituality are fundamental to the identity of large portions of the global community, both individually and collectively, but scholars must do a better job of clarifying how business and religion are things that go together, or are an integral part of how business organizations (and business people) operate (Wicks 2014).

A growing stream of research uses religion as a proxy for culture and social norms and suggests that religion is a key social mechanism for influencing beliefs and behaviors (Kennedy and Lawton 1998). In fact, consistent with the notion that a religion-based social identity and sense of belonging affects behavior of individuals and firms, recent literature gives evidence that local religious beliefs impact a wide range of corporate decisions, including financial reporting irregularities and accruals-based earnings manipulation (Dyregang *et al.* 2012, McGuire *et al.* 2012, Chen *et al.* 2013, Du *et al.* 2015), risk exposure (Hilary and Hui 2009), tax avoidance (Boone *et al.* 2013), equity pricing (El Ghouli *et al.* 2012), tunneling (Du 2014), corporate philanthropic giving (Du *et al.* 2014a), and corporate environmental responsibility (Du *et al.* 2014b). Although this research provides valuable insights, it is conducted in the US and more recently in China, leaving for sparse evidence on other denominations outside the US and the Chinese context (Du *et al.* 2015), that may have different religious configurations and different religious intensity. To begin to fill this gap in the literature, in this study, I examine whether religion is associated with the quality of corporate financial reporting, in the context of an European country, i.e., Portugal.

In this study, religiosity is measured through the level of religious adherence in the region of the firm's headquarters and through a geographic-proximity-based religion variable. Data on religiosity in Portuguese regions are collected from the European Values Study Longitudinal Data File (EVS 1981-2008). To measure earnings quality, I examine firms' earnings management behavior with respect to abnormal accruals, and I employ modified versions of the Jones (1991) model and the Dechow and Dichev (2002) model. Using a sample of Portuguese privately-held companies over the six-year period from 2003 to 2008, and after controlling for several firm-level variables and region-level demographic variables, I find a negative association between religiosity and abnormal accruals. Specifically, the results suggest that firms headquartered in areas with strong religious adherence generally experience lower incidence of earnings management. This result holds separately for Catholic affiliation (which is the religious affiliation that

largely dominates Portugal). I also find evidence that firms headquartered in the core area of the Portuguese religious cult (the district where the *Fátima* Sanctuary is located) present higher financial reporting quality, than firms headquartered in other areas of the country. Additional tests provide evidence that the main results are robust to an alternative measure of religiosity, they are not driven by firms headquartered in rural areas, and that religious social norms may complement other forms of external financial monitoring to enhance the financial reporting quality.

This study contributes to the broader literature stream that investigates the influence of religion-based social norms on corporate decision making (e.g., Hilary and Hui 2009, Dyreng *et al.* 2012, McGuire *et al.* 2012, Boone *et al.* 2013, Chen *et al.* 2013, Du *et al.* 2015), by providing additional evidence that religiosity can serve as a social mechanism to mitigate earnings management behavior, and by extending the findings of extant literature which comes mainly from the US and more recently from China, to the European context.

To my knowledge, this is the first study that investigates the association between religiosity and corporate financial reporting quality, in the context of a Western European country. While the US is overwhelmingly Christian, primarily Protestant, but has a relatively heterogeneous Christian population, the Western European countries are dominated by a single religious denomination (e.g., Catholics) (Hilary and Hui 2009). In turn, in China, the most influential religions are Buddhist and Taoist denominations (Du *et al.* 2015). This gives me the opportunity to analyse if the evidence on the relationship between religiosity and corporate behavior gathered from a religious diverse country (US) and from a Buddhist and Taoist country, holds in a context of a country dominated by the Catholic denomination. Furthermore, Iannaccone (1998) reports that the religious practice (e.g. weekly church attendance rates) are higher in the US than in European countries and that the rates of church membership in the US have increased throughout the past two centuries. Also, in China, religious activities were largely reduced for a long time after the founding of the People's Republic of China, but currently religion revives and even thrives under atheist Communist rule (Du *et al.* 2015). In contrast, between the western European countries, it is observed a decrease in the religious practice and a progress towards a less pronounced religiosity (Menendez 2007). In this sense, studying the Portuguese setting is interesting because, although more than 90 percent of the Portuguese population considered themselves Roman Catholic in a cultural and religious sense (Teixeira 2011), the practice of religion declined in the last decades, which could be interpreted as a loss of intensity of religiosity (Menendez 2007).

This study distinguishes itself from extant studies based on the US context (Hilary and Hui 2009, Dyreng *et al.* 2012, McGuire *et al.* 2012, Boone *et al.* 2013) and those based on the Chinese context (Chen *et al.* 2013, Du 2013, Du 2014, Du *et al.* 2014a, 2014b, 2015). While studies based on the US context compute religiosity at the county/region/metropolitan level (using the number of religious adherents within each county/region/metropolitan) and studies from the Chinese context use firm-level religion variables

(the number of religious sites within certain kilometers radius around a firm's registered place), this study uses both approaches.

Furthermore, the conclusions of this study may also help standard-setters, investors and regulators. As religious social norms potentially represent a mechanism for reducing agency costs, then, examining the strength of local religious social norms and how they affect managers may help standard-setters, investors and regulators. Understanding how religious social norms influence corporate decisions is critically important for shaping appropriate financial reporting standards (Sunder 2005), and may help to identify firms that are more or less likely to engage in actions that are costly to shareholders (McGuire *et al.* 2012). Furthermore, regulators have cited the erosion of norms as one underpinning of financial statement manipulation (McGuire *et al.* 2012).

The remainder of this paper proceeds as follows. Section 2 reviews prior literature and develops the hypotheses. Section 3 describes the research design and the sample selection process. Section 4 presents the main empirical setting and results, and Section 5 concludes the study.

The Portuguese Context

Portugal has been for centuries a Roman Catholic country, not only in a religious sense, but also socially and culturally (Solsten 1993).

Portugal was first Christianized while part of the Roman Empire. Christianity was solidified when the Visigoths, a Germanic tribe already Christianized, came into the Iberian Peninsula in the fifth century. Christianity was nearly extinguished in southern Portugal during Moorish rule (eighth century to twelfth century), but in the north it provided the cultural and religious cement that helped hold Portugal together as a distinctive entity (Mattoso 2000-2001).

Under Afonso Henriques, the first king of Portugal and the founder of the Portuguese state (1139 to 1185), church and state were unified into a lasting and mutually beneficial partnership (Solsten 1993). As reported by Solsten (1993), although relations between the Portuguese State and the Roman Catholic Church were generally amiable and stable, their relative power fluctuated. In the thirteenth century and fourteenth century, the Church enjoyed both riches and power stemming from its role in the reconquest and its close identification with early Portuguese nationalism. For a time the Church's position vis-à-vis the State diminished until the growth of the Portuguese overseas empire made its missionaries important agents of colonization. In 1497, Portugal expelled the Jews and the remaining Moors (or forced them to convert to Christianity). In 1536 the pope gave King João III (1521-1557) permission to establish the Inquisition in Portugal to enforce the purity of the faith. Earlier the country had been rather tolerant, but now orthodoxy and intolerance reigned. The Jesuit order was placed in charge of all education (Mattoso 2000-2001).

In the eighteenth century, antichurch sentiment became strong. The Marquês de Pombal (1750-1777), Secretary of State of the Kingdom (the equivalent to a today's Prime Minister), expelled the Jesuits in 1759, broke relations with Rome, and brought education under the State's control. Pombal was eventually

removed from his office, and many of his reforms were undone, but anticlericalism remained a force in Portuguese society. In 1821 the Inquisition was abolished, religious orders were banned, and the church lost much of its property (Solsten 1993). In the second half of the nineteenth century relations between church and state improved, but a new wave of anticlericalism emerged with the establishment of the First Republic in 1910 (Ferreira 2002). Not only were church properties seized and education secularized, but the Republic went so far as to ban the ringing of church bells, the wearing of clerical garb on the streets, and the holding of many religious festivals. These radical steps cost the republic popular support, and paved the way for its overthrow and the establishment of a conservative right-wing regime (Solsten 1993).

From 1933 through 1974, Portugal was ruled by a corporatist dictatorship called *Estado Novo* and led by the prime-ministers Oliveira Salazar (from 1933 to 1968) and Marcelo Caetano (1968-1974) (Santos 1984). The *Estado Novo* dictatorship was legitimized by the New Constitution of 1933, which defined Portugal as a “strong unitary and corporative State”. Interventionism, corporatism, and nationalism were the fundamental guidelines of the Portuguese Government at that time (Amaro 1982). Under the dictatorship of Salazar, the church experienced a revival. Salazar was himself deeply religious, and the Constitution and labor statute of 1933 were infused with Roman Catholic precepts, resulting in that Church and State maintained a comfortable and mutually reinforcing relationship during those times (Solsten 1993).

The establishment of the Portuguese democracy came with the Revolution of 1974, and with the Portuguese Constitution of 1976, Church and State were again formally separated. Since then, Church continues to have a special place in Portugal, but it has no longer its former social influence (Solsten 1993). Traditional Roman Catholicism flourished while Portugal was overwhelmingly poor, rural, and illiterate, but as the country became more urban, literate, and secular, the practice of religion declined and other religions are now free to organize and practice their beliefs (Menendez 2007). Since 1977, it is observed a progressive aging among the people attending religious services weekly (Teixeira 2011). As Menendez (2007) argued, the decline in religious practice over the last decades could be interpreted as a loss of intensity of religiosity. Nevertheless, in 2011, more than 90 percent of the Portuguese population consider themselves Roman Catholic in a cultural and religious sense (Teixeira 2011). To Teixeira (2012), along with the erosion of certain religious practices and representations, in Portugal, the religious factor continues to keep itself an important symbolic efficiency in the construction of imaginary and affective dimensions of the sense of belonging to a Nation or a community.

Prior literature and hypotheses development

If we consider that business and ethics cannot reasonably be separated, and if we accept that one driver of individuals’ ethical beliefs is their religious beliefs, then it seems clear that an ethically reflective workplace will include discussions of different belief systems and how they relate to the business of doing business (Ray *et al.* 2014).

Religion has long been part of economic thought and both psychology and management literature has studied the influence of religiosity in business ethics, concluding that religion is a salient component of an individual's self-identity, and that the more salient an element of one's self-identity, the more likely it will be influential in social situations, and the more likely an individual is to act in accordance with the role expectations of his/her religion (McGuire *et al.* 2012).

This point of view is fully supported by the *symbolic interactionism* (Burke 1980, Burke and Tully 1977). This theoretical framework postulates that religions offer role expectations that, when internalized through repeated social interaction, contribute to a person's self-identity and behavior. In other words, individuals occupy positions in various social structures (family, working organization, and so forth) that incorporate role expectations. The set of roles associated with a position, when internalized over time by an individual, constitutes a component of that person's identity (Burke 1980, Burke and Tully 1977). In symbolic interactionist theory the greater the number and importance of interpersonal commitments based on a particular identity (i.e., religious believer), the more salient that identity becomes and the more likely this identity will be influential in social situations, and the more likely a person's behavior will be guided by the role expectations associated with that identity (Weaver and Agle 2002). Weaver and Agle (2002) noted, however, that a religious identity need not have the same salience for each member of a particular religion, thus leading to individual differences in religiously influenced behavior. Yet, they also claim that there are categories of religious role expectations that are likely to homogeneously influence ethical behavior, and that organizational contexts can affect the salience of a person's religious role identity.

Accordingly, religion-based social norms are potentially a powerful behavioral influence because they encompass a reward and sanctioning system that inhibits unethical or opportunistic behavior (Boone *et al.* 2013). Religions provide specific ethical guidelines, emphasize the overall importance of ethical behavior, and provide adherents with a language or set of categories for describing and understanding experiences as ethical or unethical (Weaver and Agle 2002). Then, when religion is central to a person's self-identity, he or she tends to hold traditional views on moral issues and has more conservative moral standards (Barnett *et al.* 1996). Fort (1997) argues that religious thought not only appeals to the many business leaders who follow a particular belief system but also reduces the role of self-interest, enhances moral imagination, and deepens moral wisdom. As described by Ray *et al.* (2014), one point of cohesion among the large majority of religions is an emphasis on the needs of the community, rather than the desires of any one individual or institution within it.

In line with the idea that a religion-based social identity and sense of belonging affects individual behavior, recent research in accounting and finance suggests that to the extent that religious social norms are salient in the community, they influence the individual's decision-making process in business life (Boone *et al.* 2013, McGuire *et al.* 2012). For instance, Conroy and Emerson (2004) find evidence that church attendance is associated with lower individual acceptance of accounting manipulation. Longenecker

et al. (2004) also conclude that business managers and professionals who rate their religious beliefs as important are significantly less likely to approve unethical business scenarios.

Dyreng *et al.* (2012) argue that it is certainly plausible that the effects of religiosity at the individual level may be extended to the firm level, i.e., local religious beliefs impact a wide range of corporate decisions. Hilary and Hui (2009) further state that managerial style, corporate culture, employees' preferences, and investment behavior should all be congruent, and that it would be natural to expect that the culture of an organization is generally aligned with the local environment of the firm. From a theological view point, a key insight from religion is that each firm is considered as a part of a wider community in every place where it operates (Ray *et al.* 2014).

Local religious norms represent one type of social influence that is likely to affect the attitudes and culture of corporations headquartered in a given area (McGuire *et al.* 2012). Thus, to the extent that religious individuals cluster in a region, firms located in this region should employ a larger proportion of religious people and, as a result, the extent to which religious employees (managers in particular) tend to be more risk averse should be reflected in a firm's corporate culture and its behavior (Hilary and Hui 2009).

Recent literature, mainly from US and China, has explored the association between local religious beliefs and corporate decisions. Hilary and Hui (2009) find evidence that firms located in US counties with higher levels of religiosity (measured as the number of religious adherents within each county divided by total county population) display lower degrees of risk exposure, as measured by variances in equity returns or returns on assets. They exhibit a lower investment rate and less growth, but generate a more positive market reaction, when they announce new investments. Using a similar proxy for religious adherence in US areas, Dyreng *et al.* (2012) demonstrate that higher levels of religiosity are associated with a lower likelihood of financial restatement and with a less risk that financial statements are misrepresented because of overstated (understated) revenue/assets (expenses/liabilities). McGuire *et al.* (2012) compute a more comprehensive measure of religiosity for each US county, by considering three dimensions of people's religiosity (religious affiliation, attendance to religious services and importance of religion). Their study shows that firms headquartered in more religious areas present lower accounting risk, lower likelihood of accounting irregularities that result in shareholder lawsuits, and lower likelihood of accounting restatements. Although the negative association between religiosity and abnormal accruals, the authors also find a positive association between religiosity and two measures of real earnings management, suggesting that managers in US religious areas prefer real earnings management over accruals manipulation. In a more recent study Boone *et al.* (2013) confirm a negative relation between religiosity in the community and tax avoidance. They provide evidence that individual taxpayers and firms headquartered in more religious US counties are less likely to avoid taxes. The study of El Ghoul *et al.* (2012) further showed that firms located in more religious counties of US enjoy cheaper equity financing costs, being the effect larger for firms lacking alternative monitoring mechanisms.

Using data from the Chinese setting and based on geographic-proximity-based religion variables (the number of Buddhist monasteries (and Taoist temples in Du (2013) and Du *et al.* (2015) studies) within a certain radius around Chinese listed firms' registered addresses), recent studies provide evidence that is consistent with that gathered in the US. Chen *et al.* (2013) adopt accounting misconduct and discretionary accruals as the proxies for corporate governance and find that religion is significantly positively associated with corporate governance. Du (2013) uses the expense ratio as proxy for owner-manager agency costs and finds that religion is significantly negatively associated with owner-manager agency costs. Du (2014) provides evidence that Buddhism intensity is significantly negatively associated with tunneling (through inter-corporate loans). A very recently study of Du *et al.* (2015) shows that religion is significantly negatively associated with the extent of earnings management, but the negative association is less pronounced for firms with closer distance to the Chinese regulatory centers. Du *et al.* (2014a) provide further evidence that religion is significantly positively associated with Chinese listed firms' philanthropic giving and, Du *et al.* (2014b) demonstrate that Buddhism is significantly positively associated with corporate environmental responsibility.

In a more broad study, but with opposite results, Callen *et al.* (2011) investigated whether religion matters for financial reporting at the macro level (they computed financial reporting quality and religious variables at the country level). Using a cross-country data set (including 31 countries), their empirical tests indicate that earnings management is unrelated to both religious affiliation and the degree of religiosity. However, as suggested by Dyreng *et al.* (2012), the Callen *et al.* (2011) sample contains only 31 observations and it is therefore unclear whether their lack of statistical results is driven by a lack of power of their statistical estimates.

Overall, recent research, essentially based on data from US and China, suggests that the behavior of individuals, and by extension, corporate behavior, is shaped by the religious beliefs of the community in which the individual/firm is headquartered. It seems then, that local religious values cannot be separated from business life (Boone *et al.* 2013). In Portugal, while the practice of religion has been suffering from an erosion in the last decades, more than 90 percent of the population consider themselves culturally and religiously Catholic (Teixeira 2011) and the religious factor continues to keep itself an important symbolic efficiency in the construction of the sense of belonging to a community (Teixeira 2012). Thus, I predict that local religious values in Portugal contribute to corporate behavior, in terms of limiting opportunism in economic choices and outcomes. This expectation is stated formally in the first hypothesis:

H1: Firm's headquartered in the Portuguese areas with strong religious adherence are less likely to engage in earnings management behavior.

Portugal is a country largely dominated by the Catholic religion and the *Fátima* sanctuary is, as described by Teixeira (2012), from almost a hundred years the focal point of the Portuguese Catholicism and the largest place of pilgrimage of the country.¹ It represents the contemporary Portuguese catholic

“eclesiosphere” (Teixeira 2012). Every year, the *Fátima* sanctuary receives between four and five millions of visitors, rivaling with the *Lourdes* sanctuary in France. Since the apparition of the Virgin Mary to three peasant children in 1917, *Fátima* has gradually become a center of pilgrimage and religious cult in Portugal. *Fátima* allows the characterization of the Portuguese contemporary society beliefs (Teixeira 2012). According to Teixeira (2012), from a historical and anthropological view point, the pilgrimage places assume a fundamental role in the maintenance of a collective memory that enables the construction and preservation of a religious belief, and have the ability to integrate individual, family and collective interests and alliances. In the same line, Do *et al.* (2015) argue that these representative religious sites have more far-reaching influence because of their historical development, religious heritage, and inter-generational inheritance. Religious site is an indicator of the religious intensity of the people in the vicinity, and thus accordingly, the distance between a religious site and a firm can reflect religious influence or religious atmosphere in a region (Do *et al.* 2015).

Being the pilgrimage places characterized by higher levels of religiosity, and based on recent research which gives evidence that religion-based social identity affects behavior of individuals and firms, one can expect that religious social norms will influence the manager’s reporting decisions in a way that firms headquartered in these areas will present higher financial reporting quality. This expectation leads to the second hypothesis:

H2: Firm’s headquartered in the district of *Fátima* sanctuary (the largest center of pilgrimage and religious cult in Portugal) are less likely to engage in earnings management behavior than firms headquartered in other areas of the country.

Research design

Model specification

To test the effect of religiosity on financial reporting quality (hypotheses H1 and H2) the basic regression model (1) is estimated:

$$EQ = \beta_0 + \beta_1Religiosity + \beta_2CultArea + \beta_3FirmSize + \beta_4FirmAge + \beta_5ROA + \beta_6Grow + \beta_7Lev + \beta_8Loss + \beta_9Tax + \beta_{10}Population + \beta_{11}Age + \beta_{12}Income + \beta_{13}Unemployment + \beta_{14}Education + \beta_{15}Urban + \beta_{16}Year + \beta_{17}Industry + \varepsilon \quad [1]$$

The variables of model (1) are defined in Table 1. Measurement concepts of the dependent and test variables are explained in the next two Sections.

The dependent variable in the model (EQ_{it}) is a measure of earnings quality, based on firm’s financial reporting quality with respect to abnormal accruals.

The test variables are *Religiosity* and *CultArea*. *Religiosity* corresponds to the degree of religiosity in the region where the firm is located. Data on religiosity come from the European Values Study Longitudinal Data File 1981-2008 (EVS 1981-2008). $CultArea_{it}$ is a dummy variable taking value 1 the firm is

headquartered in the largest Portuguese area of religious cult (the district of *Leiria*, where the *Fátima* Sanctuary is located), 0 otherwise. Based on prior literature, I expect that firms headquartered in areas with higher religious adherence are less likely to engage in earnings management behavior.

In addition to the variables of interest, I also control for a vector of firm-level characteristics that prior research suggests are associated with financial reporting quality. Data on earnings quality measures and firm-level characteristics come from the AMADEUS database. *FirmSize* is included because large companies have incentives to report high quality earnings as they are subject to more scrutiny from financial analysts and investors (Chen *et al.* 2005). Yet, past research also suggests that large firms manage earnings downward due to political costs (Haw *et al.* 2004, Maijoor and Vanstraelen 2006). *FirmAge* captures the fact that younger companies are less stable and are more likely to encounter financial distress and manage earnings to reach better profitability levels (Carey and Simnett 2006). As accruals are likely to be positively associated with a company's growth opportunities, changes in sales revenue (*Grow*) and return on assets (*ROA*) are also included in the model (*e.g.*, Young 1999, Johnson *et al.* 2002, Haw *et al.* 2004). Financial leverage (*Lev*) captures risk associated with higher levels of debt, that is, firms can manage earnings to avoid debt covenant violation or to facilitate debt renegotiations (*e.g.*, Becker *et al.* 1998, Young 1999, Frankel *et al.* 2002, Carey and Simnett 2006). *Loss* is included as companies with continued losses are more likely to fail and manage earnings to hide poor performance (Carey and Simnett 2006) or facilitate debt renegotiations (Becker *et al.* 1998, Menon and Williams 2004, Maijoor and Vanstraelen 2006). *Tax* is included because in Portugal the reported earnings in individual financial statements are used for tax assessment and a high alignment between tax and financial accounting plays an important role in the firms' reporting behavior (Ball and Shivakumar 2005, Burgstahler *et al.* 2006), *i.e.*, firms can manage earnings for tax purposes.

I also control for different region-level demographic characteristics (by NUTS II) that have been shown to be correlated with religious participation (*Population, Age, Income, Unemployment, Education, and Urban*) (Iannaccone 1998, Hilary and Hui 2009, McGuire *et al.* 2012). I want to make sure that *Religiosity* and *CultArea* capture the effect of religious adherence *per se*, as opposed to simply being correlated with the other demographic characteristics. Consistent with Hilary and Hui (2009) and McGuire *et al.* (2012), I do not have strong predictions about the association between the demographic variables and earnings quality (after controlling for *Religiosity* and *CultArea*). I use data obtained from the Portuguese Census Bureau to compute region-level demographic variables (by NUTS II). Data on demographic variables by NUTS II are available for 2001 and 2011. To construct region-level demographic variables for sample years between 2003 and 2008, I linearly interpolate the values from 2001 and 2011.

I use the AMADEUS Company Location designation to match the region information with firm location. As suggested by Hilary and Hui (2009), a concern with this approach is that AMADEUS only reports the current location of a firm's headquarters and therefore this introduces noise in the measurement of my variable. However, the number of firms that relocate is generally small and, although the magnitude

of the measurement error might be correlated with the dependent variable, it seems unlikely that this would be the case for the direction of the measurement error (Hilary and Hui 2009).

Complete definitions of the variables in model (1) are provided in Table 1.

[Insert Table 1 here]

Measuring Earnings Quality

Prior research uses a variety of proxies to measure earnings quality which can be organised into three broad categories: properties of earnings, investor responsiveness to earnings, and external indicators of earnings misstatements (Dechow *et al.* 2010). I measure earnings quality by examining firms' earnings management behavior with respect to abnormal accruals (e.g., Davis *et al.* 2009, Reichelt and Wang 2010, Gul *et al.* 2013). Earnings management *per se* does not violate generally accepted accounting principles, but, firms that manage earnings are perceived as having lower quality earnings (Francis and Yu 2009).

I employ two separate proxies to measure abnormal accruals: a modified version of the Jones (1991) model and the Dechow and Dichev (2002) model, both incorporating the asymmetric recognition of gain and loss in accruals as described by Ball and Shivakumar (2006). I use two separate measures of earnings quality to examine the robustness of the association with the religiosity variables.² Because each measure of abnormal accruals has its own limitations, prior research does not rely on any single measure of earnings quality. Between the several alternative proxies for earnings quality available in the literature, these models were selected because they attempt to broadly capture earnings quality, i.e., they attempt to capture both intentional and unintentional factors that influence the quality of corporate earnings (DeFond 2010).

The first approach to measure abnormal accruals is a modified version of the Jones (1991) model (Jones 1991, Dechow *et al.* 1995, Teoh *et al.* 1998 - as described in Ferguson *et al.* (2004)), incorporating the asymmetric recognition of gain and loss in accruals as described in Ball and Shivakumar (2006) (henceforth, the Jones Model). The goal of the original Jones (1991) model was to distinguish earnings that would have been reported in the absence of agency cost from the self-interested earnings manipulation by managers. However, as stated by DeFond (2010), the original model evolved beyond simply being a proxy for management opportunism to being used more broadly to capture both intentional and unintentional factors that influence earnings quality. The second approach to measure abnormal accruals is a variation of the Dechow and Dichev (2002) model which incorporates the asymmetric recognition of gain and loss in accruals, as described in Ball and Shivakumar (2006) (henceforth, the DD Model). The Dechow and Dichev (2002) model does not attempt to disentangle intentional estimation errors from unintentional errors since they imply low-quality accruals and earnings. Instead, the model assumes that even in the absence of intentional earnings management, accrual quality will be systematically related to firm and industry characteristics, i.e., the volatility of operations will systematically be related to the propensity to make estimation errors (Dechow and Dichev 2002). I include both in the Jones and in DD Model the asymmetric recognition of gain and loss in accruals, because estimating earnings quality could be improved by incorporating in those models the gain and loss recognition role of accruals and the nonlinearity implied by

the asymmetry therein (Ball and Shivakumar 2006). Finally, I use the non-signed versions of both measures of abnormal accruals because this allows using the whole sample and the quantification of the overall magnitude of earnings management regardless of the direction of accruals (Bauwhede and Willekens 2004). For technical details about the abnormal accruals models, see Table 1.³

Measuring Religiosity

Data on religiosity are obtained from the European Values Study Longitudinal Data File 1981-2008 (EVS 1981-2008). According to the website, the EVS is a large-scale, cross-national, and longitudinal survey research program on basic human values.⁴ It provides insights into the ideas, beliefs, preferences, attitudes, values and opinions of citizens all over Europe (covering data on life, family, work, religion, politics and society). The EVS started in 1981, when a thousand citizens in the European Member States of that time were interviewed using standardized questionnaires. Every nine years, the survey is repeated in an increasing number of countries. The fourth wave in 2008 covers no less than 47 European countries/regions, from Iceland to Azerbaijan and from Portugal to Norway. In total, about 70,000 people in Europe were interviewed. EVS provides data on several dimensions of religiosity, including data on the number of religious adherents within each region of Portugal. EVS information on religiosity from Portugal at the region level is available for three years (1990, 1999 and 2008).

The first variable of interest is the degree of religiosity (*Religiosity*) in the region where the firm is located. Following Boone *et al.* (2013), I calculate *Religiosity* as total number of religious adherents by Portuguese region (NUTS II) divided by the total residents in the region, as reported in the 1999 and 2008 EVS surveys. More specifically, I compute *Religiosity* in 1999(2008) by dividing the 1999(2008) survey data on religious adherents by NUTS II (number of religious adherents) by the 1999(2008) data on residents by NUTS II (number of residents by NUTS II).⁵ To construct religious adherence (*Religiosity*) for sample years between 2003 and 2008 I follow prior research (Hilary and Hui 2009, Dyreng *et al.* 2012, Boone *et al.* 2013) and linearly interpolate the data to obtain the values in the missing years (to compute *Religiosity* in 2003, 2004, 2005, 2006, and 2007, I linearly interpolate using the religious adherence values from 1999 and 2008). Approximating *Religiosity* linearly increases the power of the tests and gives me the opportunity to study the time-series properties of my setting. Conceptually, the larger the fraction of the population that are religious adherents in a region, the larger the influence of religious social norms on corporations headquartered in the region (Dyreng *et al.* 2012).

The second measure of religiosity, which I label of *CultArea* and is a dummy variable taking value one if a firm is headquartered in the largest Portuguese area of religious cult (the district of *Leiria*, where the *Fátima* sanctuary is located), zero otherwise. The reason behind the inclusion of this variable is that the *Fátima* sanctuary is, as described by Teixeira (2012), the focal point of the Portuguese Catholicism and the largest place of pilgrimage of the country. Because *Fátima* allows the portrayal of the Portuguese society beliefs (Teixeira 2012) and being these pilgrimage places characterized by higher levels of religiosity, one

can expect that religious social norms will influence the manager's reporting decisions in a way that firms headquartered in these areas will present lower levels of earnings management.

Sample

Two different samples are created for the six-year period from 2003 to 2008: Sample A and B are designed to test the formulated hypotheses using the estimated abnormal accruals from the Jones Model and DD Model, respectively. Data for initial samples consist of all Portuguese privately held limited and joint-stock firms available at AMADEUS database, headquartered in Portugal and that have financial data available for the period of 2003 through 2008 (I use individual financial statements data), and the necessary data to estimate the abnormal accruals models.^{6, 7} Estimating the abnormal accruals models further required financial data for the two years prior to 2003 (the DD Model also requires financial data for the following year). As in prior studies (e.g., Frankel *et al.* 2002, Ferguson *et al.* 2004, Carey and Simnett 2006), observations for financial, insurance, and real estate institutions; public administrative/services institutions; agriculture, forestry, and fishing; transportation, communications, electric, gas, and sanitary services are excluded from the analysis, because they have specific accounting requirements, a high degree of complexity, and fundamental differences in the accrual generating process. Furthermore, as the accruals models are both estimated in the cross-sectional version, in order to efficiently estimate the regressions for each industry and year combination, a minimum of 10 observations *per* unit of analysis is imposed (i.e., the two-digit industry codes with less than 10 observations are eliminated).⁸ Finally, extreme outliers in *ROA* and *Grow* were eliminated.⁹ The sample selection process led to a final sample of 78,177 firm-years for Sample A, and 69,756 firm-years for Sample B. Table 2 presents the sample selection process.

[Insert Table 2 here]

Empirical results and discussion

Descriptive statistics

Table 3 reports summary statistics of variables used in this study. Concerning the religious adherence, Table 3, Panel A presents geographical data by reporting the average value of religious adherents in Portuguese regions. The largest religious adherence is recorded in the north region of Portugal, with 95 percent of adherents, of which, 92 percent have Catholic affiliation. The region where is located the capital of Portugal (*Lisboa*) and southern region of the country (*Alentejo*) are those which present the lowest religious adherence and the smallest Catholic affiliation.

Table 3, Panel B presents descriptive statistics for the remaining variables. Distribution of the absolute value of abnormal accruals (*absAwca*) has a median of 0.04 both in Sample A and B. Regarding the firm-level control variables, which have very similar values in Sample A and Sample B, it is possible to observe that firms present, on average, a return on assets (*ROA*) and a sales growth (*Grow*) of 3 percent and 9 percent, respectively. Their debt level represents about 45 percent of their total assets. Also, around 15 percent are financially distressed companies with continued losses. More than 80 percent of the firms are headquartered in urban areas and, in average, 7.6 percent of the firms are located in the largest Portuguese

area of religious cult (the district of *Leiria*, where the *Fátima* sanctuary is located). Concerning the region-level demographic control variables reported in Table 3. Panel C (based on data of Portuguese NUTS II regions), while I use the natural logarithm of each region's population to control for skewness in that variable, the raw data indicate that the average population in Portuguese regions is of 1,989,865 persons. Additionally, the average age of residents is roughly 41 years old, the average gross domestic product is of 43.58 Eur millions, approximately 10.2 percent of residents are unemployed, and around 14.5 percent of the population are college graduates.

[Insert Table 3 here]

Table 4, reports the correlation matrices for variables used in this study with significance levels reported at the 0.05 level. As hypothesized, religiosity variables (*Religiosity* and *CultArea*) are negatively correlated with each measure of abnormal accruals (*absAwca*). The firm-level control variables are correlated with abnormal accruals in a manner that is broadly consistent with prior research. Table 4 further reports that *Religiosity* is negatively correlated with the average age of residents, the education level, and the average income. *Religiosity* is also positively correlated with the population level, the percentage of unemployed people in Portuguese regions, and also with urban areas. The significant correlation between the dependent and control variables underscores the importance of controlling for these variables in the multivariate analysis. As one might expect, the region-level demographic variables exhibit correlations with each other that are larger in magnitude than the correlations among the firm-level control variables. Overall, collinearity of *Religiosity* and *CultArea* with the control variables is not likely to be a significant issue in the multiple regressions.¹⁰

[Insert Table 4 here]

Multivariate Results

Table 5 presents the results of several multivariate tests that investigate the association between religiosity and corporate financial reporting quality. The first and third models in Table 5 are estimated using ordinary least squares (OLS) regression with robust standard errors clustered at the firm-level, and with year- and industry-fixed effects controlled. The year and industry indicators (dummies) controls for common shocks which could cause cross-sectional correlation in the errors. The firm-level robust clustering of standard errors corrects for heteroskedasticity and for the possibility of serial correlation attributable to unobserved firm effects that cause serial correlation in the errors. The second and fourth models in Table 5 are estimated using a firm-level random-effect model (RE) (with robust standard errors) that control for the omitted-variables threat (the concern is that variables may be correlated with the error term but not included in the model).¹¹ Since the results are consistent in the models estimations using OLS regression or the RE approach, I discuss the results in a general sense. The *R*-squared indicate that the models are successful in explaining some of the variance in abnormal accruals.

In line with H1, I expect that firms headquartered in the Portuguese areas with strong religious adherence are less likely to engage in earnings management. Consistent with this prediction, and after

controlling for several firm-level variables and region-level demographic variables, Table 5 shows a statistically significant negative association between *Religiosity* and *absAWCA* in all the models. I interpret this result as evidence in support of H1 that firms located in areas with strong religious adherence are less likely to engage in earnings management behavior. The evidence collected in this study is in line with extant research which documents that local religious beliefs are related with a wide range of corporate decisions, including financial reporting irregularities and accruals-based earnings manipulation (Dyrenge *et al.* 2012, McGuire *et al.* 2012, Chen *et al.* 2013, Du *et al.* 2015), risk exposure (Hilary and Hui 2009), and tax avoidance (Boone *et al.* 2013).

Table 5 also presents a statistically significant negative relation between *CultArea* and *absAWCA* in all the models (and after controlling for several firm-level variables and region-level demographic variables). I interpret this result as evidence that firms headquartered in the largest center of pilgrimage and religious cult in Portugal (the district of *Fátima* sanctuary) are less likely to engage in earnings management behavior than firms headquartered in other areas of the country. This result supports H2, and is in line with the argument that the pilgrimage places assume a fundamental role in the maintenance of a collective memory that enables the construction and preservation of a religious belief, and have the ability to integrate individual, family and collective interests (Teixeira 2012). The evidence collected in this study suggests these pilgrimage places reinforce the religion-based social identity, which in turn affects behavior of individuals and firms, in a way that firms headquartered in these areas present higher financial reporting quality.

Consistent with recent research (Dyrenge *et al.* 2012, McGuire *et al.* 2012, Boone *et al.* 2013, Chen *et al.* 2013, Du *et al.* 2015), the results suggest that the behavior of individuals, and by extension, corporate behavior, is shaped by the religious beliefs of the community in which the firm is headquartered, even in a context where the religious intensity decreased in the last decades.

Results for control variables show that, in line with Chen *et al.* (2005) and Carey and Simnett (2006) arguments, the coefficients for *FirmSize* and *FirmAge* reveal that higher and older firms present higher financial reporting quality. The coefficients for *ROA* and *Grow* suggest significant evidence that firms with high grow opportunities tend to engage in earnings management behavior. As suggested by Francis and Yu (2009), growth firms may have greater incentives to manage earnings in order to meet market expectations or to meet (beat) earnings benchmarks. In line with past research (Carey and Simnett 2006, Maijor and Vanstraelen 2006), the coefficients for *Lev* and *Loss*, suggest that companies with higher levels of debt and/or with continued losses present lower earnings quality. The coefficients on *Tax* are not statistically significant. Finally, several region-level demographic variables are associated with earnings quality. In particular, firms headquartered in urban areas (*Urban*) are more likely to engage in earnings management behavior.

[Insert Table 5 here]

Supplemental Analyses

An Aggregate Measure of Religiosity and Earnings Quality

According to past research, religiosity is defined by three distinct elements: cognitive, affective, and behavioral (Parboteeah *et al.* 2008). Therefore, similar to McGuire *et al.* (2012), I compute a comprehensive (alternative) measure of region-level religiosity and I examine its relationship with financial reporting quality.

To develop the comprehensive measure I use responses to three questions asked by EVS survey of 2008, that correspond to the three distinct elements of religiosity defined above: (1) Are you affiliated with a religion? (cognitive dimension; answers: 1= yes; no = 0); (2) How important is religion in your life? (affective dimension; answers fall on a scale from 1 to 4, where 1= not important at all, and 4= very important); and (3) How often do you attend religious services? (behavioral dimension; answers fall in a scale from 1 to 7, where 1= never, and 7= more than once in a week). I first compute three measures at region-level, one for each religious dimension, which I call *ReligiousAF*, *ReligiousImp* and *ReligiousAT*. Each of these three measures corresponds to the sum of the answers to the EVS interview question, divided by the number of residents in each region (as reported in EVS 2008 data file). I then estimate an aggregate measure of region-level of religiosity, which I call *AggReligiosity* and corresponds to the average of the three measures of religiosity (by NUTS II). I only computed the aggregate measure of religiosity to the year 2008, because making the analysis to the total sample implies estimating the three distinct dimensions of religiosity by linear interpolation to the missing years, and not being the respondents to the EVS surveys of 1999 and 2008 the same, estimating the affective and behavioral dimensions of religiosity by linear interpolation is quite subjective.

Table 6 provides the results of the re-estimation of the main model in cross-section for the year 2008, and reveals that the coefficient of the aggregate measure of religiosity (*AggReligiosity*) remains significantly negative both in Jones and DD model, thus confirming that firms headquartered in areas with strong religious adherence are less likely to engage in earnings management.

[Insert Table 6 here]

Religion in Urban versus Rural Areas

Past research advocates that rural areas are generally characterized by higher levels of religiosity and, thus, firms located in those areas have higher earnings quality than firms located in urban areas (Dyreng *et al.* 2012, McGuire *et al.* 2012, Boone *et al.* 2013).

To rule out that the main results regarding the influence of religion on financial reporting quality are not driven by firms headquartered in rural areas, I replicate the main tests using a subsample of firms headquartered in Portuguese urban areas. I use data obtained from the Portuguese Census Bureau to distinguish urban from rural areas of the country. The Portuguese Census Bureau considers a region (by NUTS II) as urban when the population density is equal or higher than 100 residents per square kilometre.

Table 7, presents the results of the multivariate tests of the relation between religiosity and earnings quality within a subsample of firms headquartered in Portuguese urban regions. *Religiosity* and *CultArea* remain negatively and statistically significantly related with earnings management. Therefore, the association between religiosity and financial reporting quality that I document in the main tests cannot be solely attributed to a rural versus urban firm phenomenon.

[Insert Table 7 here]

Religion and External Financial Monitoring

McGuire *et al.* (2012) argue that if religious social norms help to deter financial reporting irregularities within a firm, it is possible that the association between religiosity and earnings management will be less important for firms that already have their financial reporting system under high levels of external monitoring. Alternatively, religious social norms could complement other forms of external monitoring. Consequently, I examine whether the relation between religiosity and earnings quality varies in subsamples of firms whose financial statements are subject (or not) to financial audits.

In Portugal, the financial statements audit is only mandatory when it results from a legal, statutory, or contractual requirement, or for firms that have (or are required to have) an accounting system organized in accordance with the Portuguese Accounting Standards and meet the requirements laid down in article 262(2) of the Portuguese Companies Act (companies that meet, during two years, at least two of the following criteria: total assets greater than 1,500,000 euros/year, turnover level greater than 3,000,000 euros and with more than 50 employees). The vast majority of the Portuguese companies are small firms whose financial statements are not mandatorily audited.

As reported by Cosserat (2005), the main objectives of a financial audit are to obtain a reasonable assurance about the correctness of the accounts, detect fraud and errors, and provide an independent opinion on the truth and fairness of the financial statements, thus enhancing the degree of confidence of intended users in the financial statements.

I define firms whose financial statements are subject to a financial audit as having external financial monitoring. Table 8 reports the results of the multivariate tests of the relation between religiosity and earnings quality within subsamples of firms whose financial statements are subject (or not) to financial audits. I find a statistically negatively relation between earnings management and both measures of religiosity (*Religiosity* and *CultArea*), equally in the subsample of audited firms and non-audited firms. Likewise, the results suggest that religious social norms could complement other forms of external financial monitoring. The results remain qualitatively similar when I analyse whether the relation between religiosity and earnings quality varies in subsamples of firms audited by Big Four audit firms/Non-Big Four audit firms (untabulated results reveal that *Religiosity* and *CultArea* remain significantly negative in both subsamples).

[Insert Table 8 here]

Additional Robustness Tests

In untabulated analyses, I perform a number of additional robustness tests to provide support for the main results. First, I examine whether the main results are robust to alternative calculations of abnormal accruals. The Jones Model and the DD Model are alternatively estimated from pooled data using within-industry observations, and also based in total accruals. Untabulated results reveal that these procedures do not materially affect the main findings (i.e., the coefficient of *Religiosity* and *CultArea* remain significantly negative).

Second, I analyse whether inferences collected in the main analysis are robust to an alternative specification of religiosity. Being Portugal largely dominated by Catholic religion (Teixeira 2012), I use an alternative measure of religiosity which is computed as the ratio of religious adherents with catholic affiliation in the region to the residents in the region (NUTSII). As before, I use data from EVS survey and I linearly interpolate values from 1999 and 2008 to generate the religiosity variable values for the sample years 2003, 2004, 2005, 2006 and 2007. Untabulated re-estimations of the main model show that the coefficient of the alternative specification of *Religiosity* remains significantly negative.

Third, although I apply several techniques to address potential endogeneity, it is possible that firms with specific characteristics (omitted from the analysis) prefer to locate in more religious areas. Extant research suggests that endogeneity is not a major threat since the choice of corporate headquarters location is driven by proximity to customers, suppliers, and production inputs (El Ghouli *et al.* 2012). Yet, I control for the potential endogeneity between religion and earnings management by following prior research (El Ghouli *et al.* 2012, Du *et al.* 2015), and I re-estimate the baseline regression model by narrowing the samples to firms from the mining, construction, wholesale and retail sectors.¹² John *et al.* (2011) argue that firms in these sectors show a pronounced tendency to locate in areas reflecting the nature of their production process, being not likely to be driven by religious considerations. Despite the reduction in power due to the smaller sample size (Sample A, now contains 51,325 firm-years and Sample B 45,380 firm-years), coefficients of *Religiosity* and *CultArea* remain significantly negative at the 5% level. This evidence helps dispel concerns that self-selection bias is spuriously responsible for the core results.

Conclusion

Prior research provides evidence that local religious beliefs influence a wide range of corporate decisions, such as financial reporting irregularities (Dyregang *et al.* 2012, McGuire *et al.* 2012, Chen *et al.* 2013, Du *et al.* 2015), risk exposure (Hilary and Hui 2009, El Ghouli *et al.* 2012), tax avoidance (Boone *et al.* 2013), and corporate environmental responsibility (Du *et al.* 2014b). Despite the relevant information that research provides, it only reflects the US and China settings, leaving for scarce evidence on other contexts, and different countries may have diverse religious intensity and different religious configurations.

This study extends this line of research to an European country, and examines the association between religiosity and financial reporting quality. Although Portugal has experienced a decrease in religious practices over the past decades, I find evidence that firms headquartered in areas with strong religious

adherence generally experience lower incidence of earnings management. This result holds separately for Catholic affiliation. I also document that firms headquartered in the core area of the Portuguese religious cult (the district where the *Fátima* Sanctuary is located) present higher earnings quality than firms headquartered in other areas of the country. In additional analyses, I provide further evidence that the results are robust to an alternative measure of religiosity, that are not driven by firms headquartered in rural areas, and that religious social norms may complement other forms of external financial monitoring in promoting earnings quality. In line with past research (Dyreng *et al.* 2012, McGuire *et al.* 2012, Boone *et al.* 2013, Chen *et al.* 2013, Du *et al.* 2015), the main results in this study suggest that local religious values stimulate individual's ethical behavior and, by extension, corporate behavior, thus representing a mechanism for reducing costly agency conflicts, and promoting corporate earnings quality.

Still, I acknowledge that the inference is subject to some caveats. First, an inherent limitation stems from the abnormal accruals models used to measure earnings quality, as past research documents that they have residual problems and are subject to some potential measurement error. Thus, the validity of the main results is subject to the efficiency of those models. Second, and similar to that described by Dyreng *et al.* (2012), I cannot directly measure the religious affiliation of individual managers. As such, I acknowledge that the inability to directly measure religious adherence is a limitation of this study. Third, despite I consider the interaction between religious adherence and a financial statements audit, due to lack of data, I cannot control for the interaction between religiosity and other governance mechanisms and this may be an important area of inquiry (Dyreng *et al.* 2012, McGuire *et al.* 2012). Finally, while I apply several techniques to address this problem, I recognize that the empirical analysis can still suffer from endogeneity.

Future research may expand the analysis from a single country to a cross-country European setting.

¹ According to Teixeira (2012) around eighty percent of the Portuguese population is catholic and more than ninety percent of the Portuguese population with religious affiliation is catholic. Also, Portugal is a small country with many pilgrimage places, but none of them has the influence of the *Fátima* Sanctuary.

² The correlation between the abnormal accruals values (*absAWCA*) obtained from the Jones Model and the DD Model is 0.52 (significant at the one percent level).

³ The Jones and DD models that I use focus exclusively on the working capital component of accruals because it appears that working capital accruals are more likely than other accruals to be subject to manipulations (Burgstahler and Dichev 1997, Ashbaugh *et al.* 2003).

⁴ http://www.europeanvaluesstudy.eu/frmShowpage?v_page_id=4386315781860116.

⁵ EVS 1999 survey only contains data on *Religiosity* by NUTS II, data by NUTS I were not available. So, I calculate Religiosity only by NUTS II. Furthermore, as described by McGuire *et al.* (2012) and Boone *et al.* (2013), measuring religiosity across a broader geographical unit is preferable over using county-level religiosity measures because in many urban areas, people commute to city from any one of numerous surrounding counties. Using a broader geographical unit reduces the likelihood of representing inaccurately the religiosity of local populations surrounding company headquarters.

⁶ I choose to perform the analysis among privately held firms because they are the vast majority of the Portuguese companies. According to the Portuguese Census Bureau firms working in Portugal are small firms (in 2012, 96 percent were small firms with less than 10 employees). Also, the number of listed companies is very small (in average, 50 firms were listed in the Euronext Lisbon, from 2000 to 2012). Furthermore, as stated by Burgstahler *et al.* (2006), private and listed firms are fundamentally different, as private firms are less reliant on earnings to communicate firm performance (relative to listed firms, private firms have relatively concentrated ownership structures and can efficiently communicate among shareholders via *private* channels) it

is of less concern if they make earnings less informative in the process of managing earnings to minimize taxes (given the high alignment between tax and financial accounting in Portugal).

⁷ In this study I use individual financial statements of privately held firms (unlisted) to infer the quality of the reported earnings of firms to the six-year period from 2003 to 2008. As described by Guerreiro *et al.* (2012), in Portugal, the *Sistema de Normalização Contabilística* (SNC) (Portuguese Accounting Standards) came into force in January 2010. SNC is the IFRS adaptation to the Portuguese context and to be followed by unlisted companies. In the period 2005–2009, Portuguese law allowed unlisted companies to use IFRS in both the consolidated and individual accounts. However, the voluntary adoption of IFRS in individual accounts was under two conditions: first, that companies maintained another accounting system for individual accounts in accordance with the national accounting system; and second, that companies must have had their accounts publicly certified. Thus, the transition from Portuguese GAAP to IFRS does not affect the measures of earnings quality computed in this study.

⁸ Examples of studies that estimated the cross-sectional or time-series versions of the Jones-type models that required a minimum of about 10 observations for efficiently estimating the regression parameters include Haw *et al.* (2004) and Gul *et al.* (2013).

⁹ I constructed box plot graphics for all the variables but only *ROA* and *Grow* revealed the presence of severe outliers, so that the minimum value of *ROA* was winsorized at -0.25, and the maximum value of *Grow* was winsorized at 5.

¹⁰ I confirmed this by examining the VIF in the multiple regressions, and in all instances, the VIF was below the threshold of 10 that has been suggested in literature as indicative of a multicollinearity problem.

¹¹ Greene (2007) indicates that both fixed-effect and random-effect models control for omitted variables in panel data. A Hausman specification test (not reported) shows that a random-effect model is more appropriate to test Model (1) and given the short time series of six years in my data, and the low within-variation of the test variable (variation of *Religiosity* at the firm level over time is low), I chose a firm-level random-effect model to test the model.

¹² El Ghouli *et al.* (2012) and Du *et al.* (2015) also included in their samples firms from the agriculture and utilities sectors. In this study, these sectors were removed during the sample selection process, because they have fundamental differences in the accrual generating process (see the *Sample* subsection for more details).

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Table 1 – Definition of Variables

Panel A. Dependent Variable - EQ_{it} - a measure of earnings quality of firm i in year t	
$absAWCA_{it}$	<p>Absolute value of abnormal working capital accruals scaled by lagged total assets of firm i in year t, computed through modified versions of the Jones (1991) model (Jones, 1991, Dechow <i>et al.</i> 1995, Teoh <i>et al.</i> 1998 - henceforth the Jones Model) and the Dechow and Dichev (2002) model (henceforth the DD Model), both incorporating the asymmetric recognition of gain and loss in accruals as described in Ball and Shivakumar (2006).</p> <p>The Jones Model - Absolute value of abnormal working capital accruals are the residuals of the following model:</p> $WCA_{it}/TA_{it-1} = \beta_0(1/TA_{it-1}) + \beta_1[(\Delta REV_{it} - \Delta REC_{it})/TA_{it-1}] + \beta_2CFO_{it} + \beta_3DCFO_{it} + \beta_4DCFO_{it} * CFO_{it} + \beta_5\Delta CFO_{it} + \beta_6\Delta\Delta CFO_{it} + \beta_7\Delta\Delta CFO_{it} * \Delta CFO_{it} + \varepsilon_{it}$ <p>where:</p> <p>WCA_{it} = working capital accruals of firm i in year t, computed as (change in current assets – change in cash/cash equivalents cash) – (change in current liabilities – change in short-term debt);</p> <p>TA_{it-1} = total assets of firm i in year $t-1$;</p> <p>ΔREV_{it} = change in sales revenues of firm i in year t;</p> <p>ΔREC_{it} = change in accounts receivable of firm i in year t;</p> <p>Proxies for the asymmetric recognition of gain and loss in accruals:*</p> <p>CFO_{it} = cash flow from operations of firm i in year t, computed indirectly by subtracting the accrual component from earnings: CFO = operating income – working capital accruals (this procedure was used because direct information on firm’s CFO was not presented in a widely form in AMADEUS database; also, in Portugal, firms under certain size are not required to prepare cash flow statements);</p> <p>$DCFO_{it}$ = dummy variable taking value 1 if $CFO_{it} < 0$ and 0 otherwise, of firm i in year t;</p> <p>$DCFO_{it} * CFO_{it}$ of the firm i in year t;</p> <p>$\Delta CFO_{it} = CFO_{it} - CFO_{it-1}$ of firm i in year t;</p> <p>$\Delta\Delta CFO_{it}$ = dummy variable taking value 1 if $\Delta CFO_{it} < 0$ and 0 otherwise, of firm i in year t;</p> <p>$\Delta\Delta CFO_{it} * \Delta CFO_{it}$ of firm i in year t.</p> <p>All variables are scaled by lagged total assets (Coppens and Peek 2005, Carey and Simnett 2006).</p> <p>* Ball and Shivakumar (2006) used four different proxies for the asymmetric recognition of gain and loss in accruals, three of them financial reporting (“book”) measures (level of cash flows, change in cash flows, and industry-adjusted cash-flows) and the fourth based on stock market returns. Due to data restrictions the proxy based on stock market returns is not used. Also, the industry-adjusted cash-flows proxy is not used because as Ball and Shivakumar (2006, p. 216) indicate, this proxy “ignores gains and losses from industry-wide shocks to current and future cash flows”.</p> <p>Jones (1991) estimated the original model using long time-series of firms. However, to make a reliable estimation of abnormal accruals using the time-series approach it is necessary a minimum of observations over the period (usually 10 years of data). Due to sample restrictions, I estimate Jones Model cross-sectionally over the investigation period (2003 to 2008). This approach is widely used in the literature (Jones <i>et al.</i> 2008, Dechow <i>et al.</i> 2011). First, OLS is used to estimate separate regressions for each two-digit Portuguese SIC code (<i>CAE – Rev. 2.1 – Classificação das Atividades Económicas</i>) and year combination to obtain industry-specific estimates of β (it are included 26 industry year-groups and at least 10 observations are required per industry-year combination; given all industry-year combinations the median value of observations is of 220 firms and the mean value of the adjusted R-squared is of 0.76). The fitted coefficients are then used to derive normal accruals for the sample of firms. Abnormal accruals are defined as the residual from the regression of firm i in year t. Higher values of $absAWCA_{it}$ indicate lower earnings quality.</p> <p>The DD Model - Absolute value of abnormal working capital accruals are the residuals of the following model:</p> $WCA_{it} = \beta_0 + \beta_1CFO_{it-1} + \beta_2CFO_{it} + \beta_3CFO_{it+1} + \beta_4DCFO_{it} + \beta_5DCFO_{it} * CFO_{it} + \beta_6\Delta CFO_{it} + \beta_7\Delta\Delta CFO_{it} + \beta_8\Delta\Delta CFO_{it} * \Delta CFO_{it} + \varepsilon_{it}$ <p>where:</p> <p>WCA_{it} = working capital accruals of firm i in year t;</p> <p>CFO_{it-1} = cash flow from operations of firm i in year $t-1$;</p> <p>CFO_{it} = cash flow from operations of firm i in year t;</p> <p>CFO_{it+1} = cash flow from operations of firm i in year $t+1$;</p> <p>The proxies for asymmetric recognition of gain and loss in accruals (CFO_{it}; $DCFO_{it}$; $DCFO_{it} * CFO_{it}$; ΔCFO_{it}; $\Delta\Delta CFO_{it}$; $\Delta\Delta CFO_{it} * \Delta CFO_{it}$) are those used in the Jones Model. ΔCFO_{it} is not included as a separate variable in the regressions because it induced perfect correlation with the independent variables used to explain accruals.</p> <p>All variables are scaled by lagged total assets (Dechow and Dechev, 2002; Carey and Simnett, 2006).</p> <p>Originally, Dechow and Dechev (2002) estimate their model using a firm-level time-series regression approach (requiring at least eight years of data to estimate the model) and consider the standard deviation of the firm-specific residuals as a firm-level measure of accrual quality, where higher standard deviation denoted lower quality. I do not have eight years of data for all the firms, so I estimate the DD Model through the cross-sectional version, over the investigation period (2003 to 2008). I estimate separate regressions (OLS) for each two-digit Portuguese SIC code and year combination to obtain industry-specific estimates of β (it are included 26 industry-year groups and at least 10 observations are required per industry-year combination; given all industry-year combinations, the median value of observations is of 179 firms and the mean value of the adjusted R-squared is of 0.79). The fitted coefficients are then used to derive normal accruals for the sample of firms and the error term from the regressions is computed by deducting the estimated accruals from the working capital accruals component and considered as a measure of accrual and earnings quality. Higher residuals values denote higher abnormal accruals and lower earnings quality. Jones <i>et al.</i> (2008) and Gul <i>et al.</i> (2013) use a similar approach to estimate the Dechow and Dechev (2002) model.</p>

(Continued)

Table 1. Definition of Variables (Continued)

Panel A. Dependent Variable - EQ_{it} - a measure of earnings quality of firm i in year t	
Panel B. Test Variable	
<i>Religiosity</i> - a measure of religious adherence by region (NUTS II), defined as the total number of religious adherents by Portuguese region (NUTS II) divided by the total residents in the region. I use data reported in the 1999 and 2008 EVS surveys to calculate <i>Religiosity</i> for 1999 and 2008. I compute <i>Religiosity</i> in 1999(2008) by dividing the 1999(2008) survey data on religious adherents by NUTS II (number of religious adherents) by the 1999(2008) data on residents by NUTS II (number of residents by NUTS II). To construct <i>Religiosity</i> in 2003, 2004, 2005, 2006, and 2007, I linearly interpolate using the religious adherence values from 1999 and 2008.	
<i>CultArea</i> - a dummy variable taking value 1 if firm i in year t is headquartered in the largest Portuguese area of religious cult (the district of <i>Leiria</i> , where the <i>Fátima</i> Sanctuary is located), 0 otherwise.	
Panel C. Firm-Level Control Variables	
<i>FirmSize</i>	Size of the firm, defined as the natural logarithm of total assets of firm i in year t .
<i>FirmAge</i>	Age of the firm, defined as the natural logarithm of the lifetime (in years) of firm i in year t .
<i>ROA</i>	Return on assets, defined as net income scaled by total assets, of firm i in year t .
<i>Grow</i>	Sales growth, defined as change in sales revenues scaled by sales revenues in year $t-1$, of firm i in year t .
<i>Lev</i>	Financial leverage ratio, defined as total liabilities scaled by total assets, of firm i in year t .
<i>Loss</i>	Firm with continued losses, defined as a dummy variable taking value 1 if firm i in year $t-1$ reported a loss (negative operating income), 0 otherwise.
<i>Tax</i>	The natural logarithm of income tax, of firm i in year t
Panel D. Demographic Control Variables (defined by NUTS II) – region-level demographic variables for 2003, 2004, 2005, 2006, and 2007 are computed by interpolating data from 2001 and 2008 provided by the Portuguese Census Bureau.	
<i>Population</i>	The natural logarithm of the population for each region in millions.
<i>Age</i>	Average age of residents in each region.
<i>Income</i>	The gross domestic product for each region (in EUR millions).
<i>Unemployment</i>	Percentage of unemployed resident population, by region.
<i>Education</i>	Percentage of resident population by region, with completed college education.
<i>Urban</i>	Urban region, defined as a dummy variable taking value 1 if the population density in the region is equal or higher than 100 residents per square kilometre (this is the Portuguese Census Bureau criterion to consider a region as urban), 0 otherwise. Population density is computed as the ratio of the total population in the region over the total area of the region.
<i>Year</i>	Year dummies
<i>Industry</i>	Industry Indicators

Table 2. Sample-selection process

Sample-selection process	Sample A (Jones Model)		Sample B (DD Model)	
	No. of firm-years obs. removed	No. of firm-years obs. remaining	No. of firm-years obs. removed	No. of firm-years obs. remaining
Initial sample of privately held Portuguese limited and joint-stock companies in AMADEUS database that had:				
- Headquarters in Continental Portugal,		250,813		251,138
- Financial data available in the AMADEUS database for the period of 2003 to 2008,				
- Available financial data for the two previous years (the DD Model sample also required firms to have financial data available for the following year),				
- The necessary data to estimate the Jones Model and the DD Model.	76,729		82,101	
Excluding observations from the following industries: agriculture, forestry and fishing; transportation, communications, electric, gas and sanitary services; financial, insurance and real estate institutions; public administrative/services institutions;	45	174,039*	46	168,991**
Excluding industries (at the two-digit code of the Portuguese SIC) with less than ten observations.				
Excluding firms lacking the necessary data in several firm-level control variables (<i>FirmAge</i> , <i>ROA</i> , and <i>Tax</i>).	95,623		99,082	
Excluding extreme values of <i>ROA</i> and <i>Grow</i>	239		153	
Final sample		78,177		69,756

Notes: * The industry-specific β_s in the Jones Model are estimated in this sample.
** The industry-specific β_s in the DD Model are estimated in this sample.

Table 3. Descriptive statistics

Panel A: Statistics for components of religiosity by Portuguese regions (NUTS II)								
	Religious Adherence (ratio of religious adherents to total residents in the region)				Catholic Affiliation (ratio of catholic adherents to total residents in the region)			
<i>Norte</i>	0.95				0.92			
<i>Centro</i>	0.86				0.83			
<i>Lisboa e Vale do Tejo</i>	0.82				0.73			
<i>Alentejo</i>	0.73				0.70			
<i>Algarve</i>	0.91				0.89			
Panel B: Statistics for firm-level control variables								
Variable	Sample A (Jones Model)				Sample B (DD Model)			
	n	Mean	Median	Std. Dev.	n	Mean	Median	Std. Dev.
Continuous								
<i>absAwca</i>	78,177	0.06	0.04	0.07	69,756	0.08	0.04	0.12
<i>Size</i>	78,177	14.1	14.2	1.61	69,756	14.07	14.10	1.65
<i>Age</i>	78,177	2.67	2.77	0.75	69,756	2.67	2.77	0.74
<i>ROA</i>	78,177	0.03	0.02	0.06	69,756	0.03	0.02	0.07
<i>Grow</i>	78,177	0.09	0.03	0.42	69,756	0.08	0.03	0.42
<i>Lev</i>	78,177	0.46	0.45	0.40	69,756	0.44	0.42	0.38
<i>Tax</i>	78,177	8.87	8.95	2.22	69,756	8.81	8.86	2.25
Discrete								
	n	%			n	%		
<i>Loss (=1)</i>	11,749	15.0			10,724	15.4		
<i>Urban (=1)</i>	62,635	80.1			56,173	80.5		
<i>CultArea (=1)</i>	5,905	7.6			5,270	7.6		
Panel C: Statistics for region-level demographic variables (based on data of Portuguese NUTS II)								
	Mean	Median	Std. Dev.					
<i>Population</i>	14.50	14.40	0.45					
<i>Age</i>	40.70	40.50	1.45					
<i>Income</i>	43.58	47.39	14.8					
<i>Unemployment</i>	10.16	10.22	1.47					
<i>Education</i>	14.48	11.21	3.60					

Variable Definitions: *absAwca* = Absolute value of abnormal working capital accruals (computed through the Jones and DD Models); *Religion* = ratio of religious adherents in the region to the population in the region; *CultArea* = 1 if firm is located the district of *Leiria* (where *Fátima* sanctuary is located), 0 otherwise; *FirmSize* = natural logarithm of total assets; *FirmAge* = the natural logarithm of the firm lifetime (in years); *ROA* = net income scaled by total assets; *Grow* = sales growth, defined as change in sales revenues scaled by sales revenues in year *t-1*; *Lev* = total liabilities scaled by total assets; *Loss* = 1 if firm reported negative operating income in year *t-1*, 0 otherwise; *Tax* = natural logarithm of income tax; *Population* = natural logarithm of the population for each region in millions; *Age* = average age of residents in each region; *Income* = gross domestic product for each region (in EUR millions); *Unemployment* = percentage of unemployed resident population, by region; *Education* = percentage of resident population by region, with completed college education; *Urban* = 1 if firm is located in a urban region, 0 otherwise.

Table 4. Pearson Correlations

Pearson correlations: below the diagonal for Sample A, above the diagonal for Sample B																
Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
<i>absAwca</i>	1															
<i>Religiosity</i>		-0.03														
<i>CultArea</i>			-0.02													
<i>Size</i>				-0.18												
<i>Age</i>					-0.13											
<i>ROA</i>						0.36										
<i>Grow</i>							0.14									
<i>Lev</i>								0.05								
<i>Loss</i>									0.07							
<i>Tax</i>										0.07						
<i>Population</i>											0.02					
<i>Age</i>												0.02				
<i>Income</i>													0.04			
<i>Unemployment</i>														0.10		
<i>Education</i>															0.08	
<i>Urban</i>																0.21

Notes: Data cover years from 2003 to 2008 and contain 78,177 observations in Sample A and 69,756 in Sample B. Bold numbers indicate two-tailed significance at the 0.05 level(**).

Variable Definitions: *absAwca* = Absolute value of abnormal working capital accruals (computed through the Jones and DD Models); *Religiosity* = ratio of religious adherents in the region to the population in the region; *CultArea* = 1 if firm is located the district of *Leiria* (where *Fátima* sanctuary is located), 0 otherwise; *FirmSize* = natural logarithm of total assets; *FirmAge* = the natural logarithm of the firm lifetime (in years); *ROA* = net income scaled by total assets; *Grow* = sales growth, defined as change in sales revenues scaled by sales revenues in year *t-1*; *Lev* = total liabilities scaled by total assets; *Loss* = 1 if firm reported negative operating income in year *t-1*, 0 otherwise; *Tax* = natural logarithm of income tax; *Population* = natural logarithm of the population for each region in millions; *Age* = average age of residents in each region; *Income* = gross domestic product for each region (in EUR millions); *Unemployment* = percentage of unemployed resident population, by region; *Education* = percentage of resident population by region, with completed college education; *Urban* = 1 if firm is located in a urban region, 0 otherwise.

Table 5. Religiosity and Earnings Quality

	Exp sign	Sample A (Jones Model)		Sample B (DD Model)	
		(1) OLS	(2) RE	(3) OLS	(4) RE
<i>Religiosity</i>	–	-0.036*** (0.015)	-0.033** (0.018)	-0.062** (0.027)	-0.064** (0.033)
<i>CultArea</i>	–	-0.003*** (0.001)	-0.004*** (0.001)	-0.006*** (0.002)	-0.007*** (0.002)
<i>FirmSize</i>	+/-	-0.004*** (0.001)	-0.004*** (0.001)	-0.008*** (0.001)	-0.009*** (0.001)
<i>FirmAge</i>	–	-0.007*** (0.001)	-0.008*** (0.001)	-0.006*** (0.001)	-0.007*** (0.001)
<i>ROA</i>	+	0.460*** (0.023)	0.395*** (0.019)	0.315*** (0.018)	0.274*** (0.016)
<i>Grow</i>	+	0.014*** (0.002)	0.013*** (0.001)	0.015*** (0.001)	0.014*** (0.001)
<i>Lev</i>	+	0.018*** (0.004)	0.016*** (0.006)	0.013*** (0.003)	0.012*** (0.003)
<i>Loss</i>	+	0.024*** (0.001)	0.009*** (0.001)	0.024*** (0.001)	0.009*** (0.001)
<i>Tax</i>	–	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.001)
<i>Population</i>	+/-	-0.009* (0.006)	-0.011** (0.005)	-0.001 (0.009)	-0.005 (0.009)
<i>Age</i>	+/-	-0.002** (0.001)	-0.001* (0.001)	-0.004*** (0.001)	-0.002** (0.001)
<i>Income</i>	+/-	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
<i>Unemployment</i>	+/-	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)
<i>Education</i>	+/-	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)
<i>Urban</i>	+	0.007*** (0.001)	0.008*** (0.001)	0.010*** (0.001)	0.012*** (0.002)
Year Fixed Effects		Yes	Yes	Yes	Yes
Industry Fixed Effects		Yes	Yes	Yes	Yes
Observations		78,177	78,177	69,756	69,756
R ²		0.22	0.25	0.26	0.31

*, ** and *** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively. Both the OLS and RE regressions include robust standard errors (clustered by firm in the OLS regression). Each column reports the coefficient estimate followed by the standard error in parentheses.

Variable Definitions: *absAwca* = Absolute value of abnormal working capital accruals (computed through the Jones and DD Models); *Religion* = ratio of religious adherents in the region to the population in the region; *CultArea* = 1 if firm is located the district of *Leiria* (where *Fátima* sanctuary is located), 0 otherwise; *FirmSize* = natural logarithm of total assets; *FirmAge* = the natural logarithm of the firm lifetime (in years); *ROA* = net income scaled by total assets; *Grow* = sales growth, defined as change in sales revenues scaled by sales revenues in year *t-1*; *Lev* = total liabilities scaled by total assets; *Loss* = 1 if firm reported negative operating income in year *t-1*, 0 otherwise; *Tax* = natural logarithm of income tax; *Population* = natural logarithm of the population for each region in millions; *Age* = average age of residents in each region; *Income* = gross domestic product for each region (in EUR millions); *Unemployment* = percentage of unemployed resident population, by region; *Education* = percentage of resident population by region, with completed college education; *Urban* = 1 if firm is located in a urban region, 0 otherwise.

Table 6. An Aggregate Measure of Religiosity and Earnings Quality

	Exp sign	Sample A (Jones Model) (1)	Sample B (DD Model) (2)
<i>AggReligiosity</i>	–	-0.025** (0.014)	-0.050* (0.042)
<i>FirmSize</i>	+/-	-0.024*** (0.001)	-0.044*** (0.007)
<i>FirmAge</i>	–	-0.016*** (0.001)	-0.039** (0.018)
<i>ROA</i>	+	0.100*** (0.038)	0.136** (0.130)
<i>Grow</i>	+	0.001*** (0.001)	0.001*** (0.001)
<i>Lev</i>	+	0.028*** (0.009)	0.122*** (0.048)
<i>Loss</i>	+	0.045*** (0.003)	0.099*** (0.027)
<i>Tax</i>	–	-0.001 (0.001)	-0.017 (0.005)
Demographic Controls		Yes	Yes
Observations		33,422	32,915
R ²		0.13	0.12

*, ** and *** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively. Models are estimated using OLS, including robust standard errors clustered by firm. Each column reports the coefficient estimate followed by the standard error in parentheses.

Variable Definitions: *absAwca* = Absolute value of abnormal working capital accruals (computed through the Jones and DD Models); *AggReligion* = an aggregate measure of region-level religiosity; *FirmSize* = natural logarithm of total assets; *FirmAge* = the natural logarithm of the firm lifetime (in years); *ROA* = net income scaled by total assets; *Grow* = sales growth, defined as change in sales revenues scaled by sales revenues in year *t-1*; *Lev* = total liabilities scaled by total assets; *Loss* = 1 if firm reported negative operating income in year *t-1*, 0 otherwise; *Tax* = natural logarithm of income tax; *Population* = natural logarithm of the population for each region in millions; *Age* = average age of residents in each region; *Income* = gross domestic product for each region (in EUR millions); *Unemployment* = percentage of unemployed resident population, by region; *Education* = percentage of resident population by region, with completed college education.

Table 7. Religiosity and Earnings Quality in Urban Areas

	Exp sign	Sample A (Jones Model) (1)	Sample B (DD Model) (2)
<i>Religiosity</i>	–	-1.152** (0.586)	-0.905* (0.91)
<i>CultArea</i>	–	-0.002** (0.001)	-0.007*** (0.002)
<i>FirmSize</i>	+/-	-0.007*** (0.001)	-0.011*** (0.001)
<i>FirmAge</i>	–	-0.006*** (0.001)	-0.006*** (0.001)
<i>ROA</i>	+	0.2940*** (0.021)	0.330*** (0.034)
<i>Grow</i>	+	0.011*** (0.001)	0.016*** (0.003)
<i>Lev</i>	+	0.018*** (0.004)	0.028*** (0.009)
<i>Loss</i>	+	0.027*** (0.001)	0.030*** (0.002)
<i>Tax</i>	–	-0.002 (0.001)	-0.003 (0.001)
Demographic Controls		Yes	Yes
Year Fixed Effects		Yes	Yes
Industry Fixed Effects		Yes	Yes
Observations		62,635	56,173
R ²		0.16	0.21

*, ** and *** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively. Models are estimated using OLS, including robust standard errors clustered by firm. Each column reports the coefficient estimate followed by the standard error in parentheses.

Variable Definitions: *absAwca* = Absolute value of abnormal working capital accruals (computed through the Jones and DD Models); *Religion* = ratio of religious adherents in the region to the population in the region; *CultArea* = 1 if firm is located the district of *Leiria* (where *Fátima* sanctuary is located), 0 otherwise; *FirmSize* = natural logarithm of total assets; *FirmAge* = the natural logarithm of the firm lifetime (in years); *ROA* = net income scaled by total assets; *Grow* = sales growth, defined as change in sales revenues scaled by sales revenues in year *t-1*; *Lev* = total liabilities scaled by total assets; *Loss* = 1 if firm reported negative operating income in year *t-1*, 0 otherwise; *Tax* = natural logarithm of income tax; *Population* = natural logarithm of the population for each region in millions; *Age* = average age of residents in each region; *Income* = gross domestic product for each region (in EUR millions); *Unemployment* = percentage of unemployed resident population, by region; *Education* = percentage of resident population by region, with completed college education.

Table 8. Religiosity and Earnings Quality in Firms with(without) External Financial Monitoring

	Exp sign	Sample A (Jones Model)		Sample B (DD Model)	
		(1) Audited Firms	(2) Non-audited Firms	(3) Audited Firms	(4) Non-audited Firms
<i>Religiosity</i>	–	-0.060** (0.034)	-0.030** (0.017)	-0.110** (0.064)	-0.057** (0.030)
<i>CultArea</i>	–	-0.004** (0.002)	-0.002** (0.001)	-0.005* (0.003)	-0.005*** (0.002)
<i>FirmSize</i>	+/-	-0.003*** (0.001)	-0.005*** (0.001)	-0.007*** (0.001)	-0.010*** (0.001)
<i>FirmAge</i>	–	-0.006*** (0.001)	-0.007*** (0.001)	-0.007*** (0.001)	-0.006*** (0.001)
<i>ROA</i>	+	0.417*** (0.037)	0.466*** (0.026)	0.322*** (0.035)	0.313*** (0.021)
<i>Grow</i>	+	0.015*** (0.003)	0.014*** (0.001)	0.016*** (0.003)	0.015*** (0.001)
<i>Lev</i>	+	0.011*** (0.004)	0.018*** (0.005)	0.011** (0.005)	0.013*** (0.003)
<i>Loss</i>	+	0.025*** (0.002)	0.023*** (0.001)	0.027*** (0.002)	0.023*** (0.002)
<i>Tax</i>	–	-0.001 (0.001)	-0.001 (0.001)	-0.002 (0.001)	-0.002 (0.001)
Demographic Controls		Yes	Yes	Yes	Yes
Year Fixed Effects		Yes	Yes	Yes	Yes
Industry Fixed Effects		Yes	Yes	Yes	Yes
Observations		13,718	64,459	13,329	56,427
R ²		0.18	0.22	0.21	0.26

*, ** and *** indicate significance at the 0.1, 0.05 and 0.01 levels, respectively. OLS regressions include robust standard errors clustered by firm. Each column reports the coefficient estimate followed by the standard error in parentheses.

Variable Definitions: *absAwca* = Absolute value of abnormal working capital accruals (computed through the Jones and DD Models); *Religion* = ratio of religious adherents in the region to the population in the region; *CultArea* = 1 if firm is located the district of *Leiria* (where *Fátima* sanctuary is located), 0 otherwise; *FirmSize* = natural logarithm of total assets; *FirmAge* = the natural logarithm of the firm lifetime (in years); *ROA* = net income scaled by total assets; *Grow* = sales growth, defined as change in sales revenues scaled by sales revenues in year *t-1*; *Lev* = total liabilities scaled by total assets; *Loss* = 1 if firm reported negative operating income in year *t-1*, 0 otherwise; *Tax* = natural logarithm of income tax; *Population* = natural logarithm of the population for each region in millions; *Age* = average age of residents in each region; *Income* = gross domestic product for each region (in EUR millions); *Unemployment* = percentage of unemployed resident population, by region; *Education* = percentage of resident population by region, with completed college education; *Urban* = 1 if firm is located in a urban region, 0 otherwise.