

New Insights into Bank Asset Securitization: The Impact of Religiosity

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Abstract

We examine the influence of both organizational and geographical religiosity, as important ethical parameters moderating banks' decisions to securitize their assets. The study employs a unique database of the located within countries marked by high (low) religious adherence. Our results provide evidence that different measures of religiosity affect banks' decisions to securitize their assets. Banks located in countries with high religious adherence are less likely to engage with securitization compared to banks in countries with lower religiosity. Islamic banks also have a higher likelihood of embarking on a highly monitored model of asset securitization in contrast to conventional banks. When examining the motives underlying banks' decisions to securitize assets, there is strong evidence that Islamic banks securitize their assets to improve their portfolio diversification, financial performance, and regulatory compliance. This study highlights the importance of considering informal ethical mechanisms, such as religiosity, at both the country and firm levels, when studying bank risk-taking and trading decisions, especially in countries with dual banking systems.

Keywords: Bank Asset Securitization, Geographical Religiosity, Organizational Religiosity, Islamic Banks, Bank Risk.

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1. Introduction

The recurring financial and corporate crises have led to an increase in research covering the role played by informal institutions such as religiosity in affecting the actions and decisions of individuals and corporations. Conceptualized as the extent of adhering to prevailing religious codes¹ and promulgations, religiosity represents a prime example of social norms². Religious norms interact with individual attitudes and corporate decision-making (Iannaccone, 1998; Baele et al. 2014; Adhikari and Agrawal, 201) and several prior studies suggest that religiosity induces social norms that foster sound moral judgment and risk aversion in organizations (Baele et al. 2014; Hassan and Aliyu, 2018; Trinh et al., 2020). Importantly for this study, religious norms are known to influence banks' risk management behavior (Stulz and Williamson, 2003; Abdelsalam & El Komi, 2014; Baele et al. 2014; Arnaboldi et al., 2018; Fungáčová et al., 2019), which should vary across countries and financial systems due to variations in legal traditions (Beck et al., 2003).

Accordingly, this study examines the impact of those legal origin proxies for religious differences on banks' decisions to securitize their assets. We examine the impact of both geographical and organizational religiosity on banks' asset securitization decisions and the financial motives to securitize their assets. Geographical religiosity is represented by a country-level proxy for the high (low) importance of religion to individuals. Our sampled countries in this study represent variations in responses regarding how important religion is to their citizens.

While the impact of religious norms on the economic behavior of organizations has been generally discussed (see e.g. Callen and Fang, 2015), no empirical work to date has investigated the influence of religiosity on the risk-return investment choices related to bank asset securitization. The latter has gained momentum for two decades, reaching volumes of \$10.24 trillion in the United States and \$2.25 trillion in Europe by the second quarter of 2008 (Campbell et al., 2011). Nevertheless, the global financial crisis of 2007–2008 raised questions concerning the credibility of this mechanism, with securitization standing accused of playing a major role in the destabilization of global financial markets (Kiff and Kisser, 2014; Kara et al. 2016)³.

¹ Most religions have promulgated a joint set of principles and beliefs, which serve as a code of actions and virtues for good ethical attitudes.

² Social norms are defined as attitudes of approval and disapproval (Sunstein, 1996). Religion plays a substantial role in shaping and enforcing ethical behavior, including honesty and justice.

³ Ethical commentary on the reasons underlying the occurrence of the global financial crisis referred to ultimate concepts of imprudence, greed, and recklessness, granting demand-driven loans made to unworthy borrowers. The crisis has highlighted a failure of the beliefs, judgments, and structural design of asset securitization, which created significant financial and credit risk shocks in the economy and consequently led to a widespread subprime crisis in the banking industry (Gorton and Metrick, 2012; Gorton, 2012). Other studies have

Asset securitization activities are based on converting the promises of future payments into freely transferable securities (Cetorelli and Peristiani, 2012; Milonas, 2017). Some researchers argue that bank asset securitization is an activity that helps to redistribute credit risk (Arnaboldi et al., 2018; Lockwood et al. 1996) to investors who can bear it, which should, in turn, facilitate and improve the functionality and stability of financial markets and help banks to operate competitively, whilst lowering their cost of debt (Rosenthal and Ocampo, 1988; John et al., 2016). Irrespective of enabling banks to convert illiquid assets into liquid funds, conventional securitization, in practice, has led to a reduction in banks' incentives for due diligence, causing a major decline in underwriting standards. All the above factors resulted in the transformation of asset securitization from an innovative finance tool to a mechanism, which encouraged reckless lending, reduced screening and monitoring incentives, and the shifting of credit risk to new investors (Panetta and Pozzolo, 2010; Franke and Krahen, 2005).

Examining the association between asset securitization and religiosity responds to prior calls for further research on how religious norms influence banks' risk management behavior (Stulz and Williamson, 2003; Abdelsalam & El Komi, 2014; Baele et al. 2014; Arnaboldi et al., 2018; Fungáčová et al., 2019). The law and finance theory predicts that variations in legal traditions aid in explaining international differences in finance systems today (Beck et al., 2003). Although the law and finance theory historically focused on the differences between the two most influential legal traditions, namely, British Common law and French Civil law (see, e.g., Hayek, 1960; La Porta et al., 1998), relatively little is known about the influence of operating within religious communities and how religiosity could help mitigate aggressive risk-taking practices.

We propose that banks and communities⁴ in which religion is highly important are expected to display a distinct appetite for risk as well as distinct motives for asset securitization. Hence, this offers an ideal setting for investigating geographical religiosity. For organization religiosity, we study the unique (highly monitored) securitization model employed by religious banking institutions like Islamic⁵ banks. We compare this model with conventional banks' asset securitization in countries

highlighted its danger in undermining the ethical foundation of the financial system (Demyanyk and Hasan, 2010; McConnell and Buser, 2011).

⁴ Communities in which religion is important hold expectations that shape individuals' and organizations' behavior (Weaver and Agle 2002). Attitudes in these communities are, to a certain degree, shaped by endorsed behaviors. Such influences are predominantly pervasive in geographic locations where religious adherence is a predominant characteristic of the local population (Hilary and Hui, 2009; Grullon and Kanatas, 2010; Kumar et al., 2011; Dyreng et al., 2012; Boone et al., 2013; Callen and Fang, 2015).

⁵ Islamic banks operate on a banking model that follows religious rulings and prohibits usury and speculation, while encouraging risk and profit sharing between the bank and its depositors. Conventional banks refers to traditional commercial banks, which operate on an interest basis (Elnahass et al., 2019).

operating on dual banking systems (i.e. banks issuing Islamic⁶ and/or conventional bonds). A noteworthy feature of the global banking industry is the significant increase in the number of Islamic banks, which operate on a restricted business model that prohibits excessive uncertainty (Abedifar et al. 2016; Hassan and Aliyu, 2018). Islamic banks adhere to their moral constraints, which shape their framework for economic operations and affect their risk-taking decisions (Abdelsalam et al., 2016). Akin to people, religious organizations are likely to be risk-averse (Hilary and Hu, 2009; Pappas et al., 2017; Hayat and Hassan, 2017).

In addition to examining the impact of geographical and organizational religiosity, we extend these analyses to address the underlying motives for banks to securitize their assets. These motives include achieving higher capital adequacy, shifting credit risk, improving cost efficiency, and promoting a higher quality loan portfolio and diversifications. Accordingly, we determine six major bank-level drivers for asset securitization decisions: (a) regulatory capital adequacy, (b) credit risk, (c) cost efficiency, (d) operating income, (e) loan concentration and portfolio diversification, and (f) loan growth rate.

Our comprehensive dataset includes 526 global banks (3838 bank-year observations) located in 20 countries. The sampled countries are characterized by dual banking system operations and a responsive identification by citizens for the importance/unimportance of religion in daily life. This study sample period is also marked by a unique geo-economic event, i.e. the financial crisis, central banks' interventions, and quantitative easing on deflationary and financially distressed economies (Deku et al. 2019). Such interventions⁷ overlap with our sample period and tend to have had reduced systematic risk and stimulated the national economy (Mahajan, 2015).

Our results indicate that religiosity has a significant and differential impact on banks' decisions to securitize in general terms. We find that banks located in more religious areas (high geographical religiosity) are less likely to securitize their assets, suggesting a general risk-averse behavior. Concerning banks' motives to enter securitization activities, the results show that banks located in more religious locations use securitizations mainly to improve their financial performance and loan portfolio diversification. In contrast, banks located in areas with low levels of geographical religiosity are more likely to embark on asset securitization to ultimately shift credit risk and promote a higher quality of the loan portfolio. Furthermore, the results reveal that Islamic banks are more likely to

⁶ In general, Islamic securities, "Sukuk", are defined as certificates of representing shares and rights in tangible assets, usufructs and services, or equity of a given project or equity of a special investment activity. Islamic securities are investment certificates as Islamic investment account holders hold ownership (actual or beneficial) claims in the underlying assets (Box and Asaria, 2005).

⁷ (e.g. from late November 2008, the Federal Reserve started buying \$600 billion in mortgage-backed securities)

securitize their assets, using a highly monitored model of asset securitization. Moreover, when examining the motives for Islamic banks, we find that these banks tend to use asset securitization to address deficiencies in capital adequacy and profitability challenges. The results indicate that Islamic banks had a particularly low credit risk in the year preceding their decision to enter asset securitization, which does not support a risk transfer motive. In contrast, conventional banks displayed a high credit risk profile in the year preceding the securitization decision, which suggests a strong motive for risk-shifting to new investors. We additionally examine for the impact of religiosity on the annual securitization activities and our general conclusion and the main results remain unchanged. Testing for the conditional effect of the crisis on banks' decisions to securitize shows that during the crisis period, banks operating in more religious areas tended not to engage in securitization. Moreover, Islamic banks were less likely to securitize, in comparison to conventional banks.

Our findings contribute to the broad strands of the literature that consider religiosity as a monitoring mechanism that impacts the decision-making behavior of firms (Hilary and Hui, 2009; Grullon and Kanatas, 2010; Kumar et al., 2011; Dyreng et al., 2012; McGuire et al., 2012; Boone et al., 2013; Callen and Fang, 2015). Previous studies on asset securitization focused on the financial motives and economic benefits of using securitization (see Lockwood et al. 1996; Purnanandam, 2011; Deku et al. 2019; Abdelsalam et al. 2020; Ivanov and Jiang, 2020; Iglesias-Casal et al. 2020). Our study shows that banks' decision to engage in securitization activities could be significantly tempered by the presence of religious adherence at both the country and organizational levels. In addition, our study offers insights into the determinants of asset securitization decisions. Moreover, we demonstrate that banks within religious contexts operate based on a risk-averse attitude, which leads to less corporate risk-taking behavior. Therefore, we extend the established stream of the global banking literature on the importance of religiosity in mitigating banks' risk-taking as well as organizations' agency costs (Hilary and Hui 2009; Callen and Fang 2015). Finally, our study extends the comparative literature of Islamic and conventional banking (e.g.; Mollah and Zaman, 2015; Abedifar et al. 2017; Bitar et al. 2017; Berger et al. 2019; Elnahass et al., 2019; Trinh et al., 2020) by providing empirical evidence on the relative differences in the risk-shifting behaviors between Islamic banks.

The findings in this study offer some important policy implications for regulators, investors, and bank managers, stressing the need for rigorous regulatory supervision over asset securitization practices worldwide to avert future waves of financial crises. Regulators could benefit from this study when developing guidance and standards for asset securitization, particularly for conservative

countries where religion may dominate investment choices and market valuations. This study also offers new insights into the effect of religiosity as an alternative monitoring mechanism in mitigating agency costs and guiding a risk-sharing rather than a risk-shifting motive for asset securitization. Although the conventional securitization model may successfully shield bank funds by transferring assets with the worst credit profile, we argue that one of the causes of the collapse of this banking system during the financial crisis could be attributable to excessive risk-taking and the failure to relatively consider communities and individuals' perceptions of risk-rewards attitudes, which might be driven by religious orientations. The overall results raise vital questions regarding the ethical reasoning underlying banks' growing trade in assets securitization.

The next section discusses the main motives behind asset securitization. Section 3 presents the theoretical framework and the hypothesis development of the study. Section 4 identifies the study sample and data. The methodology and empirical models are reported in section 5. The descriptive and empirical results are presented in section 6. Section 7 reports the sensitivity and robustness checks, and section 8 concludes the study.

2. Motives for Bank Asset Securitization

Previous empirical studies have identified several motives for banks to be involved in asset securitization and have offered mixed evidence on the dominant motives and reasons.⁸ These motives include improving regulatory capital adequacy, shifting credit risk to new investors, diversifying loan portfolios, and improving profitability (see Chronopoulos et al., 2015; Faleye and Krishnan, 2017; Zhang et al. 2019). Hänsel and Bannier (2008) suggest that securitization markets are primarily motivated by credit risk management and liquidity improvement rather than regulatory capital adequacy improvement. Casu et al. (2013) find that U.S. securitizing banks have a high credit risk, high funding costs, and less liquidity despite being more profitable and having a more diversified funding structure than non-securitized banks.

⁸ Bank asset securitization is the financial practice of pooling types of contractual debt (or non-debt assets that generate receivables) and selling consolidated debt (or receivables) to third-party investors as securities. The principal and interest on the debt underlying the security is regularly paid back to the various investors. Mainly financial institutions, aiming to expand their loan portfolios to offer new loans to lower income groups, accessible to subprime consumers (DeLorenzo, 2007), have applied securitization. In the United States the market for securitizations counted on two important assets: asset-backed securities (ABS) and mortgage-backed securities (MBS). Both types of debt contracts have played a crucial role in integrating securitization markets. MBS are securities created from the pooling of mortgages, which are then sold to investors. They have been developed through government-sponsored agencies (such as the Federal National Mortgage Association, known as Fannie Mae, and the Federal Home Loan Mortgage Corporation, or Freddie Mac). The demand for these types of securities grew rapidly among institutional investors who were willing to invest in credit risk (Campbell et al., 2011; Cetorelli and Peristiani, 2012). These types of securities are prohibited in Islamic banks because they involve paying interest and the sale of debt.

In principle, asset securitization should allow credit risk to be redistributed to investors who can bear it, which should ideally facilitate the functionality and stability of financial markets. Nevertheless, this innovative activity has not followed its ideal principles, and the inherent complexity and limited monitoring ability of the conventional asset securitization model have resulted in a major decline in underwriting standards.⁹ This is apparent in the lower incentives to appropriately screen borrowers (Loutschina and Strahan, 2009; Keys et al. 2010) and high incentives to securitize low-quality assets to shift the credit risk to new investors (Dell’Ariccia et al. 2009; Mian and Sufi, 2009; Keys et al., 2010). The latter was one of the main reasons for the severe subprime crisis that triggered the bitter financial crisis in 2007/8 (Kiff and Kisser, 2014).

With respect to the management of credit risk motive for banks’ involvement in asset securitization, prior empirical research recognized two directions. The first direction suggests that asset securitization may lead to a worsening of issuing banks’ credit risk profile through securitizing their best loans while keeping the worst quality loans. The second direction suggests that asset securitization may result in an improvement in the issuing banks’ credit risk profile by shifting their credit risk to new investors. Cantor and Rouyer (2000) find that the credit risk profile of the issuer improves if the riskiness of the securities sold to investors is higher than that of the issuing bank prior to the securitization. Panetta and Pozzolo (2010) state that banks’ asset securitization increases their likelihood of engaging in substantially riskier profit opportunities. This can be seen in the higher risk activities engaged in by banks functioning at greater financial leverage levels, which intensifies the exposure to the default risk by the issuing banks. Moreover, Franke and Krahenen (2005) indicate that asset securitization increases the systematic risk of the issuing bank. It has been argued that the higher a bank’s credit risk, the more likely it is to become involved in asset securitization to shift credit risk to new investors (Cebenoyan and Strahan, 2004). The prior literature shows that banks securitized their worst mortgage (with a higher-than-average default risk) loans to pass their credit risks to new investors (Dell’Ariccia et al., 2009; Mian and Sufi, 2009; Keys et al., 2010; Purnanandam, 2011).

With regard to the performance enhancement motive, asset securitization helps banks to improve their profitability position by pooling assets and issuing multiple financial claims with different risk profiles. Banks can also use securitization to capitalize on increased economies of scale and the

⁹ For example, the SEC filed allegations against Goldman Sachs for opportunistically designing synthetic collateralized debt obligation using mortgage-backed products, which had long-term adverse implications on the credit ratings of securitized loans (World Finance, July/August, 2010). This had been viewed as a wrongful act in the flawed securitization process, which brought unfair practices to the current financial regime.

diversification of funding sources as well as to improve regulatory capital (Jones, 2000) management to enhance their performance. In terms of the cost-efficiency motive, Panetta and Pozzolo (2010) show that securitization helps banks to improve the efficiency of both direct and indirect costs. Affinito and Tagliaferri (2010) report that banks with low profitability, low liquidity, poor capital adequacy, and high levels of nonperforming loans display a greater tendency to securitize.

Concerns are more likely to arise from asset securitization due to the involuntary transfer of risk to investors with excessive power and deceit. Current practices of securitization before and after the financial crisis have shown that receiving parties are hardly ever aware that a risk-shifting process is occurring and, hence, cannot manage or handle the transmitted risk. Such strategic misinterpretations by investors make this either unethical or contrary to social norms. Financial innovations often seem complex and opaque given the inherited risk levels, which are difficult for third parties to quantify (Boatright, 2010). It may, therefore, be concluded that the profitability and efficiency enhancement motives are less ethically questionable than the credit risk management motives.

3. Theoretical Framework and Hypothesis Development

Religion, as part of social norms, plays a catalytic role in determining both the judgments and intentions for a particular situation and should shape an individual's behavior. In this study, we investigate the role of this cultural feature on bank choices and the underlying motives to engage in risk-taking activities like asset securitization.

The social norms theory provides detailed grounds for the shaping of individual economic attitudes (Akerlof 1980; Kohlberg 1984). Social norms represent the prevailing code of conduct and ethics that are jointly shared by a group of individuals. Compliance with norms and group expectations is subject to community/societal support and acceptance, whilst non-compliance promotes social discrimination (Elster 1989). Such social acceptance or discrimination should shape the accepted attitudes and moral liability (Festré, 2010; Abdelsalam et al., 2016). Social norms also affect corporate decision making (Hilary and Hui, 2009). Peer-group expectations and community beliefs are represented by an organization's policies and its decision-making process. Hence, as driven by the social norms theory, management corporate practices are influenced by their informal beliefs and values in addition to the formal corporate governance arrangements (McGuire et al., 2012). Therefore, codes of ethics can stimulate social norms to help to deter opportunistic behavior (Bicchieri, 2006; Davidson and Stevens, 2012). On the other hand, Weaver and Agle (2002) still argue and advance that the relationship

between religiosity and corporate choices should not be viewed as being one-dimensional in nature. They also argue that the direction and magnitude of the relationship differ depending on the type of “religious motivation orientation” (RMO), which explains the varying results between the previous studies. They categorize RMO into intrinsic and extrinsic types. Religious persons/communities that are intrinsically motivated tend to be more inclined to treat religious beliefs and practices as ends in themselves (Weaver and Agle, 2002; King and Crowther, 2004) and, therefore, adhere to the religion’s code(s) of conduct. In contrast, for extrinsically oriented religious persons/organizations, religion is viewed in terms of its effectiveness and as a means for procuring other social or personal benefits (e.g. business success, accessing markets and appealing to followers) (King and Crowther, 2004). It is expected that compliance with the ethical values of the religious codes will differ between these two religious’ orientations.

Religiosity has traditionally been viewed as an institutionalized mechanism that promotes aversion to excessive risk (Miller and Hoffmann 1995; Pappas et al., 2017) by enhancing internal monitoring. As concerns have been raised on the subject of bank asset securitization activities, it is likely to be affected by the presence of religious norms in certain geographic locations and certain organizations. This prediction has been echoed in the recent literature, which reveals a positive relationship between religiosity and individual economic attitudes such as risk aversion (Miller and Hoffmann, 1995; Leventis et al., 2015; Callen and Fang, 2015; Baele et al., 2014). Such influences are expected to be prevalent in locations where Islamic banks are predominant in the local population (Boone et al., 2013; Callen and Fang, 2015; Dyreng et al., 2012; Grullon and Kanatas, 2010; Hilary and Hui, 2009; Kumar et al., 2011). Religious attitudes and community expectations are, to a certain degree, shaped by the endorsed behaviors in a particular geographic area. Religious communities usually establish expectations and create frameworks that shape individuals’ behavior (Weaver and Agle, 2002). Risk-taking and the likelihood of accounting fraud have been found to be lower in contexts characterized by high geographical religiosity compared to contexts with low geographical religiosity (Dyreng et al., 2012; Grullon and Kanatas, 2010; McGuire et al., 2012; Leventis et al., 2015; Kanagaretnam et al., 2015). Moreover, Chen et al. (2019) find that governance quality and risk management quality have significant mediating effects on asset securitization policies.

Accordingly, we expect that banks located in communities marked with high importance of religion (i.e. high geographical religiosity) should prioritize ethical choices among different business opportunities that involve risk-taking decisions (Hilary and Hui, 2009) and, hence, will be more risk-averse (Leventis et al., 2015; Kanagaretnam et al., 2015). However, other motives for deciding to

securitize might develop for this set of banks, such as promoting a better financial profile and accessing additional market sources to diversify their funding structure rather than to transfer risk. Hence, we propose the following hypothesis, stated in the alternative form:

H₁: Banks located in more religious countries are more likely to be risk-averse when making asset securitization decisions than banks based in less religious countries.

Communities in which ethics are predominant hold expectations that shape individuals' choices and organizations' decisions (Weaver and Agle, 2002). Attitudes in these communities are, to a certain degree, shaped by endorsed behaviors. Such influences are predominantly pervasive in organizations where religious adherence is a predominant characteristic of the local population (Hilary and Hui, 2009; Grullon and Kanatas, 2010; Callen and Fang, 2015). The management of a corporation with high religious norms is expected not to act in a manner that violates a social norm (Stavrova et al., 2013; Leventis et al., 2015). A high level of societal trust is, therefore, likely to support an organization's economic growth and social efficiency (La Porta et al., 1998). Similar to religious communities, religiously oriented organizations (Islamic banks) are likely to be risk-averse (Hilary and Hu, 2009) and are expected to prioritize their moral code among different business opportunities that involve excessive risk or manipulation.

According to Abdelsalam et al. (2016), these banks are more inclined to internalize moral norms associated with conservatism and are, as a result, less likely to embark on excessively risky activities. Even if the religiosity of the actors of religious adherent organizations is only "skin deep", they could potentially lose their legitimacy in their respective societies and pay a hefty price in terms of social disgrace if they are caught violating social norms by embarking on excessively risky activities, especially in more religious countries. Although managers of religious adherent organizations might still be tempted to embark on excessively risky activities for personal gain, for instance, because their remuneration is linked to financial performance, they might trade off the gain from such additional remuneration against the cost of social stigma and market reputation. Therefore, bank managers affiliated with organizations with strong religious orientations are expected to be morally responsible for corporate policymaking, which should discourage risk-taking practices.

Within the context of asset securitization activity, the conventional asset securitization (originate-to-distribute) model conveys a relaxed structure of asset securitizations, which involves risk-taking followed by risk transfer. Present or future asset claims of varying maturity and quality are converted

into tradable debt securities (DeLorenzo, 2007),¹⁰ with the theoretical aim of diversifying or shifting risk. Nevertheless, in practice, this model tends to support a false sense of confidence that risks have been fairly assessed, understood, and managed. In contrast, the scope of this type of securitization based on debt is limited in religious adherent banks. Islamic banking offers an example of religiously oriented organizations, which operate on a unique business model of finance that restricts the sale of debt at a discount and requires specific monitoring mechanisms to ensure an adequate level of risk-sharing and asset ownership transfer to new investors in securitization contracts. This set of banks is prohibited from entering excessively uncertain activities like derivatives and hedging (Trinh et al. 2020).

The Islamic banking business model, hence, reflects several constraints imposed on the bank asset securitization activity (Ebrahim et al., 2016; Abdelsalam et al. 2020). All participatory types of investments undertaken by Islamic banks are subject to certain financing constraints as interest-based debt is prohibited in compliance with the underlying principle operations of this banking sector, which stem from religious norms. Therefore, the primary activity in providing financial services (e.g. asset securitization) must be traded through ‘permissible’ financial instruments (such as Islamic-based asset securities). Appropriately qualified religious scholars who ensure that the usury restrictions are not violated usually govern the degree of compliance of a given Islamic-based security with the underpinning principles of the religious doctrine. Under this constrained securitization model, an originator sells existing or future revenues from lease receivables, profit-sharing contracts, or private equity from a portfolio of acceptable assets to a special purpose vehicle (SPV). This entity refinances itself by issuing unsecured securities to market investors (Jobst, 2007). Investors do not hold a conditional or secured payment obligation; a sufficient element of ownership must instead be clarified to investors. To this end, the degree of monitoring and the degree of implicit (credit risk) or explicit (with profits) risk-sharing can be thought of as extending the usual definition of ‘Islamic securitization’ that the holder of the claim has in the underlying activities. The unique nature of Islamic asset securitization contrasts with the conventional model in the sense that all underlying financial activities must be either trade-based or asset-linked, a constraint that is claimed to encourage greater scrutiny¹¹ and, hence, possible systematic resilience by the originator.

¹⁰ In a typical transaction, the originating bank transfers a pool of financial assets with fixed or nearly fixed cash flows to a special purpose vehicle. This represents a legal entity that in turn finances the purchase through the issuance of securities backed by the pool. These securities must also be grouped in one of the top two ratings as determined by an accredited credit rating agency and usually pay periodic payments that are similar to coupon payments (Bowden and Lorimer, 2009).

¹¹ Islamic banking does not allow the provision of credit to subprime borrowers (Desai, 2008).

Moreover, the contractual features of the Islamic securities and the rights of investors in terms of returns and associated risks are largely determined by compliance with religious norms. For example, whereas Islamic securities representing the ownership of real assets or projects are tradable at negotiable market prices, debt-based securities cannot be traded and can only be exchanged at par value (Abdel-Khaleq and Richardson, 2007). In Islamic-based assets, the risk-sharing in the benefits and costs of the underlying economic activity naturally requires enhanced screening and monitoring. However, for conventional securitized assets, credit risk stems from the action of breaking the contractual covenant and defaulting (Piskorski et al., 2009). Strict monitoring imposed on an Islamic securitization systematically calls on originators to operate in a manner that could be deemed relatively more socially optimal (i.e. a higher quality loan book, smoother income profile, and lower solvency risk). In part, this instantiates itself in the ownership and the arrangements inherent between the providers of capital and those managing the reference assets (Ashraf et al., 2016), which could mitigate some of the agency costs of debt that can be inherent in a conventional securitization approach and, therefore, promote the better mitigation of the underlying credit risk (see Bosse and Phillips, 2015).

These discussions imply that the asset securitization employed by Islamic banks is arguably less opaque when compared to the conventional model, yet relatively more complex due to the additional screening criteria required over the traded activities and SPV to ensure their compliance to and permissibility by Islamic banking principles (see Abdelsalam et al. 2020). The securitization model of Islamic banks, hence, offers an eminent example of religiously orientated organizations, which are assumed to operate in compliance with their set of codes and religious norms rulings, presumably based on honesty, fairness, and trust. As such, any risk-pervasive or deceptive activity is not assumed to be undertaken by Islamic bank managers, who operate under moral accountability in addition to their legal responsibility (Ashraf et al. 2016). The model of asset securitization applied by Islamic banks is expected to operate by sharing risk and incentives among securitization participants in accordance with these banks' moral accountability and responsibility for handling risk (see Körner, 2017). Drawing on both the social norms theory and constrained business model for Islamic banks, we argue that practices related to risk-shifting are not dominant for these organizations when compared to their conventional counterparts (see Köhler, 2015). In contrast, Islamic banks are more likely to engage in securitization activities to improve their financial performance and obtain access to market funding sources rather than to transfer credit risk. Therefore, this expectation leads to the second hypothesis, formulated as follows:

H₂: Islamic banks are more likely to embark on a constrained model of securitization to improve performance rather than to transfer bank risk.

4. Data and Sample

The key dependent variable in this study is the decision to securitize assets. This variable represents the activity level and is measured as the total securitization for bank i at time t issuance deflated by total assets (Barth et al., 2011; Casu et al., 2013). We define asset securitization activity as banks that engage in asset securitization transactions for at least one observation of securitization at time t . We construct a comprehensive dataset of asset securitization by hand-collecting the annual reports and several databases, including the Thomson One, Orbis, and bank websites. This is justified by the limited available information on asset securitization, specifically for Islamic banks operating worldwide. The bank-level data are collected from the BankFocus and Orbis databases. The country-level variables and macroeconomic data are collected from the World Bank and the IMF.

We operationalize religiosity at the geographic level by employing a dominant indicator, which is the importance of religious adherence within each geographic area (see Boone et al., 2013; Callen and Fang, 2015; Dyreng et al., 2012; Grullon and Kanatas, 2010; Hilary and Hui, 2009; Kumar et al., 2011). This variable represents a cognitive element of religiosity, which indirectly denotes religious adherence and knowledge. We construct this measure of geographical religiosity using the responses to the global Gallup survey research¹² conducted in 2009 for 114 countries. Adults had to respond with a yes or no to one main question: “*Is religion an important part of your daily life?*” Unlike previous surveys conducted by Gallup in 2006 and 2008, which investigated issues related to racial and ethnic minorities in practicing religion, the 2009 survey was specifically initiated to study and identify global inferences for the importance of religion per se.

For the 2009 survey, the total reported religious adherents’ responses across all countries varied between 27% and $\geq 99\%$ (Crabtree, 2010). An important characteristic of the survey is that it offers insights into the global variations, uncovering the diversity in beliefs across different nations, including rich and poor countries. The survey reflects the strong relationship between a country’s socioeconomic status and the religiosity of its residents. It shows that religion continues to play an

¹² Gallup is an American research-based, global performance-management consulting company known for its public opinion polls conducted worldwide. For more information on the Gallup survey, please visit <https://news.gallup.com/poll/142727/religiosity-highest-world-poorest-nations.aspx>

important role in many people's lives worldwide. A main limitation of the survey is that the data only compare the importance of religion in people's lives and say nothing about what being highly religious means among different faiths. *Appendix 1* reports the overall responses across all the countries that were surveyed. The global median proportion of respondents who said that religion played an important part in their daily lives was 84%. The countries with the highest respondent rates were Bangladesh, Indonesia, and Yemen, and those with the lowest rates were the United Kingdom and Turkey. These responses were based on telephone and face-to-face interviews conducted with approximately 1000 adults in each country, with 95% confidence that the maximum margin of sampling error ranged from ± 5.3 to ± 2.6 percentage points.

Through utilizing the responses to the Gallup survey of 2009, geographical religiosity in this study is measured by a dummy variable equal 1 for countries that responded that religion is important in their daily life and 0 for countries that responded that religion is not important. Moreover, in line with the prior literature (see Leventis et al., 2015; Kanagaretnam et al., 2015), we capture organizational religiosity through an identification process of the bank type involved in asset securitization (i.e., we cluster the full sample into Islamic banks and conventional banks). Our aim is to use the specific features of asset securitization in different bank types (i.e. Islamic versus conventional banks) to identify the impact of organizational religiosity on banks' decisions to securitize.

The global list and data on Islamic banks involved in asset securitization issuances are originally identified using the Thomson-Reuters' Refinitiv and IFIS databases. The data collection process involves reading every bank's prospectus to classify the Islamic securities, specifically Islamic bonds (i.e. Sukuk)¹³. We utilize the specific features of Sukuk for Islamic banks to identify the impact of monitoring on the issuing banks' financial stability. In a typical Sukuk contractual arrangement, an originator transfers an asset to a special purpose vehicle (SPV). The SPV then presents potential investors with a claim in those assets, and/or the right to its future cash-flows, for the tenure of the Sukuk.¹⁴ If the bank does not report any information about Sukuk issuances, we check publicly

¹³ In addition, we identify specific criteria to determine the value of the total securitization from each financial report and securitization prospectus (if one existed). Due to the fact that not all securities are religiously adherent, we categorize Sukuk asset securitization into: (a) equity-based securities (profit-loss sharing arrangements) such as credit sale and partnerships or (b) asset-based securities backed by lease and Sukuk issuances that are approximately conventional. We review the prospectuses for the presence of contractual cash-flows that can be viewed as debt-like (i.e. with either a fixed or variable coupon payment pegged to a fixed spread above an indexed rate, such as LIBOR or the OIS rate).

¹⁴ For example, in 2011, the AmIslamic Bank Berhad based in Malaysia issued a RM2 billion Musharakah (partnership) based on subordinated Sukuk, whereby investors would become partners in a venture that the AmIslamic Bank managed with the following condition: "Any profit derived from the Musharakah Venture will be distributed based on the ratio of capital contribution among the Sukuk holders and losses will also be shared based on the Sukuk holders' ratio of capital contribution." (Source: AmIslamic Bank Berhad' Sukuk prospectus, 2011 p. 4). Similarly, in 2008 the RM 200 million credit sale Sukuk issued by OCBC Al-Amin Bank Berhad

available bank prospectuses¹⁵.

Based on the above data identification process, the primary variable of interest to establish the measure for organizational religiosity is whether the bank has issued a new securitized asset during the reporting year. We then decompose this dummy variable into conventional securitizations or Islamic securitizations. Therefore, the organizational religiosity variable is defined as an indicator variable equal to 1 for Islamic banks and 0 for conventional banks; both bank types engage with asset securitization activities during the sample period.

We employ an unbalanced panel dataset and two country variable criteria, reflecting Beck et al. (2013) and Mollah et al. (2017): (1) countries with at least four banks and (2) at least two observations for each bank. Based on these criteria, our final sample comprises banks operating within 20 countries where (i) citizens responded to the Gallup Poll in 2009 and (ii) both Islamic and conventional banks are present¹⁶. Our sample consists of 526 banks (3838 bank-year observations) from 2003 to 2012. The sampled banks are represented by 131 Islamic banks and 395 conventional banks. There are 419 (107) banks concentrated in more (less) religious countries, respectively. The selection of this sample period is justified by the extensive quantitative easing and central banks' purchases of assets to stabilize financial conditions in many countries. Such government interventions (e.g. from late November 2008, the Federal Reserve started buying \$600 billion in mortgage-backed securities) overlap with our sample period and tend to have reduced systematic risk and stimulate the national economy (Mahajan, 2015). According to Deku et al. (2019) before the financial crisis of 2007, banks with higher credit and market risk were more likely to securitize assets and banks became riskier as they took advantage of securitization to obtain capital relief.

Error! Reference source not found. presents the values of the importance of religion (Yes and No variables) per country. We observe for our sample that Turkey, Iraq, and Lebanon are ranked as the lowest three countries, with respondents indicating that religion is not an important part of their daily lives. Bangladesh, Indonesia, and Yemen are ranked as the top three countries, with citizens responding that religion is an important part of their daily lives. Based on these observations and our sample criteria, we cluster the full sample into high/low religious importance countries with reference

took the form of a silent partnership, whereby investors became joint owners of the credit sale venture assets managed by the issuing bank with profit shared in agreed proportions.

¹⁵ An example of a religious adherent bank not involved in securities issuances is the securitized investment vehicle originated by the Affin Bank in 2012. The bank only reported general information about Sukuk and relevant standards. Therefore, observations for this bank-year were treated as that of a non-securitized bank.

¹⁶The countries are Algeria, Bahrain, Bangladesh, Brunei Darussalam, Egypt, Indonesia, Iraq, Jordan, Kuwait, Lebanon, Malaysia, Mauritania, Pakistan, Qatar, Saudi Arabia, Syria, Tunisia, the United Arab Emirates, Turkey and Yemen.

to the average mean (i.e. averages- cut off) of responses for all the 20 countries in our sample. In other words, the classification of high religion importance areas represents countries whose citizens indicated “yes” for the Gallup poll’s question “Is religion important in your daily life?” and are above or equal to the mean value of (0.899) for the 20 countries in the sample. Countries with low religious importance are those whose citizens answered “No” and are above or equal to the mean value (0.101) in the sample countries. Table 2 reports the study sample composition by country and bank type.

[Insert Tables 1 and 2 here]

5. Empirical Model

We follow Casu et al. (2013) and apply Probit regression estimations through a binary indicator that has a unit value for the securitization decision type, and zero otherwise. Our estimation model is developed in line with Caliendo and Kopeinig (2008) and Elnahass et al. (2019) to separate the propensity estimation from the average treatment of the group and to account for self-selection bias of locations by banks. This model is specified as:

$$P(D_SEC_{it} = 1 | X_{it-1}, Z_{it-1}, MACRO_j) \quad (1)$$

Where D_SEC_{it} is a set of the securitization decision dummies, X_{it-1} is a vector of bank-level characteristics, Z_{it-1} is a vector of the variables capturing the religiosity indicators, and $MACRO_j$ is country-level macroeconomic variables. Consistent with Casu et al. (2013) and Caliendo and Kopeinig (2008), we predict that the propensity to securitize in the current period (t) is affected by both the religiosity indicators (i.e. geographical and organizational) in the prior period ($t - 1$). To study the motives for deciding to use securitization in the current year (t), we follow Casu et al. (2013) and measure a bank’s financial motives in the previous year ($t - 1$). We also control for the dependence of standard errors for a given bank by clustering the standard errors at the bank level.

To examine whether other financial motives are likely to dominate banks’ choice for asset securitization, in the presence of religiosity orientations, we include several additional measures, namely (a) capital adequacy, (b) credit risk, (c) cost efficiency, (d) profitability, (e) liquidity, and (f) the quality, growth, and composition of loan portfolios. Following Demirgüç-Kunt and Huizinga (2004) and Beck et al. (2013), we employ a bank capital adequacy measure, the capital adequacy ratio (CAR), which is calculated as (Tier 1 + Tier 2)/total risk-weighted assets. CAR reflects the legal regulatory requirements for capitalization as well as measures the adequacy level (i.e. the buffers maintained by the bank) (Fonseca and González, 2010; Anginer et al. 2018). Moreover, consistent

with the prior literature, we measure credit risk as the nonperforming loans to gross loans ratios, NPLtoGR (Lepetit et al., 2008; Bitar et al. 2017)¹⁷. The overheads to total assets ratio (OVtoTA) is used to measure cost efficiency (Bitar et al. 2017; Trinh et al., 2020). This measure is expected to capture the dynamics of operational efficiency affecting bank performance. Bank profitability is also used to indicate a bank's earning capability through return on average equity (ROAE) (Casu et al., 2013; Mollah et al., 2015). The liquidity indicator reflects a bank's ability to repay short-term obligations. We use the ratio of liquid assets to total deposits (LAtoTD) and borrowings to measure bank liquidity management (Beck et al., 2013).

Furthermore, we indirectly measure additional motives for securitization through the loan Herfindahl–Hirschman Index (HHI), LOANHHI, and the total deposits to total assets ratio (DESPO), which captures the portfolio diversification (Liu et al. 2020). Both the operating income to total revenue (INCO) and the non-interest income to net operating revenue (NONINT) ratios capture the banking activity/services diversification motive. It is predicted that an increase in the share of noninterest income in total operating income will lower bank financial performance and stability since an increased reliance on noninterest income raises the volatility of bank loan portfolios without a straight link to increased profits (DeYoung and Roland, 2001; Trinh et al., 2020). Banks with a high share of non-operating income encounter increased insolvency risk (Lepetit et al., 2008).

Loan growth is captured through both the total loan to total assets ratio (LOANRATIO) and the loan growth rate (LOANGROWTH) (Affinito and Tagliaferri 2010; Casu et al., 2013). Bank size (SIZE) is used to capture the possible influence of economies of scale (Hänsel and Bannier 2008; Chronopoulos et al. 2015). Size accounts for big banks that might have smaller capital buffers and are therefore riskier, which according to the “too-big-to-fail” hypothesis proposes that large banks will receive regulatory support during financial distress or when they have lower risk due to the enhanced diversification of their asset portfolio (Olson and Zoubi, 2008; Parashar and Venkatesh, 2010; Fonseca and González, 2010; Abedifar et al., 2013; Beck et al., 2013).

We control for bank age (AGE) to proxy bank's capability and use informational advantages to control for risks (Pathan and Skully 2010). In addition, we control for a set of macroeconomic variables, including market power, through a proxy for the market share of deposits (MSD), measured as the total bank deposits over the total banking sector deposits (Berger, 1995). Moreover, we control

¹⁷ Nonperforming loans are defined as loans in the bank's portfolio that are overdue by more than 90 days on interest or principal payments. They are disclosed as supplemental financial statement information (Wahlen, 1994).

for the country's prevailing inflation rate as well as the growth in the prosperity of the population by including the growth in GDP per capita, GDPGR (Fang et al. 2014; Trinh et al. 2020). According to Demirgüç-Kunt and Detragiache (2006), bank crises are more prevalent in countries with low GDP growth and high inflation and real interest rates. During periods of high economic growth, demands on loans and financial services provided by both Islamic and conventional banks are likely to increase. This situation is expected to increase bank cash flow, interest earnings, and profits.

Since our study period falls within the period of the global financial crisis, we predict the growth variable, GDP, to be a negative determinant of bank performance (Subramanian et al., 2013). With regard to the inflation variable (INF), in conventional banking, high inflation rates should lead to higher loan rates, which in turn would result in higher revenues (Elnahass et al. 2018). For Islamic banks, INF is likely to be positively associated with performance only if a large portion of the profits accrue from debt-based contracts (i.e., Murabaha-cost plus markup) (Subramanian et al., 2013). In our study, with the assumption that Islamic banking is at present mostly based on debt rather than equity-based contracts, we expect inflation to have a positive effect on religious adherent banks' performance. In addition, because Islamic banks are prohibited from charging fixed interest rates, profitability is likely to be positively associated with domestic inflation rates. *Appendix 2* presents the variable definitions for our model.

[Insert Table 3 here]

6. Results

6.1 Descriptive Statistics

Table 3 presents the descriptive statistics of our data for the full sample (in Panel A) and the comparative results for securitizers (in Panel B) and non-securitizers (in Panel C). We also present a two-sample T-test (paired sample mean t-test for securitizer and non-securitizer banks). All financial indicators are lagged by one year to demonstrate the financial profile of banks in the previous year before deciding to enter into securitization in comparison with non-securitizers.

For our full sample, the unreported descriptive statistics for the securitizer banks indicate that these banks constitute 60% of total assets of the full sample and 6% of the total market share for banks' deposits (MSD). These results are consistent with previous research, which finds that larger banks are more inclined to securitize than their smaller counterparts (Hänsel and Bannier, 2008; Liu et al. 2020).

The means for geographical (organizational religiosity) for the full sample are reported as 0.783 (0.217), respectively. Securitizer banks report lower means for the two religiosity indicators employed here than non-securitizer banks. The t-test reveals that there is a noteworthy distinction between securitizer and non-securitizer banks in relation to both geographical and organizational religiosity (i.e. securitizer banks indicate significantly lower geographical and organizational religiosity than non-securitizer banks). T-tests comparing the two subsamples show considerable differences in (a) capital adequacy, (b) risk profile, (c) performance, and (d) loan diversification profile.

These results provide primary insights into the underlying motives behind engagement in asset securitization activities, and they are in line with the prior literature (see Mian and Sufi, 2009; Affinito and Tagliaferri, 2010; Casu et al., 2013). In particular, the results show that securitizers have low capital adequacy with a CAR average ratio of 20% (22%), have high credit risk with an average NPLtoGR ratio of 12% (8%), are less cost-efficient with an average ratio of OVtoTA of 40% (29%), have poorer loan portfolio diversifications with a LOANHHI mean of 0.14 (0.15), and a slow loan growth mean of 19% (23%); however, they are more profitable at 11% (10%), respectively, than banks that were never involved in asset securitization in our total sample. Moreover, securitizers are relatively larger and older than non-securitizers.

[Insert Table 4 here]

Table 4 presents the Pearson correlation coefficients for the full sample. All correlations are in line with expectations, and the matrix of the correlation coefficients affirms that multicollinearity does not appear to be a serious statistical problem.

[Insert Table 5 here]

6.2 Empirical Results

In Table 5, we examine the effects of both geographical and organizational religiosity on asset securitization for the full sample. Panel A presents estimations from our baseline model in equation (1), but we interact geographical religiosity with determinants of asset securitization decisions. We use a dummy interaction variable (I_GR) which takes the value of 1 (value of 0) for high (low) religion importance across the sampled countries as represented by our proxy. Panel B shows the results for identifying the effect of organizational religiosity through interacting all determinants of asset securitization decisions with the dummy indicator (i.e. OR), which reflects the two bank types (i.e.

Islamic banks take the value of 1 and conventional banks take the value of 0).

When estimating our baseline model in equation (1), the results for the full sample indicate that, on average, banks located in countries characterized by a high representation of geographical religiosity are less likely to securitize, therefore indicating a risk-averse behavior. These findings support those of Leventis et al. (2015), Kanagaretnam et al. (2015), Dyreng et al. (2012), and McGuire et al. (2012), which suggest that lower risk-taking occurs in countries characterized by more religious adherence. In contrast, banks characterized by organizational religious adherence such as Islamic banks tend, on average, to significantly embark on asset securitization. When assessing the different financial motives to securitize their assets across our sampled banks and regardless the nature of the religiosity indicator applied, we find that banks with high credit risk in the previous year (i.e. a significant and positive NPLtoGR ratio) are likely to be involved in asset securitization in the current year to shift and mitigate their risk. Banks in our sample also tend to use securitization to improve their profitability position in the current year (i.e. low ROAE in the previous year) and promote better loan growth (low LOANRATIO in the previous year). These results are consistent with Jones (2000), suggesting that banks securitize assets in order to take advantage of increased economies of scale, reduce their costs of debt financing, and diversify funding sources. Furthermore, our results support Casu et al. (2013), which indicates that banks tend to securitize assets to shift their credit risk, reduce their funding costs, and improve profitability.

To test our first hypothesis (H_1), which addresses the monitoring role of religiosity in risk-shifting within high versus low religious geographic locations, we use the interaction analyses for countries characterized by a high (low) importance of religion. In Panel A, Table 5, a highly significant and positive coefficient on the dummy indicator for religion importance (I_GR) suggest that banks located in countries with low religion importance tend to engage more aggressively in securitization as compared to countries with high religiosity. By interacting I_GR with the determinants for asset securitizations, we find that securitizing banks located in more religious countries (i.e. high importance of religion) show significantly low credit risk (NPLtoGR), low loan concentration (LOANHHI), and low profitability (ROAE) in the preceding year. These results indicate that securitized banks in more religious countries tend not to use securitization to shift credit risk when compared to banks located in less religious countries. In fact, these banks tend to use securitization to improve their loan portfolio diversification and earnings in the current period. These findings confirm our predictions and are consistent with those of Casu et al. (2013) that banks are likely to enter the activity when they can take advantage of their strong credit profile and access benefits by

reducing the funding costs/operating on higher economies of scales.¹⁸ The findings in Panel A support our first hypothesis indicating a risk-averse behavior for banks located in more religious countries when compared to banks located in less religious countries.

In Table 5, Panel B, we test our second hypothesis (H_2) through interaction analyses between the indicators for asset securitization decisions and OR. We find a significant and positive coefficient on the OR variable, which indicates that conventional banks are more likely to securitize than Islamic banks. However, when interacting OR with the determinant for securitizations, we find that Islamic banks show significantly low capital adequacy (CAR), low cost efficiency (OVtoTA), low loan growth ratio (LOANGROWTH), low profitability (ROAE) and low operating income (INCO) in the previous year. These findings indicate that religious adherent banks seem to ultimately utilize asset securitization to enhance their financial performance and loan portfolio. These findings are consistent with Abdelsalam et al. (2020), who find that Islamic banks are more likely to securitize their assets to gain access to external funding and to enhance their regulatory capital buffers. These motives emerge under the liquidity challenges and excessive monitoring imposed on their banking business model, which is subject to additional screening and compliance criteria (Elnahass et al. 2019).

The overall results support our second hypothesis, stating that Islamic banks embark on a constrained model of securitization to improve performance rather than to shift credit risk. Unlike conventional banks, Islamic banks appear not to use asset securitization for risk-shifting, with an insignificant coefficient on the NPLtoGR ratio. This can be attributed to the corporate moral environment for this set of banks, which appear to restrain risk transfer practices to third parties, thereby showing careful attention to the banks' underlying incentives to use securitizations. To further examine our second hypothesis, we cluster our full sample into Islamic and conventional banks subsample to run additional analyses in order to identify motives for conventional banks to securitize assets. We find that conventional banks are likely to significantly embark on securitization this year to both shift their credit risk (i.e. significantly high NPLtoGR in the previous year) and promote high

¹⁸ As a sensitivity estimate, we cluster the full sample into high and low religion importance countries to examine the first hypothesis using subsampling analyses, and our conclusion remains unchanged. Banks within countries with high religion importance utilise asset securitizations to improve their financial profile and diversify their loan portfolio. In contrast, banks located in less religious countries (i.e. low importance of religion) show significantly high cost-efficiency (low OVtoTA) and diversified loan portfolios (high LOANHHI), but the results show a significantly high credit risk (high NPLtoGR) alongside a high concentration of interest-related banking activities, which implies poor income diversification (low NONINT) in the previous year. The findings suggest that this set of banks ultimately use asset securitization for risk-shifting and diversifying their sources of funds. These results support existing studies (e.g., Mian and Sufi, 2009; Keys et al., 2010; and Dell'Araccia et al., 2009), suggesting that banks are more likely to securitize their worst mortgage loans during the last decade.

profitability (i.e. significantly low ROAE in the previous year). Conventional banks also report a high operating income (i.e. significantly low INCO) in the preceding year, which indicates that risk-shifting tends to be a motive for the asset securitization decisions of these banks. The results for the conventional banks are in line with the prior literature, which highlights a substantial use of securitizations to pass on credit risk to new investors (Dell’Ariccia et al. 2009; Mian and Sufi 2009; and Keys et al. 2010).

Taken together, our findings present strong evidence for the influence of religiosity indicators, both at the country and organization levels, on banks’ decisions towards asset securitization. The findings confirm our predictions and support the study’s hypotheses implying that religious norms and religious institutional environments can restrain risk-taking practices (Grullon and Kanatas, 2010; McGuire et al., 2012; Kanagaretnam et al., 2015). Banks operating in religious areas and those characterized by religious adherence tend to utilize asset securitization to improve their financial and operating performance rather than to shift risk. The results reported for conventional banks also support the arguments in prior studies for the use of asset securitizations, such as the originate-to-distribute model, to shift high credit risk to new investors and improve the quality of the loan portfolio (Cebenoyan and Strahan, 2004; Keys et al., 2010; Purnanandam, 2011). These motives raise some ethical concerns about this type of asset securitization model and how it should be monitored and regulated in the future.

7. Additional Analyses and Robustness Checks

Studying the relationship between religiosity and bank risk is based on the rationale supported by the social norms theory and previous research, which suggest that high religiosity is associated with more risk aversion. In order to investigate whether this relationship holds in our setting and to check the robustness of our results, we additionally identify the effect of religiosity on the banking securitization activity. We extend our analyses to assess the impact of the financial crisis alongside the recovery period on banks’ decisions to securitize. Moreover, across separate tests we additionally control for different bank ownership types and various country governance measures. Finally, we address various types of sensitivities to check the robustness of our results.

7.1 Asset Securitization Activity

To obtain further insights into the effect of religiosity on securitization decisions, we extend our analyses to address securitization activity (SEC). We aim to examine whether religiosity

(either geographic or organizational) affects the annual activity of asset securitizations for our sample banks. We restrict the whole sample to only those bank-years that issued any type of new security; however, we distinguish in the full sample between the population of Islamic banks issuing Islamic securitizations and those issuing conventional securitizations using the indicator dummy OR. The variable SEC (securitization activity) is continuous, effectively replicating Barth et al.'s (2012) and Abdelsalam et al.'s (2020) methodology. We use GMM estimations to run our analyses and the main specified model is developed as:

$$SEC_{i,t} = \beta_0 + \beta_1 SEC_{i,t-1} + \beta_2 GR_{i,t} + \beta_3 OR_{i,t} + \beta_4 X_{i,t} + \beta_5 MACRO_{i,j,t} + \varepsilon_{i,t} \quad (2)$$

Table 6 shows that the annual securitization activities for our sampled banks is significantly mitigated under geographical religiosity (GR) but such activity increases significantly for banks characterized by high religious adherence like Islamic banks (i.e. OR). When we interact these religiosity indicators with determinants for securitizations (Panel A: reports GR interactions while Panel B presents OR interactions), we find that banks located in more religious countries significantly engage in securitization activities to enhance their loan portfolio and overcome poor efficiency and profitability in the current year. Moreover, Islamic banks, in Panel B, tend to report higher annual securitization activities, when compared to their conventional counterparts, to boost their capital adequacy and profitability. These findings are consistent with Beck et al. (2013), who suggest that Islamic banks are generally less cost-efficient and less capitalized than conventional banks. Our findings support Abdelsalam et al. (2020), who suggest that Islamic banks hold higher asset quality. Taken together, these findings further support our main findings across the two different indicators of religiosity and highlight the impact on asset securitization activities.

[Insert Table 6 here]

7.2 The Financial Crisis and Recovery Periods Effects

Our sample period covers a major crisis episode that affected global banks considerably in the period 2007–2008¹⁹. The ramifications of the crisis on banks were, to a large extent, unexpected. Therefore, the crisis period offers another experimental setting to understand the causal relationship between geographical and organizational religiosity and asset securitization. According to Delis et al. (2017) and Adhikari and Agrawal (2016), exogenous crises have a negative effect on banks' risk-

¹⁹ We define the crisis periods similar to Fahlenbrach and Stulz (2011).

taking behavior. Although we control for the crisis in the main tests, we further evaluate the incremental influence of religiosity on securitization decisions during the crisis period. Our aim is to identify whether the financial crisis brought about significant additional risk-taking behavior, measured through the securitization activity, for banks operating in more (less) religious countries and banks that are religiously oriented.

To do so, we perform both descriptive and empirical analyses. First, we report the average (mean) distributions of religiosity indicators (i.e. geographical and organizational religiosity) by year in *Appendix 3*. Fig. 1 shows that since 2005 there has been a steady growth in the importance of religion to individuals, even during the financial crisis period. During the recovery period (2009–2012), a peak can be observed in 2010 with a slight decrease around 2011, followed by a gradual increase in 2012. Fig. 2 indicates that during both the financial crisis and recovery periods, the average growth of the securitization activity for banks characterized as religious adherence was not affected in any of the two periods, and stable growth is observed throughout the sample period. Second, for the empirical assessment we employ our main model, specified in Section (5), for the full sample, except for the fact that we examine the impact of religiosity indicators on banks' propensity to securitize within two separate periods: (i) the financial crisis (2007–2008) and (ii) the recovery period (2009–2012).

The results are reported in Table 7 and show that during the crisis period, banks located in more religious areas report no significant evidence of asset securitization. This finding further implies the risk-averse attitude for this set of banks, even during periods of financial distress and when compared to banks located in less religious countries. With respect to organizational religiosity, religious adherent banks are less likely to enter into asset securitization decisions as compared to their conventional counterparts. The results point towards some caution by religious adherent banks against risky activities during episodes of exogenous shocks, which might be explained by their religious orientation and/or constrained asset securitization model. When identifying the underlying motives for asset securitization, the results further confirm similar motives to our main tests for the full sample, indicating that banks tend to use securitization to shift credit risk as well as improve their financial position and funding diversification.

In Table 7, tests within the recovery period indicate that banks located in more religious areas are less likely to engage in securitization, whereas religious adherent banks report a significant increase in their propensity to securitize during that period. This finding alleviates concerns that the asset securitization model employed by religious adherent banks is affected by this exogenous shock,

unlike the conventional securitization model, which barely survived the crisis. In general, banks tend to enter into securitization activity during the recovery period to improve their cost efficiency and profitability.

Overall, the findings further support the study's hypotheses and confirm the conception that religiosity as a cultural factor can promote a more resilient banking model that is less susceptible to financial distress and more robust during periods of unrest (Adhikari and Agrawal, 2016).

[Insert Table 7 here]

7.3 Controlling for Country Governance and Bank Ownership Types

In this section, we recognize the impact of country and institutional governance on banking stability and risk-taking, in line with Trinh et al. (2020) and Elnahass et al. (2019). Hence, we control for the impact of country governance and ownership structures on our main findings. The country governance variables are represented by the political stability of the country ($POLITICAL_{t-1}$) as well as its social stability ($SOCIAL_{t-1}$) and regulatory quality (RQ_{t-1}), as defined by the World Bank's World Development Indicators database. We follow prior studies (e.g. Choi and Hasan, 2005; Iannotta et al., 2007; Pennathur et al., 2012) in classifying our sample banks' ownership types into financial, corporate, private, government, and foreign ownership. *Appendix 2* provides the definition of the country governance and ownership controls.

In Table 8, Model 1, we control for the country governance variable and we find that geographical religiosity has a significant and negative coefficient. This suggests that banks located in areas with high religion importance are less likely to securitize. The organizational religiosity indicator reports a positive and significant coefficient, indicating that Islamic banks are more likely to embark on asset securitization activity via their constrained model of securitization. The findings also show that banks located in countries with high regulatory quality (i.e. where the government formulates and implements sound policies and regulations that permit and promote private sector development) do not significantly enter into asset securitization, with a significant and negative coefficient on RQ.

Furthermore, by controlling for the various ownership types in Model 2 in Table 8, our results consistently support the positive impact of both religiosity indicators on banks' decisions to securitize. The results indicate that banks with government ownership (GOV_OWN) are less likely to enter into securitization activity, which might be justified by the substantial risk inherent in this banking activity for public banks.

[Insert Table 8 here]

7.4 Sensitivity Checks

We run a set of robustness tests based on the full sample analyses. Our aim is to investigate whether the findings remain consistent subject to alternative model specifications and changed estimation procedures, including those controlling for endogeneity problems. Table 9 presents a summary of the results, whereby we report the coefficient estimates on each of the religiosity indicators and significance levels. The first row displays our main results as a baseline, reported in Table 5 under the full sample column. The first robustness check addresses endogeneity bias in relation to the omitted variables. We use the two-stage least squares (2SLS) method. In addition, we follow Hilary and Hui's (2009) identification strategy for the valid instrument and employed a three-year lag of log of the population as our primary instrument. This instrument is valid only to the extent that any correlation between religiosity and potential omitted variables (e.g., competition, regulatory differences across time and time-varying bank growth opportunities) does not continue over time (Chan and Milne, 2014). Table 9, Test (1), reports the results for the instrumented religiosity from the second-stage estimation.²⁰ The results for both religiosity measures are significant and consistent with our main results. Therefore, the observed negative (positive) association between geographical (organizational) religiosity indicators and banks' securitization decisions is unlikely to be driven by endogeneity issues.

The second robustness check identifies whether bank-specific unobserved heterogeneity is affecting our results (i.e. whether our test variables have substantial time-series variations). Although unobserved heterogeneity across banks is better controlled through applying a bank fixed-effects model, we argue in line with prior banking studies (see Mollah and Zaman, 2015; Adhikari and Agrawal, 2016) that fixed effects are inappropriate to our empirical settings due to limited time-series variations in the level of geographical and organizational religiosity indicators. Consequently, we use a random effects model, which identifies the effect of time-invariant covariates in panel data based on restrictive assumptions regarding the error term correlations. The estimated standard errors are corrected for heteroscedasticity and are clustered at the bank level. In Test (2), the results from the random effects model continue to confirm our main results.

The next robustness check is done to assess the influence of large banks that are characterized as

²⁰ Unreported results for the first-stage estimation indicate that this instrument satisfies the relevance and exclusion criteria. The LM statistics p-value is less than 1% and the Hansen's J-statistic (p-value) is greater than 10%.

being “too-big-to-fail”. These banks might possess stronger motives to engage more aggressively in risky activities like asset securitizations. Therefore, we remove banks from our sample, following Berger et al. (2019), that have total assets exceeding \$100 billion. Test (3) shows that our results from this exclusion remain consistent, which suggests that the main findings for the causal relationship between religiosity and securitization decisions are not driven by this specific set of large banks²¹.

Moreover, to further address the influence of the financial crisis on our main findings, we remove the crisis period (i.e. years 2007–2008) from our sample and re-estimate our main model without the crisis variable. Test (4) shows that when we isolate this episode effect, the non-crisis sample exhibits consistent results, similar to the full sample effect, for the impact of religiosity on asset securitizations decisions. This finding further supports the results in section 7.1 that religious adherent banks and banks located in more religious areas were less significantly affected by this financial crisis.

We further check whether our findings are affected by possible correlations between different banks’ regulations and policies when they are located in the same country. Under this test, we cluster the standard errors at the country level instead of banks. We re-estimate our main model, and the results for Test (5) indicate that the main findings remain unchanged among the two measures of religiosity.

With the international sample of banks used in this study, we finally examine whether our results are driven by time-invariant heterogeneity across different country regions, particularly under the assumption of the high concentration of religious adherent banks in the Middle East and North Africa (MENA) region. We, therefore, cluster our full sample into two broad regions: countries located in the MENA region and those in non-MENA regions²². We use a regional dummy variable defined as 1 for MENA countries and 0 for non-MENA countries. We add this as a control to our main model specification. The results in Test (6) show that both geographical and organizational religiosity continue to show statistically significant results, having the same directions of the coefficients as those for the main tests.

[Insert Table 9 here]

²¹ With the small number of year-observations for “too-big-to-fail” banks we have in our sample, we examine additional sensitivities by clustering our full sample into large and small banks above (below) our log of total assets mean of (\$7.485). Unreported results show that our conclusions remain intact on average.

²² The MENA region in our sample includes Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Qatar, Saudi Arabia, Syria, Tunisia, Turkey, and the United Arab of Emirates.

8. Conclusion

Motivated by the controversy regarding the impact of religious norms on corporate risk-taking, this study examines the role religiosity plays in mitigating banks' choice to conduct excessive risk-shifting identified by a bank asset securitization model. Our premise is based on an identification of country-level (i.e. geographical) and bank-level (i.e. organizational) religiosity indicators. The theoretical predictions in this study suggest that individuals that highly rate the importance of religion (i.e. geographical religiosity) are more likely to embrace an intrinsic religiosity attitude. However, business organizations and banks adopting a religious code (i.e. organizational religiosity) could be representative of either type of religiosity (intrinsic and extrinsic), depending on their managements' ethical undertaking.

The findings in this study provide empirical evidence that religiosity represents an alternative monitoring mechanism that shape bank risk-taking and risk shifting choices. With respect to countries where religion is important, banks appear to be risk-averse and are less likely to securitize, and the banks that chose to securitize their assets do so in order to improve their loan growth and diversification rather than to shift credit risk. In contrast, banks located in less religious countries use of asset securitizations to transfer high credit risk to new investors. We also find that Islamic banks have a lower tendency towards shifting risk. These banks use a constrained model of securitization mainly to gain access to market sources, to enhance their profitability positions, and to improve their capital adequacy requirements. The findings also show that conventional banks are more likely to engage in asset securitization activity to shift credit risk to new investors and to improve the quality of their loan portfolio.

Our findings offer empirical evidence for the impact of religiosity on bank risk management via asset securitization and the implications on institutional agency costs. The results in this study support current regulatory attempts to boost global institutional reforms for asset securitization within the banking industry. The role of religiosity appears to be a significant element to consider in regulating securitization trading markets worldwide. We raise awareness of the constrained model of securitization operated by Islamic banks, which requires higher levels of monitoring and ownership rights by the new investors. Our empirical evidence informs regulators and other stakeholders of the urgency of embedding monitoring and accountability aspects into the banking model when developing regulatory requirements for asset securitization in this industry. We therefore strongly believe that it is important to consider the social norms theory in international banking studies.

We note that within the scope of this study, we can only explain why banks are involved in asset securitization. As such, we cannot determine the implications of this for banks' risk profile and long-term financial stability. We also acknowledge that our research design has certain limitations since studying geographical and organizational religiosities does not directly capture the individual religiosity of managers. Our measures are indicative of the prevailing norms of individual beliefs rather than an assessment of the religious adherence of corporate managers and firms. Future research needs to evaluate the impact of religiosity within the homogenous contexts of countries.

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Table 1 Importance of religion per country, as reported by the Gallup survey of 2009		
Country	Responses	
	(1)	(2)
	YES %	NO %
Algeria	0.93	0.07
Bahrain	0.96	0.04
Bangladesh	1.00	0.00
Brunei Darussalam	0.96	0.04
Egypt	0.98	0.02
Indonesia	0.99	0.01
Iraq	0.80	0.20
Jordan	0.97	0.03
Kuwait	0.93	0.07
Lebanon	0.72	0.28
Malaysia	0.96	0.04
Mauritania	0.98	0.02
Pakistan	0.97	0.03
Qatar	0.95	0.05
Saudi Arabia	0.95	0.05
Syrian Arab Republic	0.90	0.10
Tunisia	0.93	0.07
Turkey	0.23	0.77
United Arab Emirates	0.91	0.09
Yemen	0.96	0.04
<i>Average - Cut-off point</i>	<i>0.89</i>	<i>0.10</i>

Notes Data Source: Gallup Poll: “Gallup is an American research-based, global performance-management consulting company known for its public opinion polls conducted worldwide. For more information on the Gallup survey, please visit <https://news.gallup.com/poll/142727/religiosity-highest-world-poorest-nations.aspx>.

Table 2 Sample Composition by Country and Bank Type				
Country Name	High Religion Importance	Low Religion Importance	Religious Adherent Banks	Conventional Banks
ALGERIA	132		15	117
BAHRAIN	263		159	104
BANGLADESH	231		24	207
BRUNEI DARUSSALAM	23		13	10
EGYPT	248		29	219
INDONESIA	578		46	532
JORDAN	169		26	143
KUWAIT	129		79	50
MALAYSIA	254		82	172
MAURITANIA	68		10	52
PAKISTAN	266		54	212
QATAR	125		42	83
SAUDI ARABIA	123		53	70
TUNISIA	189		13	176
UNITED ARAB OF EMIRITES	249		76	173
YEMEN	69		32	32
LEBANON		290	12	278
IRAQ		209	29	60
SYRIA		179	12	67
TURKEY		275	27	248
Total Observations	2885	953	833	3005
Total Banks	419	107	131	395

Notes: The table reports the study subsamples distributions by countries for banks located in high/low religious areas and the bank type. The classification of high religion importance areas represents countries whose citizens have indicated "yes" for the Gallup poll's question "Is religion important in your daily life?" and are above or equal to the average (0.87575) of 20 counties in sample. Countries with low religious importance are those whose citizens have answered "No" and are above or equal to the average (0.1135) in sample countries. The full sample comprises 3838 observations (526 banks) for the study period years 2003 through 2012.

Variables	Panel A: Full Sample			Panel B: Securitizers			Panel C: Non Securitizers			Two-Sample T-test (two-tailed)
	Mean	Median	Std.Dev	Mean	Median	Std.Dev	Mean	Median	Std.Dev	
Geographical Religiosity	0.783	1	0.293	0.734	1	0.319	0.887	1	0.422	-16.119***
Organizational Religiosity	0.217	0	0.412	0.063	0	0.243	0.174	0	0.379	-2.916**
CAR	21.809	16.980	17.848	20.866	17.21	15.799	22.442	17.100	19.923	-3.019**
NPLtoGR	8.508	4.110	12.931	11.699	5.145	18.330	8.275	4.15	12.514	1.199**
OVtoTA	27.751	21.351	28.438	40.299	22.69	26.541	27.881	20.474	28.438	0.023
LOANHHI	0.162	0.115	0.099	0.145	0.110	0.082	0.154	0.118	0.091	-4.591***
LOANGROWTH	24.151	13.370	57.324	19.483	12.98	38.045	22.578	12.050	59.607	-0.643***
ROAE	11.064	11.074	28.795	11.134	10.33	31.351	9.572	9.833	27.478	1.239**
LAtotD	36.627	28.919	32.925	40.228	33.27	34.421	41.682	31.555	47.466	0.038
SIZE	7.454	7.44	1.800	8.176	7.160	1.868	7.339	7.322	1.927	19.364***
INCO	0.025	0.013	0.411	0.019	0.013	0.034	0.030	0.012	0.470	-0.146
LOANRATIO	0.504	0.534	0.214	0.483	0.490	0.213	0.479	0.502	0.229	-2.356*
DESPO	0.662	0.722	0.209	0.649	0.717	0.216	0.636	0.433	0.245	6.700***
NONINT	-14.117	0.423	8.204	-10.177	0.431	4.508	-10.847	0.434	5.303	-0.313
AGE	31.068	27	23.649	36.591	29.00	22.651	34.895	26.000	39.086	5.151***
MSD	0.058	0.018	0.098	0.061	0.016	0.111	0.048	0.011	0.093	-
GDPGR	9.529	9.448	10.963	9.094	8.327	10.492	8.457	8.168	10.989	-
INF	6.320	5.538	5.135	6.283	5.504	5.198	5.590	4.484	4.850	-

Notes: The table presents the descriptive statistics for the test variables for the period of 2003-2012 comparing securitizer and non-securitizer banks. The study pooled sample reflects banks operating in 20 cross countries with 3838 bank-year observations (526 banks). We report on the paired sample mean test (T-test). *, **, *** stand for statistical significance at the 10%, 5%, and 1% levels, respectively. All the financial variables are lagged 1 year. Variables definitions in Appendix 2.

Table 4

Pearson pair-wise correlation matrix

Variables	CAR	NPLtoGR	OVtoTA	LOANHHI	LOANGROWTH	ROAE	LAtoTD	SIZE	INCO	LOANRATIO	DESPO
CAR	1										
NPLtoGR	0.173*	1									
OVtoTA	0.167*	0.229*	1								
LOANHHI	-0.008	0.034	-0.019	1							
LOANGROWTH	0.138*	-0.180*	0.009	0.007	1						
ROAE	-0.041*	-0.161*	-0.099*	-0.012	0.036*	1					
LAtoTD	0.450	0.198*	0.053*	0.069*	0.032	-0.022*	1				
SIZE	-0.376*	-0.276*	-0.350*	-0.025	-0.099*	0.120	-0.270*	1			
INCO	-0.003	0.211*	-0.289*	-0.001	0.032	0.125*	0.162*	0.060	1		
LOANRATIO	-0.248*	-0.335*	-0.126*	-0.169*	-0.057*	0.015	-0.424*	0.225*	-0.121*	1	
DESPO	0.393*	-0.144*	0.197*	0.044*	-0.136*	0.037*	-0.157*	0.255*	-0.220*	0.156*	1
NONINT	0.092*	0.028	-0.006	-0.002	0.017	-0.014	0.005	-0.022	-0.042*	0.029	0.033
AGE	-0.099*	-0.002	-0.093*	-0.123*	-0.124*	0.086*	-0.082*	0.410*	-0.007	-0.041*	0.207*
MSD	-0.119*	-0.060*	-0.162*	0.224*	-0.043*	0.049*	-0.070*	0.339*	-0.061	-0.061*	0.127*
GDPGR	0.018	-0.106*	0.012	0.107*	-0.105*	0.078*	-0.067*	-0.054*	0.013	-0.040*	0.019
INF	-0.042*	0.039*	-0.084*	0.031	0.019	0.023	-0.067*	-0.011*	-0.004	-0.052*	0.062*
Variables	NONINT	AGE	MSD	GDPGR	INF						
NONINT	1										
AGE	-0.019	1									
MSD	0.008	0.177*	1								
GDPGR	0.008	-0.015	0.035*	1							
INF	0.011	-0.046	0.022*	0.019*	1						

Notes: The table reports Pearson correlation coefficients for the test and control variables for the full sample during the period of 2003-2012. * stands for statistical significance at the 5%, level.

Table 5 Asset securitization decisions and religiosity indicators			
Variables	Full Sample	Panel A (With) Interactions for GR	Panel B (With) Interactions for OR
Geographical Religiosity (GR)	-0.205*** (0.000)		
Organizational Religiosity (OR)	0.854** (0.016)		
I_GR		0.967** (0.004)	2.400** (0.027)
OR			
CAR	0.030 (0.206)		
NPLtoGR	0.017*** (0.000)		
OVtoTA	-0.007 (0.562)		
LOANHHI	-2.738 (0.396)		
LOANGROWTH	-0.003 (0.503)		
ROAE	-0.021** (0.007)		
LAtoTD	-0.015 (0.241)		
SIZE	0.602** (0.021)		
INCO	-0.070 (0.314)		
LOANRATIO	-2.355* (0.087)		
DESPO	-1.228 (0.285)		
NONINT	1.639		
CAR x I_GR		0.014 (0.584)	
NPLtoI_GR x I_GR		-0.035*** (0.000)	
OVtoTA x I_GR		0.011 (0.421)	
LOANHHI x I_GR		-6.147** (0.04)	
LOANI_GROWTH x I_GR		-0.008 (0.141)	
ROAE x I_GR		-0.015** (0.025)	
LAtoTD x I_GR		-0.005 (0.961)	
INCO x I_GR		-0.177 (0.223)	
LOANRATIO x I_GR		-0.504 (0.668)	
DESPO x I_GR		-0.781 (0.345)	
NONINT x I_GR		17.221* (0.086)	

CAR x OR			-0.053***
			(0.000)
NPLtoGR x OR			0.027
			(0.940)
OVtoTA x OR			0.097**
			(0.008)
LOANHHI x OR			-0.625
			(0.388)
LOANGROWTH x OR			-0.012**
			(0.032)
ROAE x OR			-0.061*
			(0.094)
LAtotD x OR			0.036
			(0.178)
INCO x OR			-1.521**
			(0.015)
LOANRATIO x OR			0.214
			(0.593)
DESPO x OR			-0.821
			(0.475)
NONINT x OR			7.050
			(0.208)
SIZE	0.602**	0.135	1.342***
	(0.021)	(0.507)	(0.000)
AGE	0.004	0.024	0.007
	(0.639)	(0.736)	(0.303)
CRISIS	-0.118	-0.180	-0.061
	(0.669)	(0.466)	(0.813)
MSD	-8.411	-3.979	-5.931**
	(0.141)	(0.306)	(0.113)
GDPGR	0.009	0.002	0.009
	(0.349)	(0.808)	(0.251)
INF	-0.008	-0.037	0.175**
	(0.815)	(0.320)	(0.007)
Constant	5.160**	1.859**	3.885***
	(0.029)	(0.002)	(0.000)
Industry dummies	YES	YES	YES
Year dummies	YES	YES	YES
N	3838	2164	1094
Log likelihood	-1170.950	-1601.348	-157.632
Pseudo R ²	0.087	0.091	0.073

Notes: The table reports the probit regression estimates of banks' propensity to securitize assets during the full sample period: (a) our base line equation (1) is estimated for the full sample controlling for geographical and organizational religiosity indicators; (b) Full sample (with) interaction analyses for geographical religiosity (I_GR) defined as a dummy variable equals 1 for countries scored as highly religious and 0 for countries with low importance for religion in line with Gallup survey; (c) Full sample (with) interaction analyses for organizational religiosity (OR) (i.e. Religious adherent which takes the value 1 versus conventional banks which takes the value of 0). All explanatory variables are lagged 1 year except religiosity indicators. Standard errors of estimated coefficients are corrected for heteroscedasticity and are clustered at the bank level. P-values are between parentheses. *, **, *** stand for statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 6 Asset securitization Activity and religiosity indicators			
Variables	Full Sample	Panel A (With) Interactions for GR	Panel B (With) Interactions for OR
Geographical Religiosity (GR)	-1.535** (0.013)		
Organizational Religiosity (OR)	1.402*** (0.000)		
I_GR		1.710** (0.032)	1.571** (0.000)
OR			
CAR	0.034*** (0.000)		
NPLtoGR	0.0483** (0.0413)		
OVtoTA	0.076 (0.882)		
LOANHHI	-4.148 (0.121)		
LOANGROWTH	-0.003 (0.227)		
ROAE	-0.020*** (0.001)		
LAtoTD	-0.016 (0.139)		
INCO	-0.088 (0.142)		
LOANRATIO	-0.328 (0.190)		
DESPO	-0.274 (0.201)		
NONINT	4.403* (0.071)		
CAR x I_GR		0.011 (0.584)	
NPLtoI_GR x I_GR		-0.048** (0.021)	
OVtoTA x I_GR		0.011** (0.001)	
LOANHHI x I_GR		-5.915** (0.047)	
LOANI_GROWTH x I_GR		-0.007 (0.142)	
ROAE x I_GR		-0.017** (0.026)	
LAtoTD x I_GR		-0.051 (0.967)	
INCO x I_GR		-0.851 (0.310)	
LOANRATIO x I_GR		-0.492 (0.674)	
DESPO x I_GR		-0.779 (0.551)	
NONINT x I_GR		15.321 (0.904)	

CAR x OR			-0.081***
			(0.000)
NPLtoGR x OR			0.048
			(0.871)
OVtoTA x OR			0.012
			(0.971)
LOANHHI x OR			-4.418
			(0.121)
LOANGROWTH x OR			-0.067
			(0.471)
ROAE x OR			-0.020**
			(0.019)
LAtotD x OR			-0.014
			(0.139)
INCO x OR			-0.082
			(0.139)
LOANRATIO x OR			0.678
			(0.190)
DESPO x OR			-0.267
			(0.760)
NONINT x OR			4.406
			(0.725)
SIZE	0.602**	0.146	0.371
	(0.021)	(0.541)	(0.195)
AGE	0.004	0.054	0.025
	(0.639)	(0.578)	(0.760)
CRISIS	-0.118	-0.176	-0.043
	(0.669)	(0.751)	(0.865)
MSD	-8.411	-4.042	-6.529
	(0.141)	(0.941)	(0.186)
GDPGR	0.009	0.001	0.001
	(0.349)	(0.803)	(0.802)
INF	-0.008	-0.084	0.026**
	(0.815)	(0.943)	(0.015)
Constant	5.160**	1.184***	2.815***
	(0.029)	(0.000)	(0.000)
Industry dummies	YES	YES	YES
Year dummies	YES	YES	YES
No. of instruments	75	83	75
Wald Chi 2	782***	591***	351***
AR(1) p-value	0.451	0.621	0.843
AR(2) p-value	0.482	0.793	0.752
Hansen-J-P-value	0.761	0.965	0.394

Notes: The table presents the results for GMM estimations using the full sample (Model 1) alongside interaction analyses for geographical religiosity (Model 2) and organizational religiosity (Model 3). The asset securitization variable (SEC) represents the total activity of securitization measured as the total amount of asset securitization deflated by the contemporaneous total assets of the bank. Results under the GMM technique are reported using robust standard errors. P-values in parentheses, *p < 0.10, **p < 0.05, ***p < 0.001. The Wald test of the joint significance of the reported coefficients, asymptotically distributed as χ^2 under the null hypothesis of no relationship, degrees of freedom in parentheses. $m_i (m_1, m_2)$ is a serial correlation test of order I (1 and 2) using residuals in first differences, asymptotically distributed as $N(0, 1)$ under the null hypothesis of no serial correlation. Hansen is a test of the over-identifying restrictions, asymptotically distributed as χ^2 under the null hypothesis of no correlation between the instruments and the error term, degrees of freedom in parentheses.

Table 7		
Tests identifying the impact of the financial crisis and recovery periods		
Variables	Within Crisis (2007-2008)	Within Recovery Period (2009-2012)
Geographical Religiosity	-0.982 (0.852)	-1.180* (0.091)
Organizational Religiosity	-7.112** (0.002)	1.419** (0.001)
CAR	0.009 (0.348)	0.014 (0.721)
NPLtoGR	0.696*** (0.000)	0.020 (0.365)
OVtoTA	0.029 (0.523)	0.010** (0.008)
LOANHHI	-4.707 (0.715)	-3.261 (0.329)
LOANGROWTH	-0.008 (0.783)	-0.005 (0.499)
ROAE	-0.013** (0.002)	-0.017* (0.056)
LAtoTD	-0.025 (0.747)	-0.020 (0.367)
SIZE	0.413 (0.697)	0.473 (0.142)
INCO	0.530 (0.536)	-0.106 (0.476)
LOANRATIO	-2.386 (0.797)	-1.857 (0.337)
DESPO	15.806** (0.032)	-1.703 (0.173)
NONINT	29.207 (0.862)	-6.091 (0.789)
AGE	-0.005 (0.847)	0.004 (0.704)
MSD	-7.821 (0.687)	-7.940 (0.339)
GDPGR	-0.286 (0.128)	0.013 (0.285)
INF	-0.246 (0.282)	-0.015 (0.757)
Constant	9.877*** (0.000)	3.656* (0.057)
Industry dummies	YES	YES
N	855	1064
Log likelihood	-122.745	-91.473
Pseudo R^2	0.097	60.29

Notes: The table reports the probit regression separate estimates of banks' propensity to securitize assets for the full sample identifying the impact of the financial crisis (2007-2008) and recovery (2009-2012) periods. All explanatory variables are lagged 1 year. Standard errors of estimated coefficients are corrected for heteroscedasticity and are clustered at the bank level. P-values are between parentheses. *, **, *** stand for statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 8
Test controlling for country governance indicators and bank ownership types

Variables	Model (1)	Model (2)
	Country Governance	Ownership Types
Geographical Religiosity	-0.673** (0.003)	-1.071* (0.077)
Organizational Religiosity	1.104** (0.006)	0.963** (0.024)
CAR	0.037 (0.150)	0.023 (0.426)
NPLtoGR	0.012** (0.032)	0.003 (0.639)
OVtoTA	0.010 (0.630)	0.004* (0.050)
LOANHHI	-1.988* (0.083)	-1.420** (0.005)
LOANGROWTH	-0.002 (0.159)	-0.001 (0.795)
ROAE	-0.023** (0.013)	-0.019** (0.024)
LAtotD	-0.018 (0.247)	-0.014 (0.390)
SIZE	0.653** (0.028)	0.717** (0.042)
INCO	-0.091 (0.156)	-0.063 (0.222)
LOANRATIO	-2.620* (0.088)	-3.349* (0.066)
DESPO	-1.027 (0.436)	-1.135 (0.330)
NONINT	3.674 (0.814)	4.031 (0.811)
AGE	-0.005 (0.611)	-0.007 (0.590)
CRISIS	-0.154 (0.582)	-0.198 (0.508)
MSD	-8.437 (0.156)	-8.794 (0.256)
GDPGR	0.006 (0.605)	0.002 (0.828)
INF	-0.003 (0.939)	-0.004 (0.929)
RQ	-0.040** (0.020)	
POLITICAL	-0.019 (0.219)	
SOCIAL	0.206 (0.632)	
FINANCIAL		0.384 (0.586)
CORPORATE		1.169 (0.111)
PRIVATE		-0.081 (0.933)
GOV		-0.716* (0.093)
FOR		0.453 (0.308)

Constant	9.909**	6.207*
	(0.045)	(0.085)
Industry dummies	YES	YES
Year dummies	YES	YES
N	1038	1285
Log likelihood	-99.53	-1274.25
Pseudo R^2	0.059	0.078

Notes: The table reports the probit regression separate estimates of banks' propensity to securitize assets for: Model (1) controlling for country governance indicators, and Model (2) controlling for different ownership types for the full sample. All explanatory variables are lagged 1 year. Standard errors of estimated coefficients are corrected for heteroscedasticity and are clustered at the bank level. P-values are between parentheses.

	Obs.	Panel A Geographical Religiosity		Panel B Organizational Religiosity	
		Coeff.	p-values	Coeff.	p-values
Main specification	3838	-0.205***	(0.000)	0.854**	(0.016)
1. 2SLS: instrument is lag 3 of population	2860	-0.754***	(0.229)	0.114**	(0.301)
2. Random effect estimations	3838	-0.719**	(0.031)	0.275**	(0.029)
3. Remove “too-big-to-fail” banks	1248	-0.359***	(0.000)	0.929**	(0.020)
4. Drop the financial crisis years 2007-2008	855	-1.165*	(0.077)	1.021**	(0.008)
5. Cluster standard error at the country level	3838	-1.205**	(0.007)	0.954*	(0.076)
6. Control for a regional effect (MENA vs. Non MENA regions)	3838	-0.541**	(0.002)	0.937**	(0.006)

Notes: The table reports the coefficients from alternative model specifications of the regression of geographical and organizational religiosity. The main model specification is the regression on the full sample with a complete set of controls shown in columns 1 in Table 5. Standard errors of estimated coefficients are corrected for heteroscedasticity and are clustered at the bank level, except in test 4 where we cluster at the country level. P-values are between parentheses, except in test 1, where we report standard errors for 2SLS. *, **, *** stand for statistical significance at the 10%, 5%, and 1% levels, respectively.

Appendix 1- All countries in Gallup's poll

Table 1: All countries in Gallup's Poll regarding the importance of religion in people's daily life.

No	Country Code	Country	(1)	(2)
			YES %	NO %
1	BD	Bangladesh	99.00	0.00
2	ID	Indonesia	99.00	0.00
3	MW	Malawi	99.00	1.00
4	NE	Niger	99.00	0.00
5	LK	Sri Lanka	99.00	1.00
6	YE	Yemen	99.00	1.00
7	BI	Burundi	98.00	2.00
8	DJ	Djibouti	98.00	2.00
9	MR	Mauritania	98.00	2.00
10	SO	Somalia	98.00	2.00
11	AF	Afghanistan	97.00	3.00
12	KM	Comoros	97.00	2.00
13	EG	Egypt	97.00	2.00
14	MA	Morocco	97.00	1.00
15	TH	Thailand	97.00	2.00
16	KH	Cambodia	96.00	3.00
17	CM	Cameroon	96.00	4.00
18	MY	Malaysia	96.00	3.00
19	NG	Nigeria	96.00	3.00
20	PH	Philippines	96.00	4.00
21	SN	Senegal	96.00	4.00
22	DZ	Algeria	95.00	4.00
23	TD	Chad	95.00	5.00
24	GH	Ghana	95.00	5.00
25	ML	Mali	95.00	4.00
26	QA	Qatar	95.00	4.00
27	RW	Rwanda	95.00	5.00
28	ZM	Zambia	95.00	5.00
29	BH	Bahrain	94.00	4.00
30	CG	Congo	94.00	5.00
31	KE	Kenya	94.00	6.00
32	NP	Nepal	93.00	6.00
33	PS	Palestinian Territory, Occupied	93.00	7.00
34	SA	Saudi Arabia	93.00	4.00
35	SD	Sudan	93.00	7.00
36	TN	Tunisia	93.00	5.00
37	UG	Uganda	93.00	7.00
38	PK	Pakistan	92.00	6.00
39	PY	Paraguay	92.00	8.00
40	KW	Kuwait	91.00	6.00
41	AE	United Arab Emirates	91.00	8.00
42	IN	India	90.00	9.00
43	KV	Kosovo	90.00	8.00
44	BO	Bolivia	89.00	10.00
45	SY	Syrian Arab Republic	89.00	9.00
46	TZ	Tanzania, United Republic Of	89.00	11.00
47	CI	Côte D'Ivoire	88.00	12.00
48	GT	Guatemala	88.00	9.00
49	PA	Panama	88.00	11.00
50	ZW	Zimbabwe	88.00	12.00
51	BR	Brazil	87.00	13.00
52	DM	Dominica	87.00	13.00
53	LB	Lebanon	87.00	12.00
54	MT	Malta	86.00	10.00
55	ZA	South Africa	85.00	15.00
56	TJ	Tajikistan	85.00	12.00
57	HN	Honduras	84.00	15.00
58	IQ	Iraq	84.00	11.00
59	NI	Nicaragua	84.00	15.00
60	PE	Peru	84.00	14.00
61	RO	Romania	84.00	12.00
62	CO	Colombia	83.00	16.00

63	SV	El Salvador	83.00	16.00
64	EC	Ecuador	82.00	17.00
65	TR	Turkey	82.00	15.00
66	GE	Georgia	81.00	16.00
67	TM	Turkmenistan	80.00	18.00
68	CR	Costa Rica	79.00	19.00
69	VE	Venezuela	79.00	21.00
70	BA	Bosnia And Herzegovina	77.00	21.00
71	MK	Macedonia, The Former Yugoslav Republic Of	76.00	22.00
72	CY	Cyprus	75.00	24.00
73	PL	Poland	75.00	19.00
74	AM	Armenia	73.00	25.00
75	MX	Mexico	73.00	25.00
76	IT	Italy	72.00	25.00
77	KG	Kyrgyzstan	72.00	25.00
78	MD	Moldova, Republic Of	72.00	19.00
79	GR	Greece	71.00	28.00
80	ME	Montenegro	71.00	28.00
81	CL	Chile	70.00	29.00
82	HR	Croatia	70.00	28.00
83	SG	Singapore	70.00	29.00
84	AR	Argentina	66.00	33.00
85	US	United States Of America	65.00	34.00
86	IE	Ireland	54.00	46.00
87	RS	Serbia	54.00	44.00
88	IL	Israel	51.00	48.00
89	UZ	Uzbekistan	51.00	46.00
90	AZ	Azerbaijan	50.00	49.00
91	ES	Spain	49.00	50.00
92	SI	Slovenia	47.00	52.00
93	UA	Ukraine	46.00	48.00
94	KZ	Kazakhstan	43.00	48.00
95	KR	Korea, Republic Of	43.00	56.00
96	CA	Canada	42.00	57.00
97	LT	Lithuania	42.00	49.00
98	CH	Switzerland	41.00	57.00
99	UY	Uruguay	41.00	59.00
100	DE	Germany	40.00	59.00
101	AL	Albania	39.00	58.00
102	HU	Hungary	39.00	58.00
103	LV	Latvia	39.00	58.00
104	LU	Luxembourg	39.00	59.00
105	BY	Belarus	34.00	56.00
106	RU	Russian Federation	34.00	60.00
107	FR	France	30.00	69.00
108	VN	Vietnam	30.00	69.00
109	GB	United Kingdom	27.00	73.00
110	HK	Hong Kong	24.00	74.00
111	JP	Japan	24.00	75.00
112	DK	Denmark	19.00	80.00
113	EE	Estonia	17.00	82.00
114	SE	Sweden	17.00	82.00

Data Source: Gallup Poll: "Gallup is an American research-based, global performance-management consulting company known for its public opinion polls conducted worldwide. For more information on the Gallup survey, please visit <https://news.gallup.com/poll/142727/religiosity-highest-world-poorest-nations.aspx>.

We constructed this measure of geographical religiosity by using the responses to the global Gallup survey research conducted in 2009 for 114 countries. Adults had to respond with a yes or no to one main question: "Is religion an important part of your daily life?"

Appendix 2. Variable definitions and notations		
Variables	Notations	Definitions
1. Dependent Variables:		
<i>Securitizers</i>	D_SEC	A dummy indicator equal 1 for banks that engage in asset securitization transaction with at least one observation of asset securitization and switched from being non-securitizer during one observation year at time t and 0 otherwise.
<i>Annual Securitization Activity</i>	SEC	A continuous variable (activity for asset securitization) defined as the total amount of asset securitization for both Islamic banks and conventional banks deflated by the contemporaneous total assets of the bank.
2. Independent Variables:		
2.1 Religiosity:		
<i>a. Geographical Religiosity</i>	GR_j	A dummy indicator for the percentage of people's positive response to the question "Is religion important in your daily life?" according to global Gallup Poll research conducted. Data as of 2014. This variable is divided into: (i) High religious importance: equal to 1 if the citizens of the country's responses are (positive) above or equal to the average (0.87575) of 21 countries in the sample, 0 otherwise. (ii) Low religious importance: equal to 1 if the citizens of the country's responses are (negative) above or equal to the average (0.1135) of 21 countries in the sample, 0 otherwise.
<i>b. Organizational Religiosity</i>	OR_i	Dummy variable equal 1 for banks with religious adherence and 0 for conventional banks.
2.2 Bank Characteristics:		
a. Capital capitalization	CAR_{it-1} (%)	Capital Adequacy Ratio.
b. Credit Risk	NPLtoGR_{it-1} (%)	Non-Performing Loans to Gross Loans ratio.
c. Cost Efficiency	OVtoTA_{it-1} (%)	Overheads to Total Assets ratio.
d. Loan Herfindahl-Hirschman Index (HHI)	LOANHHI_{it-1}	Herfindahl-Hirschman Index for total loans.
e. Loan growth rate	LOANGROWTH_{it-1} (%)	Percentage of change in the total outstanding loans between year t and year t-1.
f. Operating income ratio	INCO_{it-1} (%)	Operating income to total revenue ratio.
2.3 Other Bank Controls		
a. Profitability	ROAE_{it-1} (%)	Return on average equity ratio.
b. Liquidity	LAtoTD_{it-1} (%)	Liquid Assets to Total deposits and borrowings.

c. Deposit ratio	$DEPO_{it-1}(\%)$	Total deposits to total assets ratio.
d. Noninterest income ratio	$NONINT_{it-1}(\%)$	Noninterest income to net operating revenue ratio.
e. Loan ratio	$Loan\ ratio_{it-1}(\%)$	Total loan to total assets ratio.
f. Bank size	$SIZE_{i,t-1}$	Natural logarithm of the total bank assets.
g. Bank Age	$AGE_{i,t-1}$	Age of bank since the year of its establishment.
2.4 Country Governance:		
a. Political Stability	$Political_{j,t-1}$	Political Stability and Absence of Violence/Terrorism captures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.
b. Social Stability	$Social_{j,t-1}$	Social stability refers to the stability of regulation with the restrictions placed on the practice, profession, or selection of religion by other religious groups or associations or the culture at large.
c. Regulatory Quality	$RQ_{j,t-1}$	Perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
2.5 Ownership Type:		
a. Financial Ownership	$FINANCIAL_{t-1}$	Shareholder from Financial Institutions
b. Corporate Ownership	$CORPORATE_{t-1}$	Shareholder from Companies (ORBIS)
c. Private Ownership	$PRIVATE_{t-1}$	Shareholder from Private shareholders (ORBIS)
d. Government Ownership	GOV_{t-1}	1 if government ownership is greater than 50% 0 otherwise
e. Foreign Ownership	FOR_{t-1}	1 if foreign ownership greater than 50% 0 otherwise
2.6 Macroeconomic:		
a. Deposit Market concentration	$MSD_{i,t}$	Bank i deposits at time t over total banking sector deposits at time t
b. GDP growth rate	$GDPGR_{i,t}$	Growth in GDP per capita in country j at time t
c. Inflation rate	$INF_{i,t}$	Country-prevailing inflation rate for bank i in time t.
d. Crisis	$Crisis_t$	Time Dummy equal 1 for the financial periods of 2007-2008 and 0 otherwise

Appendix 3. Illustrations for the average (mean) movements in religiosity indicators between the years 2002-2012

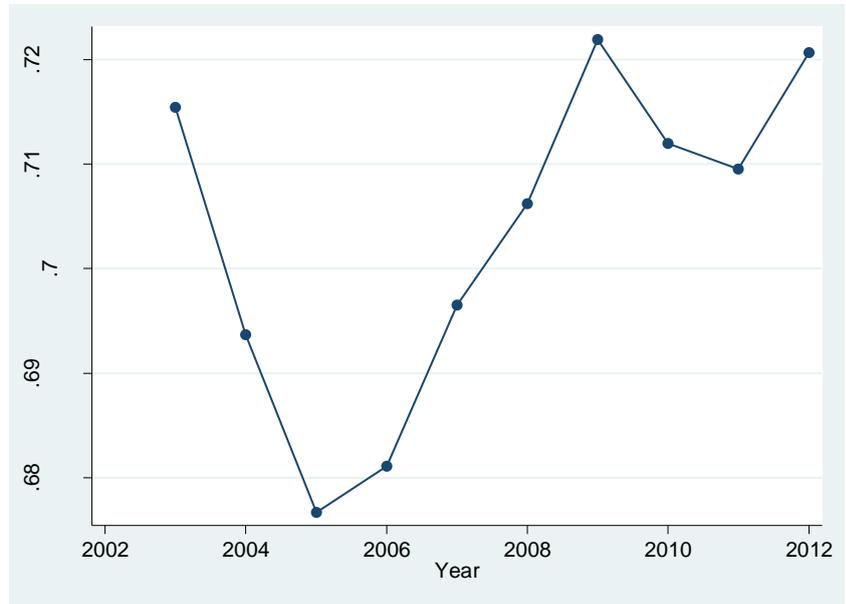


Fig. 1-Geographical Religiosity

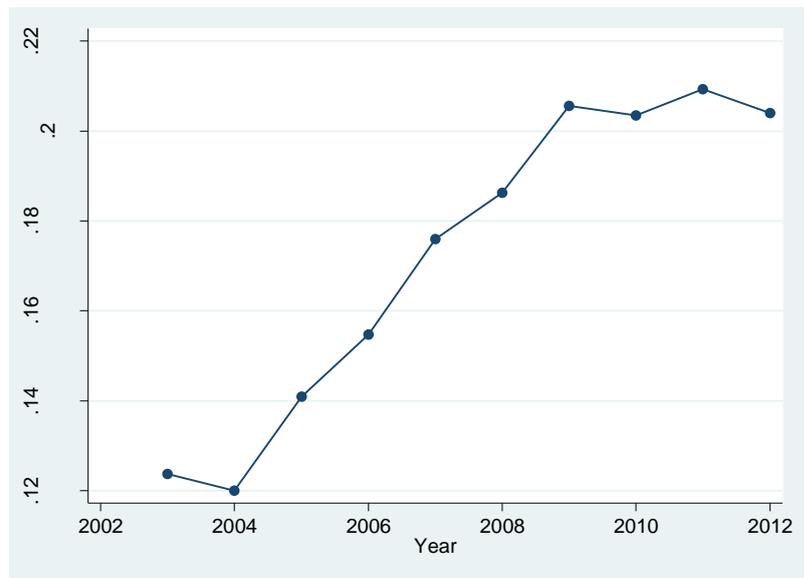


Fig. 2-Organizational Religiosity

Notes: Fig.1 presents the average (sample mean) movements in the religion (high and low) importance variable during the period 2003-2012. Fig. 2, presents the mean sample distributions for religious adherent versus conventional banks during the sample period.