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CORRUPTION, DIVERSIFICATION AND ASSET QUALITY OF ISLAMIC AND CONVENTIONAL BANKS: A DYNAMIC PANEL DATA APPROACH

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ABSTRACT

Minimal research to date has examined whether and how corruption and diversification influence the asset quality of Islamic banks from the agency perspective. The study aims to fill this research gap using a sample of 155 banks (28 Islamic banks and 127 conventional banks) in three Asian countries (Indonesia, Malaysia, and Pakistan) from 2006 to 2012. Estimation of the dynamic panel data model reveals that corruption negatively affects the asset quality of Islamic banks whereas conventional banks see no such effect. Corruption also proves to strengthen (weaken) any negative (positive) effect of diversification on the asset quality of Islamic banks, in particular. Furthermore, the modifying effect of corruption is particularly found in more corrupt countries (Indonesia and Pakistan) as opposed to a less corrupt country (Malaysia). Overall, results suggest that banks should engage in diversification moderately because diversification's negative effect can overpower its positive effect. In addition, Islamic banks and particularly small ones should watch out for the negative effect of corruption because these banks' asset quality is more influenced by corruption than other banks. Furthermore, it is crucial for policymakers to effectively control corruption to maximize the asset quality of banks for better financial stability of the banking sector. This is especially true for Islamic banks because they are more likely to incur higher agency costs as opposed to conventional banks.

Keywords: Corporate Governance, Corruption, Diversification, Asset Quality, Islamic banks

INTRODUCTION

Research on Islamic banking and finance is on the rise particularly due to its unique features and ability to ride out the recent global financial crisis (Zain and Shafii, 2018). Existing literature mostly focuses on the comparison between Islamic and conventional banking (Suppia and Arshad, 2019), but minimal research to date has examined whether and how corruption and diversification influence the asset quality of Islamic banks from the agency perspective. It is mainly for this reason that the study is conducted.

Islamic banks have increasingly resembled conventional banks in the sense that they mimic conventional banks in many ways to meet the demand of Muslims. For example, diversification, which prevails among conventional banks and proves value-reducing based on prior research, is increasingly common among Islamic banks as they become progressively globalized. However, such a practice calls for a second thought before pursuing diversification any further. The underlying reason is that despite the apparent differences between Islamic and conventional banks, they do share quite a few commonalities (Kuran, 2004). For example, both Sukuk (i.e., Islamic bonds) and Western bonds provide a stream of payments to investors. Both Islamic and conventional banks also have problems with moral hazard and adverse selection as well as the use of financial instruments to deal with risk (Khan, 2010). Furthermore, Beck et al. (2013) indicate that these two types of banks share similar business models. Hence, problems and challenges experienced by conventional banks should eventually come to the surface for Islamic

banks as they increasingly adopt more conventional banking practices. In particular, the widely observed negative effect of diversification that prevails among conventional banks should carry over to Islamic banks.

More importantly, Muslim cultures are deeply rooted in the institutions and external environment is likely to aggravate the negative effect of bank diversification (Laeven and Levine, 2007). Despite the apparent compliance with Sharia, Islamic banking may not be as perfect due to the fact that Muslim countries are generally more corrupt than the rest of the world in terms of information asymmetry (Khan, 2010). Since resources tend to be diverted to non-productive uses in a corrupt environment, the interests of national citizens and their government are likely in conflict.. High level of corruption subsequently implies severe agency problems at the national level. Given the documented positive relationship between national- and firm- level agency problems (Stulz, 2005), agency problems prevailing among banks in non-Islamic countries such as adverse selection and moral hazard resulting from information asymmetry should be more severe among banks in Islamic countries that are generally more corrupt than in other countries.[1]

The study contributes to the existing literature by examining the effect of corruption and diversification on the asset quality of banks, with emphasis on whether and how corruption modifies the diversification's effect on the asset quality of banks. That is, aside from the direct effect of corruption, the study investigates the indirect effect of corruption on the asset quality of banks through diversification, which is a good channel through which the effect of diversification which has been shown to incur agency costs and result in poor bank performance in most cases (Laeven and Levine, 2007). Given the established negative relationship between agency costs and bank performance (Mamatzakis and Bermpei, 2015), any negative effect of corruption on corporate governance or any positive effect of corruption on agency costs within the banks should therefore be reflected by increased (decreased) diversification discount (premium).

Asset quality is selected rather than other bank performance variables primarily based on the following reasons. First, prior research has found a positive effect of corruption on bad loans (Park, 2012) whereas the effects of corruption on other bank performance measures remain unclear, rendering asset quality a better candidate for investigating the effect of corruption on bank performance. Second, this study focuses on the effect of "asset" diversification because it is more robust for capturing the level of diversification compared to income diversification (Laeven and Levine, 2007). Asset diversification involves increasing the proportion of non-lending assets relative to traditional lending assets, thus directly influences asset structure and quality. Third, prior studies have found that among several bank performance measures, asset quality is higher among Islamic banks than conventional banks (Beck et al., 2013). Given that Islamic banks are the focus of the study, it subsequently raises greater concern whether asset quality, which is the comparative advantage of Islamic banks, can be negatively influenced by diversification and whether any such a negative effect is aggravated by corruption widely observed in Islamic countries. Fourth, given the potential positive effect of diversification on agency costs and bank risk, loan loss provisions likely increase such that asset quality worsens as the level of diversification increases. Fifth, financial stability has been on the top of the agenda across countries, rendering investigating the effect of corruption on financial stability a worthwhile endeavor. Asset quality has been widely used as a proxy for financial stability since better asset quality (meaning relatively more good loans or fewer loan loss reserves) suggests that banks can afford to ride out any financial distress and remain financially stable.

Considering the rampant corruption in Islamic countries and the positive relationship between corruption and bad loans (Park, 2012), it is worthwhile to examine whether corruption has bearings on the asset quality of banks in such

[1] The apparent compliance with Sharia may not guarantee the nonoccurrence of any speculative or criminal behavior within the banks. Instead, these problems can be more severe and common among banks in Islamic countries due to generally higher level of corruption. In fact, similar to other conventional banks, Islamic banks also experienced several fraudulent practices (e.g., Dubai Islamic Bank fraud in 2009), suggesting that mere compliance with Sharia is not a panacea. Islamic banks are ostensibly as fragile as other conventional banks such that they are not immune to fraudulent operations and corrupt practices (Rahman and Anwar, 2014a, 2014b; Sarker, 1999).

countries. In particular, given the established positive effect of national-level governance on corporate governance (Doidge et al., 2007), corruption should negatively affect corporate governance and worsen agency problems within these banks. It follows that bad loans due to agency problems should be more common. Based on this, I first hypothesize that corruption has a negative effect on asset quality of banks and such a negative effect should be particularly found among Islamic banks because of their severe agency problems resulting from the unique features of Islamic banking (e.g., opaqueness and profit and loss sharing (PLS) scheme) (Beck et al., 2013). In addition, given the established positive effect of national-level governance on corporate governance (Doidge et al., 2007), any negative effect of bank diversification on asset quality due to the accompanied agency problems should be stronger and any positive effect of diversification due to the accompanied risk reduction should be weaker when corruption worsens. Given the unique features of Islamic banking, such a modifying effect of corruption should also be stronger for Islamic banks than for conventional banks. Furthermore, given the positive feedback between national and firm level agency problems (termed the twin agency problems) (Stulz, 2005), agency problems within these banks should worsen in countries with high level of corruption. It follows that any negative effect of diversification on asset quality, which is due to its corresponding agency cost, should be stronger in more corrupt countries than in less corrupt countries.

Using a sample of three Asian countries with a dual banking system (i.e., Indonesia, Malaysia, and Pakistan) from 2006 to 2012, the study found that corruption negatively affects the asset quality of Islamic banks, thus concurring with the finding of Bougatef (2015). By contrast, corruption is generally irrelevant for all conventional banks examined. In addition, diversification negatively affects the asset quality of banks and such a negative effect is reinforced by corruption particularly for Islamic banks. Moreover, corruption strengthens (weakens) any negative (positive) effect of diversification on asset quality particularly for Islamic banks in more corrupt countries (i.e., Indonesia and Pakistan) only. Furthermore, results are robust for banks with different sizes, particularly for Islamic banks. Nevertheless, corruption strengthens (weakens) diversification's negative (positive) effect on asset quality for all Islamic banks in more corrupt countries whereas such a modifying effect is observed only among small conventional banks in such countries. The modifying effect of corruption is also stronger for small banks than for large banks, regardless of bank types.

In sum, these results highlight the importance of tightening control of corruption to achieve high asset quality or bank stability particularly in countries with high level of corruption. Given the generally higher level of corruption in Islamic countries, it is highly recommended to impose rigorous supervision and effective control of corruption to mitigate agency problems within the banks and lessen any negative effect of diversification on asset quality. That is, corruption should be effectively controlled to upgrade the asset quality of banks and help capitalize on bank diversification in countries with high level of corruption, particularly for Islamic banks.

The remainder of the paper is structured as follows. First, a review of literature on Islamic banking, diversification and corruption that leads to this study's hypotheses is provided, followed by description of methodology and an analysis of the empirical results. The final section concludes the paper.

LITERATURE REVIEW

CORRUPTION AND ASSET QUALITY OF BANKS

Islamic banks operate in a quite different setting as opposed to conventional banks. Most noticeably, Islamic banks are required to comply with the Sharia law, which is derived from Islam and considered one of the harshest laws in the world (Economist, 2015). Bank fraud should be unlikely to occur under such circumstances. However, despite the potential positive effect of Sharia compliance on corporate governance, another opposing force is lurking behind, which deals with the overarching national-level governance. More specifically, Islamic countries are generally more corrupt than non-Islamic countries (Khan, 2010). This is evidenced by Transparency International's (2014)

Corruption Perception Index rankings that the majority of Muslim countries fall in the bottom 50% of all countries surveyed. Since national governance can influence corporate governance, high corruption likely counteracts any positive effect of Sharia-compliance for Islamic banks (Doidge et al., 2007).

Existing literature indicates that the effects of corruption can be of two types: grease the wheel and sand the wheel effects (Chen et al., 2015). Empirical evidence remains mixed regarding which effect is more dominant. Some studies indicate a positive effect of corruption on bank performance (e.g., Chen et al., 2013; Mauro, 1995) whereas others indicate a negative effect of corruption on bank performance (e.g., Bougatef, 2015; Glaeser and Saks, 2006; Park, 2012). It also remains an empirical question whether corruption is really bad or good for asset quality of banks. More specifically, if corruption facilitates and ensures the approval of bad projects, bad loans are likely to occur in a corrupt environment such that banking instability can ensue and the bad loan problems can be further aggravated. However, it could be the case that for the same reason (i.e., bribery facilitating approval of projects), good projects can be funded efficiently such that corruption may not necessarily contribute to occurrences of bad loans. That is, quality loans can also be made in the presence of corruption (Park, 2012).

Despite different effects of corruption on asset quality predicted, several cross-country studies have documented a positive relationship between corruption and bad loans or non-performing financings (Bougatef, 2015; Goel and Hasan, 2001; Park, 2012; Weill, 2011a), suggesting a negative relationship between corruption and asset quality of banks. This is likely because corruption favors public lending and therefore crowds out private credit (Weill, 2011b). Since public lending is usually of low quality, high public lending translates into low asset quality of banks due to relatively low private credit that is generally more productive and less likely to default. In addition, Chen et al. (2015) find that corruption induces bank risk-taking behavior. As a result, when the level of corruption is higher, banks are likely to acquire riskier assets, resulting in a decrease in asset quality.

Aside from corruption favoring public loan and inducing bank risk-taking, corruption can negatively affect the asset quality of banks through the agency cost channel. More specifically, national-level governance can positively affect firm-level governance (Doidge et al., 2007). The underlying reason is that not all economic agents can escape the influence of their surrounding institutional environment. Hence, more corrupt environment likely nourishes more corrupt practices among the economic units. Stulz (2005) also argued that agency problems at the national and firm level (termed the twin agency problems) feed on each other. Hence, agency problems within banks are likely to be more severe and corporate governance likely poorer when a country's level of corruption is higher. Following this line of reasoning, national-level agency problems can therefore become worse and transitively any existing agency problems within the banks can further be aggravated, forming a vicious circle. Based on this, agency problems should be more severe and difficult to improve in countries with high level of corruption. Given the positive relationship between corruption and agency costs within the banks and the negative relationship between agency costs and bank performance (Mamatzakis and Bermpei, 2015), asset quality of banks should worsen when the level of corruption increases.

The empirical evidence regarding the effect of corruption on the performance of Islamic banks is also mixed. On the one hand, Arshad and Rizvi (2013) found a positive effect of corruption on the profitability of Islamic banks in countries with high corruption, supporting the grease the wheel effect of corruption. It is argued that bribery or corruption is unavoidable for Islamic banking to thrive. Though not directly related to asset quality, such finding suggests a positive effect of corruption on asset quality of Islamic banks because the observed grease the wheel effect of corruption suggests that corruption can facilitate the approval of good loans, resulting in better asset quality of banks. By contrast, Bougatef (2015) found a positive relationship between corruption and non-performing financing among Islamic banks, suggesting a negative effect of corruption on asset quality of Islamic banks, thus supporting the sand the wheel effect of corruption.

Despite mixed evidence on the relationship between corruption and asset quality of banks, corruption should have a negative effect on the asset quality of banks if the negative effect of corruption on asset quality overpowers the

positive effect. In addition, Islamic banks were found to be more opaque than conventional banks in the sense that Islamic banks are more incentivized to pursue their benefits at the cost of investors under their unique PLS scheme (Lahrech et al., 2014). Unlike conventional banks, Islamic banks are also less subject to market discipline (Ariffin and Karim, 2007). Given relatively low transparency and market discipline in Islamic banks, agency problems should be more severe for Islamic banks than for conventional banks. Further, given the documented positive relationship between national- and firm-level agency problems, severe agency problems within Islamic banks should reinforce any negative effect of corruption on asset quality of such banks. The following hypothesis is thus formulated.

Hypothesis 1. Corruption has a negative effect on the asset quality of banks and such a negative effect is more pronounced for Islamic banks than for conventional banks.

CORRUPTION AND DIVERSIFICATION'S EFFECT ON ASSET QUALITY

Empirical evidence regarding diversification's effect on bank performance is mixed. Some studies indicate that diversification negatively affects bank performance likely because diversification results in more severe agency problems as well as higher risk and diseconomies due to the accompanied ineffective monitoring and adverse selection (Acharya et al., 2006; DeYoung and Roland, 2001; Laeven and Levine, 2007; Mercieca et al., 2007). By contrast, other studies reveal a positive effect of diversification on bank performance likely because the risk-diversification benefit overpowers the aforementioned negative effect (Saunders et al., 2014; Vallascas et al., 2012). Despite the mixed evidence, existing literature mostly concludes that diversification discount is widely found among conventional banks whereas any diversification premium appears to exist among Islamic banks (Čihák and Hesse, 2010; Molyneux and Yip, 2013; Shahimi et al., 2006). The presence of diversification discount or premium therefore renders diversification a good channel through which we can discern the quality of corporate governance or the severity of agency problems. More specifically, given the established negative relationship between agency costs and bank performance (Mamatzakis and Bermpei, 2015), any factors that worsen corporate governance or agency problems should increase (decrease) any diversification discount (premium).

As mentioned previously, agency problems within banks should be more severe in countries with high level of corruption because of the established positive effect of national governance on corporate governance and the twin agency problems (Doidge et al., 2007; Stulz, 2005). Agency problems brought about by diversification should be no exception. That is, agency cost resulting from diversification should be higher when the level of corruption is higher in a given country. In addition, given the established positive impact of corruption on bank risk-taking behavior (Chen et al., 2015), diversification-borne agency problems should be further aggravated in counties with high level of corruption because the accompanied high bank risk is likely to increase the opaqueness of banks and the conflict of interests between managers and shareholders (Belghitar and Clark, 2015).

Given the established relationship between national governance and corporate governance as well as between corruption and bank risk-taking, corruption should aggravate agency problems within banks and bank risk-taking such that any negative effect of diversification on asset quality of banks should be stronger when corruption increases. Similarly, any positive effect of diversification on the asset quality of banks should weaken with corruption. In addition, given low transparency and market discipline among Islamic banks as well as the positive feedback relationship between national- and firm-level agency problems mentioned previously, agency problems within Islamic banks should be more severe such that corruption has a stronger modifying effect for Islamic banks than for conventional banks. Thus, the following hypothesis is formulated.

Hypothesis 2. Corruption reinforces (weakens) any negative (positive) effect of diversification on the asset quality of banks; where such modifying effect of corruption is stronger for Islamic banks than for conventional banks.

As mentioned previously, national- and firm-level agency problems reinforce each other (Stulz, 2005). Hence, agency problems accompanied by diversification should be amplified in the presence of high corruption. Namely, corruption should have stronger modifying impact on the diversification's effect on asset quality in more corrupt countries than in less corrupt countries. Banks in more corrupt countries should also have larger room for improvement such that control of corruption should be more effective in mitigating agency problems within the banks and counteracting any negative effect of diversification on asset quality. The following hypothesis is formulated.

Hypothesis 3. Any negative (positive) effect of diversification on asset quality of banks is stronger (weaker) when corruption increases in more corrupt countries than in less corrupt countries; control of corruption counteracts any negative effect of diversification on asset quality of banks more effectively in more corrupt countries than in less corrupt countries.

METHODOLOGY

DATA

I obtain bank data of Indonesia, Malaysia, and Pakistan for the period 2006-2012 from Bankscope. The primary reason for selecting these three countries is that they share a dual banking system where both Islamic and conventional banking coexist. I derive the Corruption variable from the control of corruption index, which measures "perceptions of the extent to which public power is exercised for private gain" and ranges from –2.5 to 2.5 (Kaufmann et al., 2015). High (low) index values indicate low (high) perception of corruption. Corruption is set equal to the negative value of the control of corruption index such that it directly measures the level of corruption, with high (low) values indicating high (low) corruption. Table 1 lists the number of Islamic and conventional banks across countries.

Asset quality is inversely proxied by loan loss reserve divided by gross loan. Diversification is measured by asset diversity, which is derived based on the work of Laeven and Levine (2007):

$$\text{Diversification} = 1 - \left| \frac{net\ loans - other\ earning\ assets}{total\ earning\ assets} \right| \quad (1)$$

The value of Diversification ranges from zero to one. Higher values indicate higher diversification.

Table 1
Number of Islamic and conventional banks by country groups

Bank type \ Country group	Indonesia and Pakistan	Malaysia	Total
Islamic banks	12	16	28
Conventional banks	90	37	127
Total	102	53	155

Table 1 presents the number of Islamic and conventional banks for different country groups. Indonesia and Pakistan are classified as countries that are more corrupt whereas Malaysia is classified as a country that is less corrupt.

Table 2
Descriptive statistics for the variables used in the study

Country	Variable	Mean	Min	p25	p50	p75	Max	sd	N
	Asset Quality	2.801	0.142	1.291	1.888	3.023	46.087	3.860	314
	Diversification	0.319	0.000	0.224	0.289	0.409	0.905	0.138	314
	Deposits/Liabilities	0.892	0.097	0.872	0.930	0.963	0.991	0.127	314
Indonesia	Equity/Assets	13.515	-3.300	8.350	10.295	15.000	63.720	9.568	314
	Asset growth	26.810	-41.110	10.310	19.570	31.840	234.230	35.081	314
	Log(Assets)	9.183	7.589	8.675	9.156	9.629	10.784	0.672	314
	Corruption	0.677	0.563	0.583	0.679	0.745	0.816	0.085	314
	Asset Quality	3.959	0.142	1.291	1.834	2.847	39.400	7.139	74
	Diversification	0.420	0.064	0.227	0.302	0.581	0.972	0.267	74
	Deposits/Liabilities	0.885	0.252	0.870	0.931	0.968	0.996	0.142	74
Malaysia	Equity/Assets	13.815	3.520	7.210	9.755	16.780	67.370	11.610	74
	Asset growth	17.358	-32.770	-3.870	10.665	21.610	234.230	38.523	74
	Log(Assets)	9.484	8.124	9.013	9.341	10.068	10.784	0.637	74
	Corruption	-0.215	-0.300	-0.300	-0.300	-0.133	0.031	0.127	74
	Asset Quality	9.067	0.101	4.032	7.723	11.711	35.950	6.961	137
	Diversification	0.485	0.185	0.402	0.476	0.565	0.788	0.119	137
	Deposits/Liabilities	0.862	0.336	0.821	0.921	0.946	0.971	0.131	137
Pakistan	Equity/Assets	12.262	2.010	7.070	9.240	15.150	42.710	8.279	137
	Asset growth	20.996	-37.800	8.350	17.700	27.030	207.470	26.605	137
	Log(Assets)	9.132	7.329	8.686	9.236	9.582	10.220	0.616	137
	Corruption	0.976	0.740	0.803	1.052	1.060	1.071	0.130	137
	Asset Quality	4.599	0.101	1.447	2.358	5.063	46.087	5.983	525
	Diversification	0.377	0.000	0.243	0.343	0.484	0.972	0.174	525
	Deposits/Liabilities	0.883	0.097	0.864	0.930	0.959	0.996	0.130	525
Total	Equity/Assets	13.230	-3.300	7.820	10.040	15.280	67.370	9.570	525
	Asset growth	23.961	-41.110	8.350	17.550	30.320	234.230	33.747	525
	Log(Assets)	9.212	7.329	8.733	9.183	9.635	10.784	0.662	525
	Corruption	0.629	-0.300	0.583	0.679	0.816	1.071	0.380	525

Table 2 presents descriptive statistics for variables used in the study, including mean value, minimum value (Min), three quartiles with p25, p50, and p75 indicating the first, second (median), and third quartiles, respectively, maximum value (Max), standard deviation (sd), and number of observations (N). Asset quality is inversely proxied by loan loss reserve divided by gross loan. Diversification $= 1 - \left|\frac{net\ loans - other\ earning\ assets}{total\ earning\ assets}\right|$. Deposits/Liabilities, Equity/Assets, Asset Growth, and Log(Assets) are proxies for bank intermediation, financial leverage, bank growth opportunity, and bank size, respectively. Corruption takes the negative value of the control of corruption index (Kaufmann, Kraay, and Mastruzzi 2015) and directly measures the level of corruption, with high (low) values indicating high (low) corruption.

Control variables include bank intermediation, financial leverage, bank growth opportunity, and bank size, which are measured by the ratio of deposits to liabilities, the ratio of equity to assets, asset growth, and log of assets, respectively (Beck et al., 2013; Mercieca et al., 2007). To avoid the effect of outliers, all these variables are winsorized at 1% and 99% levels excluding Diversification.

Table 2 presents the descriptive statistics of the variables for each of the countries used in this study. The statistics show wide variations of variables across countries. Importantly, corruption is higher for Indonesia and Pakistan than for Malaysia, justifying the separation of countries into more corrupt countries and a less corrupt country in empirical analysis. In addition, given no specific patterns observed for other bank-specific variables, further regression analysis is required to investigate the relationship between asset quality and other variables.

MODEL

Given that the data vary with banks and years and that past asset quality likely influences future asset quality, I estimate the dynamic panel data model to reflect such data structure and adjustment process. The following is the benchmark model (i.e., one-step difference and system generalized method of moment (GMM) dynamic panel model), based on which I estimate different specifications of the model.

$$Asset\ Quality_{i,t} = \beta_0 Asset\ Quality_{i,t-1} + \beta_1 Diversification_{i,t} + \beta_2 Corruption_{i,t} + \beta_3\ Diversification_{i,t} \times Corruption_{i,t} + \beta_4\ Deposits/Liabilities_{i,t} + \beta_5\ Equity/Assets_{i,t} + \beta_6\ Asset\ Growth_{i,t} + \beta_7\ log(Assets)_{i,t} + \sum_{t=2006}^{2011} \gamma_t\ Year_t + \mu_i + v_{i,t} \quad (2)$$

Year is the dummy variable that returns a value of one if a given year is *t* and zero otherwise, and it is included to capture year-specific effects. μ_i denotes the unobservable bank-specific effect for bank *i*, while v_{it} is the remainder disturbance for bank *i* and year *t*. The model is adjusted for heteroscedasticity to obtain robust estimators. The one-step estimator is also used for inferences primarily because of its higher reliability compared with the two-step estimator (Bond, 2002).

Since financial variables are likely to co-determined, all independent variables are treated as endogenous except Corruption and Year dummy variables, which are treated as exogenous. All available lags of the dependent variable and independent variables other than dummy variables are used as instruments for the transformed equation. Dummy variables are used as standard instrument variables.

EMPIRICAL RESULTS

CORRUPTION AND ASSET QUALITY

Table 3 presents the results regarding the effects of corruption on asset quality of Islamic and conventional banks. Results for the benchmark model are in Columns 1 and 3 whereas those with the Corruption variable are in Columns 2 and 4. The coefficient of the lag of Asset quality is significantly positive (p .01) in all columns, indicating that the adjustment process of asset quality is not instantaneous and takes time to reach equilibrium. Hence, the selection of the dynamic model is justified. In addition, results on control variables are more significant for conventional banks, suggesting higher relationship between bank variables for conventional banks than for Islamic banks. Furthermore, the coefficient of Corruption is significantly positive in Column 2 (β = 1.992, p .001), indicating that corruption has a negative effect on asset quality of Islamic banks given that Asset quality is inversely proxied by loan loss reserve. By contrast, the coefficient of Corruption is insignificant in Column 4 (β = − 1.281, p > .1), indicating that corruption has no effect on asset quality of conventional banks. Results support Hypothesis 1: Corruption has a negative effect on the asset quality of banks and such a negative effect is more pronounced for Islamic banks than for conventional banks.

Table 3
Corruption and asset quality

Dependent variable: Asset quality $_t$	(1)	(2)	(3)	(4)
Independent variable	Islamic	Islamic	Conventional	Conventional
Asset quality $_{t-1}$	0.728***	0.822***	0.807***	0.857***
	(0.096)	(0.079)	(0.131)	(0.160)
Deposits/Liabilities $_t$	1.694	3.099	-7.602	-0.378
	(2.594)	(4.001)	(6.926)	(9.257)
Equity/Assets $_t$	0.013	0.114†	-0.205**	-0.280**
	(0.055)	(0.060)	(0.078)	(0.104)
Asset growth $_t$	-0.006	-0.015	-0.033	-0.045
	(0.012)	(0.010)	(0.023)	(0.029)
Log(Assets) $_t$	-1.346	1.560	-5.118	-9.220†
	(0.980)	(1.653)	(3.561)	(5.279)
Corruption $_t$		1.992**		-1.281
		(0.725)		(1.392)
N	66	66	459	459
z statistic (p-value)	0.253	0.216	0.374	0.321
Hansen's J statistic (p-value)	0.600	0.983	0.647	0.440

CORRUPTION AND DIVERSIFICATION'S EFFECT ON ASSET QUALITY

Table 4 presents the results regarding how corruption modifies diversification's effect on asset quality of Islamic and conventional banks. In Column 1 where Islamic banks are examined, diversification's effect on asset quality is measured as 9.664 Corruption (p .01), which is generally positive given that the mean value of Corruption for Islamic banks is positive. Since asset quality is inversely proxied by loan loss reserve, it means that on average diversification negatively affects asset quality of Islamic banks. However, any negative effect of diversification on asset quality weakens as the level of corruption decreases. In addition, such a negative effect turns positive when the value of Corruption is below zero. In other words, corruption (control of corruption) reinforces (mitigates) any negative effect of diversification on asset quality of Islamic banks. By contrast, in Column 2 where conventional banks are examined, the coefficients of Diversification and Diversification×Corruption are insignificant ($p > .01$), suggesting that diversification has no effect on asset quality and corruption plays no role in modifying such an effect for conventional banks. Results support Hypothesis 2: Corruption reinforces (weakens) any negative (positive) effect of diversification on the asset quality of banks; where such modifying effect of corruption is stronger for Islamic banks than for conventional banks.

Asset quality is inversely proxied by loan loss reserve divided by gross loan. Diversification $= 1 - \left|\frac{net\ loans - other\ earning\ assets}{total\ earning\ assets}\right|$. Deposits/Liabilities, Equity/Assets, Asset Growth, and Log (Assets) are proxies for bank intermediation, financial leverage, bank growth opportunity, and bank size, respectively. The Corruption takes the negative value of the control of corruption index (Kaufmann, Kraay, and Mastruzzi 2015) and directly measures the level of corruption, with high (low) values indicating high (low) corruption. In all columns,

year dummies are included to capture year-specific effects, but results are saved for brevity. The numbers in the parentheses are Arellano-Bond robust standard errors. N represents the number of bank-year observations. The p-values are calculated for the z statistic of the Arellano-Bond test for serial correlation at order two and for Hansen's J statistic. ***, **, *, and † stand for .1, 1, 5, and 10 per cent significance levels, respectively.

Table 4

Corruption and diversification's effect on asset quality

Dependent variable: Asset quality $_t$	(1)	(2)
Independent variable	Islamic	conventional
Asset quality $_{t-1}$	0.440*	0.725***
	(0.191)	(0.192)
Diversification $_t$	2.617	20.298
	(3.639)	(33.962)
Corruption $_t$	-3.846*	8.648
	(1.614)	(21.670)
Diversification $_t$ × Corruption $_t$	9.664**	-16.675
	(3.490)	(40.283)
Deposits/Liabilities $_t$	-1.946	-4.672
	(1.200)	(7.759)
Equity/Assets $_t$	-0.031	-0.195†
	(0.051)	(0.116)
Asset growth $_t$	0.002	-0.025
	(0.006)	(0.024)
Log(Assets) $_t$	-0.678	-6.077†
	(0.902)	(3.638)
N	66	459
z statistic (p-value)	0.333	0.482
Hansen's J statistic (p-value)	1.000	0.705

Asset quality is inversely proxied by loan loss reserve divided by gross loan. Diversification $= 1 - \left|\frac{net\ loans - other\ earning\ assets}{total\ earning\ assets}\right|$. Corruption takes the negative value of the control of corruption index (Kaufmann, Kraay, and Mastruzzi 2015) and directly measures the level of corruption, with high (low) values indicating high (low) corruption. Deposits/Liabilities, Equity/Assets, Asset Growth, and Log(Assets) are proxies for bank intermediation, financial leverage, bank growth opportunity, and bank size, respectively. In all columns, year dummies are included to capture year-specific effects, but results are saved for brevity. The numbers in the parentheses are Arellano-Bond robust standard errors. N represents the number of bank-year observations. The p-values are calculated for the z statistic of the Arellano-Bond test for serial correlation at order two and for Hansen's J statistic. ***, **, *, and † stand for .1, 1, 5, and 10 per cent significance levels, respectively.

CORRUPTION AND DIVERSIFICATION'S EFFECT ON ASSET QUALITY: PARTITIONS BASED ON COUNTRY GROUPS

I further estimate the model based on the sample of more corrupt countries (Indonesia and Pakistan) and that of a less corrupt country (Malaysia). The objective is to see if any negative effect of diversification on asset quality is stronger in more corrupt countries than in less corrupt countries. Results are presented in Table 5. In Column 1 where Islamic banks in more corrupt countries are examined, the effect of diversification on asset quality is measured as 26.505 Corruption, which equals 17.944 and 25.869 if Corruption takes on its mean values for Indonesia and Pakistan (i.e., 0.677 and 0.976), respectively (Table 2). Results indicate that diversification generally has a negative effect on asset quality of Islamic banks in countries that are more corrupt. However, the negative effect weakens as corruption becomes less severe and turns positive when its value is below zero. In Column 2 which examine conventional banks in more corrupt countries , the coefficients of Diversification and Diversification×Corruption are insignificant ($p > .10$), suggesting that diversification has no effect on asset quality and corruption plays no role in modifying such an effect for conventional banks. Results concur with those in Table 4 and further support Hypothesis 2. As for Malaysia, the coefficients of Diversification and Diversification×Corruption are insignificant in Column 3 ($p > .10$), indicating that diversification has no effect on asset quality of Islamic banks as well as no modifying effect of corruption in a less corrupt country. In Column 4, the coefficient of Diversification is significantly positive (β = 19.936, p .10) whereas that of Diversification×Corruption is insignificant (β = 48.191, $p > .10$), indicating that diversification negatively affects the asset quality of conventional banks and corruption plays no role in such a negative effect in a less corrupt country. In sum, results in Table 5 support Hypothesis 3: Any negative (positive) effect of diversification on asset quality of banks is stronger (weaker) when corruption increases in more corrupt countries than in less corrupt countries; control of corruption counteracts any negative effect of diversification on asset quality of banks more effectively in more corrupt countries than in less corrupt countries. Results in Table 4 also appear to be driven by banks in more corrupt countries.

Table 5

Corruption and diversification's effect on asset quality: Partitions based on country groups

Dependent variable: Asset quality $_t$	(1)	(2)	(3)	(4)
	Indonesia and Pakistan		Malaysia	
Independent variable	Islamic	conventional	Islamic	conventional
Asset quality $_{t-1}$	0.666***	0.595***	0.580***	0.330
	(0.158)	(0.152)	(0.046)	(0.288)
Diversification $_t$	-15.353	-3.542	0.365	19.936†
	(11.621)	(17.844)	(0.441)	(12.016)
Corruption $_t$	-11.202	-7.371	0.000	0.000
	(7.737)	(12.510)	(.)	(.)
Diversification $_t$ × Corruption $_t$	26.505*	19.944	1.731	48.191
	(12.951)	(22.802)	(8.040)	(52.349)
Deposits/Liabilities $_t$	-1.381	-10.769	0.166	-13.014
	(1.102)	(7.773)	(3.644)	(12.851)
Equity/Assets $_t$	-0.008	-0.102	0.105	-0.788*
	(0.048)	(0.114)	(0.065)	(0.307)
Asset growth $_t$	0.004	-0.021	0.005	-0.206**
	(0.009)	(0.020)	(0.010)	(0.078)
Log(Assets) $_t$	0.158	-0.609	-0.200	-23.472**
	(1.480)	(2.889)	(0.259)	(8.856)
N	39	412	27	47
z statistic (p-value)	0.053	0.667	0.299	0.162
Hansen's J statistic (p-value)	1.000	0.657	1.000	1.000

Asset quality is inversely proxied by loan loss reserve divided by gross loan. Diversification $= 1 - \left|\frac{net\ loans - other\ earning\ assets}{total\ earning\ assets}\right|$. Corruption takes the negative value of the control of corruption index (Kaufmann, Kraay, and Mastruzzi 2015) and directly measures the level of corruption, with high (low) values indicating high (low) corruption. Deposits/Liabilities, Equity/Assets, Asset Growth, and Log(Assets) are proxies for bank intermediation, financial leverage, bank growth opportunity, and bank size, respectively. In all columns, year dummies are included to capture year-specific effects, but results are saved for brevity. The numbers in the parentheses are Arellano-Bond robust standard errors. N represents the number of bank-year observations. The p-values are calculated for the z statistic of the Arellano-Bond test for serial correlation at order two and for Hansen's J statistic. ***, **, *, and † stand for .1, 1, 5, and 10 per cent significance levels, respectively.

CORRUPTION AND DIVERSIFICATION'S EFFECT ON ASSET QUALITY: ROBUSTNESS CHECK

Given the potential effect of bank size documented in finance literature, I re-estimate the model by introducing interaction variables that distinguish between banks with different sizes. Specifically, Diversification×Corruption is interacted with Q1 and Q4, which return a value of one if sizes are in the first and the fourth quartiles for a given year respectively and zero otherwise. Table 6 presents the results. Columns 1 and 2 present the results based on all Islamic and conventional banks, respectively. The effect of diversification on asset quality is measured as 8.757 Corruption in Column 1, which is positive for Indonesia and Pakistan and negative for Malaysia if Corruption takes on the respective mean values (Table 2).

Results indicate that diversification generally has a negative (positive) effect on asset quality of Islamic banks in Indonesia and Pakistan (Malaysia). However, such a negative (positive) effect weakened (strengthened) as the level of corruption decreases. Given that the coefficients of Diversification×Corruption×Q1 and Diversification×Corruption×Q4 are insignificant ($p > .10$), results are also robust for all Islamic banks with different sizes.

In Column 2 where all conventional banks are examined, the effect of diversification on asset quality is measured as 16.431 Corruption×Q1, which equals 16.431 Corruption and zero when bank size is inside and outside the bottom 25% ranges, respectively. Given the mean values of Corruption being positive for Indonesia and Pakistan and negative for Malaysia, results indicate that diversification generally has a negative (positive) effect on asset quality of small conventional banks (with sizes in bottom 25%) in Indonesia and Pakistan (Malaysia). By contrast, diversification has no effect on asset quality of all large conventional banks (with sizes are above the bottom 25% range). In addition, any negative effect of diversification on asset quality of small conventional banks weakens as the level of corruption decreases and turns positive when it is sufficiently low (below zero). Any positive effect of diversification is also reinforced when the level of corruption decreases for such banks.

Based on the results in Columns 1 and 2, corruption matters more in determining the diversification's effect on asset quality for Islamic banks than for conventional banks. In other words, the modifying effect of corruption is independent of bank sizes for Islamic banks whereas it is present only among small conventional banks with sizes in the bottom 25% range. Hence, these results further corroborate Hypothesis 2: Corruption reinforces (weakens) any negative (positive) effect of diversification on the asset quality of banks; where such modifying effect of corruption is stronger for Islamic banks than for conventional banks. Results also suggest that control of corruption is more effective in mitigating any negative effect and enhancing any positive effect of diversification on asset quality for Islamic banks than for conventional banks.

Columns 3-4 and 5-6 present the results based on more corrupt and less corrupt countries, respectively. In Column 3 which examine Islamic banks in more corrupt countries, the effect of diversification on asset quality is measured as −16.033 + 26.288 Corruption − 7.137 Corruption×Q4, which equals –16.033 + 19.151 Corruption and –16.033 + 26.288 Corruption when bank size is inside and outside the top 25% ranges, respectively. Given the mean values of Corruption for Indonesia and Pakistan are 0.677 and 0.976, the effect of diversification on asset quality is measured as – 3.068 and 1.764 for Islamic banks with sizes inside and outside the top 25% ranges in Indonesia. On the other hand, the effect of diversification on asset quality is measured as 2.658 and 9.624 for Islamic banks with sizes inside and outside the top 25% ranges in Pakistan. Hence, diversification generally has a negative effect on asset quality of Islamic banks in such countries except for large banks in Indonesia; such a negative effect is stronger for small Islamic banks than for large counterparts. However, any negative (positive) effect of diversification on asset quality is weakened (strengthened) as the level of corruption decreases. In addition, the magnitude of the coefficient on Corruption for large banks (with sizes in top 25%) is smaller than that for other banks with sizes outside top 25%, meaning that the diversification's effect on asset quality is more influenced by corruption for small and

medium-sized Islamic banks than for large counterparts. This further suggests that control of corruption is more effective in weakening any negative effect and strengthening any positive effect of diversification on asset quality for small and medium-sized Islamic banks than for large counterparts.

In column 4, which examined conventional banks in more corrupt countries, the effect of diversification on asset quality is measured as 14.480 Corruption×Q1, which equals 14.480 Corruption and zero when bank size is inside and outside bottom 25% ranges, respectively. Hence, diversification influences the asset quality of small conventional banks only in such countries. More specifically, given that the mean values of Corruption for Indonesia and Pakistan are 0.677 and 0.976, diversification generally has a negative effect on asset quality of small conventional banks in more corrupt countries. However, any negative (positive) effect of diversification on asset quality of such banks weakens (strengthens) as the level of corruption decreases or control of corruption becomes more effective. Any negative effect of diversification also turns positive when the level of corruption is sufficiently low (below zero).

In sum, results in Columns 3 and 4 suggest that control of corruption is more effective in counteracting (strengthening) any negative (positive) effect of diversification for Islamic banks in more corrupt countries. This is because the modifying effect of corruption exists for all Islamic banks whereas such an effect is restricted to small conventional banks only in such countries. Results further support Hypothesis 2: Corruption reinforces (weakens) any negative (positive) effect of diversification on the asset quality of banks; where such modifying effect of corruption is stronger for Islamic banks than for conventional banks. Control of corruption is also more effective in mitigating (enhancing) any negative (positive) effect of diversification on asset quality of small banks in more corrupt countries, regardless of bank types.

In Column 5 where Islamic banks in a less corrupt country (i.e., Malaysia) are examined, the coefficients of Diversification and its corresponding interaction variables are all insignificant ($p > .10$), indicating no effect of diversification on asset quality of Islamic banks in Malaysia, regardless of the level of corruption and bank size. In Column 6 where conventional banks in Malaysia are examined, the effect of diversification on asset quality is measured as $28.467 - 158.757$ Corruption×Q1 $- 615.753$ Corruption×Q4, which is essentially positive given that the mean value of Corruption for Malaysia is $- 0.215$. Hence, results indicate that diversification negatively affects the asset quality of conventional banks in Malaysia and such a negative effect is least (most) pronounced for medium-sized (large) conventional banks. Similarly, control of corruption also fails to counteract or reverse such a negative effect, regardless of bank size.

In sum, results in Columns 5 and 6 suggest that diversification only negatively affects the asset quality of conventional banks in Malaysia. Control of corruption is also ineffective in mitigating agency problems within banks in Malaysia likely due to the fact that room for improvement is smaller in less corrupt countries than in more corrupt countries. These results do not suggest that control of corruption is unimportant in less corrupt countries. Instead, results simply provide a contrast to those based on more corrupt countries, where control of corruption can improve the asset quality and counteract (reinforce) any negative (positive) effect of diversification on asset quality of banks. Results further support Hypothesis 3: Any negative (positive) effect of diversification on asset quality of banks is stronger (weaker) when corruption increases in more corrupt countries than in less corrupt countries; control of corruption counteracts any negative effect of diversification on asset quality of banks more effectively in more corrupt countries than in less corrupt countries.

To tighten up, with bank size considered, results in Table 6 generally concur with those in Table 5. However, results in Table 6 are richer, especially for banks in more corrupt countries. More specifically, control of corruption is effective in weakening (strengthening) the negative (positive) effect of diversification on asset quality in more corrupt countries only. It is interesting to note that, such a phenomenon is more pronounced among Islamic banks

than among conventional banks in more corrupt countries. Furthermore, small banks are more likely to benefit from control of corruption than large banks in more corrupt countries since any negative (positive) effect of diversification is weakened (strengthened) more effectively when corruption is mitigated for small banks than for large banks.

Table 6

Corruption and diversification's effect on asset quality: Robustness check

Dependent variable: Asset quality $_t$	(1) All	(2) All	(3) Indonesia and Pakistan	(4) Indonesia and Pakistan	(5) Malaysia	(6) Malaysia
Independent variable	Islamic	Conventional	Islamic	Conventional	Islamic	Conventional
Asset quality $_{t-1}$	0.410*	0.738***	0.669***	0.681***	0.566***	0.039
	(0.178)	(0.172)	(0.147)	(0.154)	(0.045)	(0.256)
Diversification $_t$	3.092	21.796	-16.033*	-4.322	0.465	28.467*
	(3.780)	(26.976)	(7.729)	(15.777)	(0.734)	(11.358)
Corruption $_t$	-3.345†	11.716	-10.391	-8.943		
	(1.973)	(17.626)	(7.917)	(11.350)		
Diversification $_t$ × Corruption $_t$	8.757*	-20.944	26.288*	20.948	3.118	38.935
	(4.123)	(32.466)	(11.174)	(19.298)	(6.704)	(59.788)
Diversification $_t$ ×Corruption $_t$×Q1	1.297	16.431†	0.877	14.480*		-158.757**
	(1.595)	(9.970)	(0.971)	(6.409)		(59.051)
Diversification $_t$ ×Corruption $_t$ ×Q4	-1.782	-5.924	-7.137*	-7.965	-5.792	-615.753**
	(5.719)	(7.050)	(3.068)	(5.400)	(3.840)	(191.759)
Deposits/Liabilities $_t$	-1.575	-8.204†	-1.377	-6.605	2.680	-4.478
	(1.251)	(4.575)	(1.091)	(5.060)	(4.898)	(12.226)
Equity/Assets $_t$	-0.042	-0.131	-0.019	-0.150	0.090†	-1.185**
	(0.040)	(0.121)	(0.034)	(0.118)	(0.051)	(0.368)
Asset growth $_t$	0.001	-0.020	0.004	-0.028	0.007	-0.237***
	(0.007)	(0.021)	(0.009)	(0.021)	(0.009)	(0.048)
Log(Assets) $_t$	-0.380	2.292	0.391	2.360	-0.542†	-41.048**
	(1.009)	(3.178)	(1.375)	(1.826)	(0.288)	(13.611)
N	66	459	39	412	27	47
z statistic (p-value)	0.737	0.608	0.119	0.994	0.245	0.298
Hansen's J statistic (p-value)	1.000	0.867	1.000	0.367	1.000	1.000

Asset quality is inversely proxied by loan loss reserve divided by gross loan. Diversification $= 1 - \left|\frac{net\ loans - other\ earning\ assets}{total\ earning\ assets}\right|$. Corruption takes the negative value of the control of corruption index (Kaufmann, Kraay, and Mastruzzi 2015) and directly measures the level of corruption, with high (low) values indicating high (low) corruption. Q1 and Q4 are dummy variables that return a value of one if sizes are in the first and the fourth quartiles for a given year respectively and zero otherwise. Deposits/Liabilities, Equity/Assets, Asset Growth, and Log(Assets) are proxies for bank intermediation, financial leverage, bank growth opportunity, and bank size, respectively. In all columns, year dummies are included to capture year-specific effects, but results are saved for brevity. The numbers in the parentheses are Arellano-Bond robust standard errors. N represents the number of

bank-year observations. The p-values are calculated for the z statistic of the Arellano-Bond test for serial correlation at order two and for Hansen's J statistic. ***, **, *, and † stand for .1, 1, 5, and 10 per cent significance levels, respectively. For the sample consisting of Malaysian banks, the coefficients of Corruption in Columns 5 and 6 and Diversification×Corruption×Q1 in Column 5 are unavailable because these two variables get dropped in estimation due to collinearity.

CONCLUSION

This study examines whether and how corruption and diversification influence the asset quality of Islamic and conventional banks. Since corruption favors public lending over private lending and public lending usually has poor quality, corruption should have a negative effect on asset quality of banks. Such a negative effect is also predicted based on the agency theory. Specifically, given the positive relationship between national- and firm-level agency problems as well as the negative relationship between agency costs and bank performance as established in prior research, any agency problems within the banks should be more severe and the asset quality of banks should worsen when the level of corruption is higher. Such a negative effect should be also stronger for Islamic banks than for conventional banks because Islamic banks have relatively low transparency and market discipline such that they should have more severe agency problems than conventional banks (Nienhaus, 2007). Based on the previously mentioned reasons, corruption should also aggravate agency problems resulting from diversification and reinforce any diversification's negative effect on asset quality particularly for Islamic banks as opposed to conventional banks. Further, any negative effect of diversification on asset quality due to the accompanied agency problems should be more subject to corruption in more corrupt countries than in less corrupt countries.

A review of banks in three Asian countries (Indonesia, Malaysia, and Pakistan) from 2006 to 2012 generally reveals that corruption negatively affects the asset quality of Islamic banks whereas conventional banks see no such an effect. In addition, diversification negatively affects the asset quality of Islamic and conventional banks and corruption appears to strengthen (weaken) diversification's negative (positive) effect on asset quality particularly for Islamic banks. Moreover, such a modifying effect of corruption is particularly found in more corrupt countries (Indonesia and Pakistan) as opposed to a less corrupt country (Malaysia). Furthermore, considering the size effect, results stay robust but are more revealing. More specifically, corruption strengthens (weakens) diversification's negative (positive) effect on asset quality for all Islamic banks in more corrupt countries whereas such a modifying effect is observed among small conventional banks only in such countries. Diversification's effect on asset quality is also more subject to corruption for small banks than for large banks, regardless of bank types.

The findings of this study provide implications for researchers, practitioners, and policy makers. For researchers, given that corruption has bearings on asset quality of banks, the level of corruption should be examined in investigating bank asset quality across countries. In addition, given that the effect of diversification on asset quality of banks varies with bank types and sizes, future studies should consider these factors to improve the validity of estimation results. Furthermore, the study provides evidence supporting the argument of twin agency problems and the overriding impact of national governance on corporate governance.

For practitioners, prior to pursuing higher level of diversification, banks should be watchful for the potential negative effect of diversification resulting from the accompanied agency problems because such a negative effect can overpower the positive effect of diversification. Based on this, banks should moderately engage in diversification, rather than blindly following the diversification trend. Otherwise, diversification likely does more harm than good to banks. In addition, Islamic banks and particularly small ones should be more aware of the negative effect of corruption on asset quality and its sensitivity to diversification given that the asset quality of these banks are more influenced by corruption.

As for policy makers, given the finding that corruption negatively affects the asset quality of banks directly and indirectly through diversification, authorities concerned should pursue higher level of control of corruption without hesitation. That is, to maintain financial stability and prevent bank failure from occurring, it is crucial to control corruption effectively to increase asset quality as well as minimize (maximize) any negative (positive) effect of diversification on asset quality of banks. In addition, given that corruption has a stronger negative effect for Islamic banks than for conventional banks, authorities concerned should recognize that Islamic banks deserve special attention and treatment since they are more likely to have severe agency problems. Furthermore, given that corruption magnifies any negative effect of diversification on asset quality of banks in more corrupt countries, governments in such countries should particularly make endeavors to control corruption to improve asset quality or stability of banks to avoid financial crisis in the future.

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