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THE ROLE OF FINANCIAL DEVELOPMENT ON FOREIGN DIRECT INVESTMENT IN ASEAN-5 COUNTRIES: PANEL COINTEGRATION WITH CROSS-SECTIONAL DEPENDENCY ANALYSIS

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ABSTRACT

This paper investigates the impact of the financial development on foreign direct investment (FDI) inflows in ASEAN-5 countries over the period of 1980–2013. The 5 countries included in this study are Malaysia, Thailand, Indonesia, Singapore and Philippines. In the model, financial development, consumer price index (CPI) and real gross domestic product (GDP) per capita are the independent variables. The stationarity of the variables is examined through both first- and second-generation unit root tests with the cross-sectional dependence among countries. The Pedroni and Westerlund cointegration tests results show the existence of long run relationship among the variables. Long term coefficients are estimated using Fully Modified Ordinary Least Square (FMOLS) model and it reveals that financial development has a nonlinear relation with FDI. When financial development passes the threshold point at above 70 point, it will benefit the FDI. Furthermore, the Panel Vector Error Correction Model (VECM) is applied to examine the causality relationship among the associated variables. The causality analysis confirms the presence of both long-

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term relationship and short term dynamic among the FDI, financial development, CPI and real GDP per capita.

Keywords: foreign direct investment, financial development, panel cointegration second-generation, cross-sectional dependence, nonlinear

INTRODUCTION

Following the financial liberalisation attempt, especially during the 1990s, foreign direct investment (FDI) has become an increasingly important element for economic development and integration of developing countries and transition economies (Çeviş & Çamurdan, 2007), including the ASEAN-5 countries. The creation of ASEAN Economic Community (AEC) at the Ninth ASEAN Summit in October 2003 represented an important milestone in ASEAN economic cooperation. It stimulated FDI inflows by reducing business costs associated with multinational activities in the ASEAN region has always been a primary objective of the economic cooperation (Plummer & Cheong, 2009). Creating a more stable economic condition and strengthening the financial sector may establish an attractive business environment for multinational firms to invest in the ASEAN-5 region.

According to Levine (2005), growing evidence shows that financial institutions and financial markets can exert a strong influence on economic development, where economic growth will affect the FDI performance. Alfaro, Kalemli-Ozcan and Sayek (2009) provide evidence that financial markets act as a channel in facilitating the positive traits of FDI performance to be realised. Levine (2005) provides detailed discussion on the five major functions of a financial system: producing information and allocating capital; monitoring firms and implementing corporate governance; ameliorating risk; pooling the savings; and easing exchange, all of which contribute towards stimulating economic growth. Financial development is discovered as an assistance to the FDI where their benefits of financial liberalisation could contribute to the FDI of the recipient countries. Thus, financial development is shown to be important to promote FDI performance. Recent empirical literature has brought forth the assertion that financial development is a key explanation for FDI performance. Financial development is found to serve as a determinant that enables the efficiency of FDI performance. The burgeoning past literature has examined the role of financial development on FDI to promote the economic growth but the literature that investigates the role of financial development on FDI performance has been scarce. Financial development is recognised as an important absorptive capacity

due to its major functions in the country's financial system that includes both banking and stock market sectors.

With this background of studies, our study has been done extensively to explore the impact of the financial development on FDI in nonlinear relationships, using an advanced econometric technique. We explore the nature of the relationship between the financial development and FDI, whether or not it may in fact be non-monotonic. In previous studies, the impact of the financial development on FDI in linear specification may be inaccurate. Furthermore, this study investigates the relationship between financial development, Consumer Price Index (CPI) and economic growth with FDI performance using the panel cointegration analysis for a sample of ASEAN-5 countries over a period of 1980 to 2013 by considering the cross-sectional dependency and nonlinear relationship in the long run estimation.

LITERATURE REVIEW

Early theories of the determinants of FDI were encompassed in eclectic approach by Dunning and Robson (1988). Three key requirements for FDI highlighted by them were, firstly, the firm must possess stable specific advantages; secondly, the firm must find it beneficial to utilise these advantages directly instead of selling or leasing them, the so called internalisation advantages; and lastly, the firm must find it profitable to combine these advantages with at least one factor input abroad so that local production dominates exporting or locational advantages. These advantages include proximity to markets, specialised suppliers, evasion of protective barriers, and factor endowment advantages.

The recent empirical literature has brought forth the assertion that financial development is the determinant of FDI performance. However, most of past literature focus on the impact of financial development on FDI performance using the linear model. Before we proceed for further discussion, it is important to understand about the determinant of FDI inflows. Then, the determinants can be tested whether or not there is an existence of co-movement between the variables with FDI inflows.

Blonigen and Piger (2014) listed 56 determinants of FDI. One of the determinants is host country financial infrastructure which uses the domestic credit to private sector. Sankaran (2015) recognised the financial market as the determinant of FDI inflows. The financial markets are measured by the domestic credit provided by banks and domestic credit provided to the private sector as a percentage of Gross Domestic Product (GDP) is used. Domestic credit to the private sector refers to financial resources provided to the private sector through

loans, purchases of non-equity securities, and trade credits and other receivable accounts. Domestic credit provided by banks is nonguaranteed long-term commercial bank loans from private banks and other private financial institutions. The investors need the information of financial health of the host countries. Thus, financial information quality also affected the investment efficiency (Rad, Embong, Mohd-Saleh, & Jaffar, 2016).

Mohamed and Sidiropoulos (2010) examined the financial development as determinants of FDI in Middle East and North Africa (MENA) countries. Financial development is measured through the weighted average of liquid liabilities, credit to the private sector and credit by banks to the private sector. Alfaro, Chanda, Kalemli-Ozcan and Sayek (2004) investigated the impact of the financial market development on the FDI attraction to achieve economic development for the period of 1975 to 1995. The research suggested that the development of strong financial market can increase an economy's ability to absorb and efficiently manage FDI capital inflow and take advantage of potential FDI benefits. Meanwhile, the study from Benáček, Lenihan, Andreosso-O'Callaghan, Michaliková and Kan (2014) used the financial freedom as one of the FDI inflows determinants. Financial freedom is a measure of banking security as well as independence from government control. The state ownership of banks and other financial institutions is seen as an inefficient burden, and political favouritism has no place in a free capital market. Sawalha, Mazouz and Pellet (2013) also found financial capital to be one of the FDI inflows determinants.

Macroeconomic sources have been identified as factors that influence FDI performance. This hypothesis has been tested by numerous studies (see, for examples Bekana, 2016; Pattayat, 2016; Dauti, 2015; Henry, Saadatmand, & Toma, 2015; Sawalha et al., 2013; Zulfiu, 2008; Mateev, 2009; Johnson, 2006). The study from Zulfiu (2008) employs the determinant of FDI inflows using static and dynamic panel. Meanwhile Mateev (2009) found that gravity factors (GDP, population, distance and cultural proximity) and cost and transition specific factors (wages, corruption and risk credit rating) are statistically significant with the estimated sign expected which affects the FDI inflows. The work by Johnson (2006) using panel data into a CEE sample found that the proxies for host country demand have a significant positive effect on the FDI. The result suggested that market seeking (absolute GDP, GDP per capita) is an important motive for investment in the CEE economies.

Although recent studies discover that financial development influences FDI performance to be realised, the long run relationship between the variables including FDI, financial development and macroeconomic variable have not

been adequately addressed in the existing studies. Therefore, this paper attempts to contribute to the existing literature in the different dimensions. This study investigates the effects of the financial development on the FDI performance which employed both the linear and quadratic models. Quadratic model is used due to the nonlinear relationship between financial development and economic growth in the recent literature such as Law and Singh (2014) and Samargandi, Fidrmuc and Ghosh (2015). However, in this study, the impact of the financial development on the FDI performance will be investigated. This study also examines the long run relationship between FDI, financial development and macroeconomic sources using the panel cointegration first- and second-generation analyses for a sample of ASEAN-5 countries over the from period 1980 to 2013.

Thus, this study extends the existing literature with two main contributions. Firstly, we examine the nonlinear relationship between the financial development on the FDI. The nonlinear relationship between financial development and FDI is lacking in the existing literature. The study by Law and Singh (2014) and Samargandi et al. (2015) on the relationship between financial development on economic growth stresses that it is nonlinear. Therefore, we are interested in scrutinising the financial development relationship on FDI inflows in both linear and nonlinear models. Secondly, we investigate the co-movement of FDI, financial development and macroeconomic sources by considering the cross-sectional dependency using the second-generation or Westerlund's (2007) cointegration test. The previous analysis using the panel cointegration first-generation assumes that all individual cross sections are independent. In the case of our study, the cross-sectional dependency may exist in ASEAN-5 countries influenced by economic integration, financial openness, economic freedom and spillover effects.

ECONOMETRIC MODEL AND DATA DESCRIPTION

To investigate the effect of the financial development (*FinDev*), inflation (*INF*) and gross domestic product per capita (*GDP*) on foreign direct investment (*FDI*), the econometric model of this study is based on the studies undertaken by Alfaro et al. (2004; 2009) and Blonigen and Piger (2014) which can be modified and specified as follows:

$$FDI_{it} = f(FinDev_{it}, CPI_{it}, GDP_{it}, w_i) \quad (1)$$

$$FDI_{it} = \alpha_0 + \alpha_{1i}FinDev_{it} + \alpha_{2i}CPI_{it} + \alpha_{3i}GDP_{it} + w_i + u_{it} \quad (2)$$

The model uses a linear specification in Equation (2), and the cross-sections are denoted by subscript i (i = 1, 2, …, N) and time period by subscript t (t = 1, 2, …, T), w is the country fixed effect and u is the stochastic random term. Following Law and Singh (2014), the domestic credit to private sector by banks as a percentage share of GDP and private sector credit to deposit money are used as proxies for financial development (*FinDev*). The model incorporates consumer price index (*CPI*) and gross domestic product (*GDP*) as controlled variables. We extend the previous study by using the quadratic model in the specification of the FDI determinant as follows:

$$FDI_{it} = \alpha_0 + \alpha_{1i} FinDev_{it} + \alpha_{2i} FinDev^2_{it} + \alpha_{3i} CPI_{it} + \alpha_{4i} GDP_{it} + w_i + u_{it} \quad (3)$$

where $FinDev^2_{it}$ indicates the nonlinear relation between financial development and FDI inflows. In Equation (3), α_0 is intercept, $\alpha_1, \alpha_2, \alpha_3$ and α_4 are the parameters' slopes to be estimated. α_3 is expected to be negative since higher inflation will harm FDI performance due to the increase in the cost of production, while α_4 is expected to be positive because the GDP is an important factor of investment. The focal parameters in the model are α_1 and α_2. If there exists a nonlinear relationship between financial development and FDI, we expect the anti-Kuznet curve since higher financial development will assist FDI to perform better. Anti-Kuznet curve is verified by α_1 being significantly negative and α_2 significantly positive. The threshold point is based on first order condition (dFDI/dFinDev). Based on Equation (3), the financial development turning point can be estimated as $-\alpha_1/2\alpha_2$.

This study uses FDI inflows as the percentage of GDP. Real GDP per capita in constant US dollar (US$) is used to measure economic growth. Domestic credit to private sector by banks as a percentage share of GDP (*DCPS*) and private credit to deposit money (*PCDM*) are used as proxies for financial development, and each proxy is employed in $FinDev_{it}$ as Model 1 and Model 2 respectively. Five countries have been selected among the ASEAN countries for the estimation of the econometric model on the basis of data availability and balanced panel data are used. Our sample focused on ASEAN-5 countries including Malaysia, Singapore, Thailand, Indonesia, and the Philippines. The study covers 34 years for the period of 1980–2013. All data are obtained from 2015 World Development Indicators of the World Bank, UNCTAD Database and Financial Structure Dataset.

The last few decades have witnessed an increasing economic and financial integration of countries comprised in ASEAN-5 economy, which implies a strong interdependence between countries. Testing for cross-sectional dependence is crucial in determining panel data estimations. Therefore, the Pesaran (2004) test for cross-sectional dependence (CD test) is employed for all variables.

The empirical result is reported in Table 1, which indicates that cross-sectional independence can be rejected for all variables. As shown in Table 1, among the variables, the real GDP per capita shows the highest cross-sectional dependence where the Pesaran CD statistics is 15.997. Hence, in this study we consider the cross-sectional dependence among countries in ASEAN-5 by using Westerlund's cointegration test as the second-generation of panel cointegration. In addition, the Fully Modified OLS (FMOLS) is used to estimate the long run coefficient in the specification. Panel vector error correction model (VECM) and causality test are used to investigate the direction of causality among the variables.

Table 2 presents the mean of all variables of each country in the ASEAN-5 economies. As shown in this table, there is a considerable variation in real GDP per capita across these countries, ranging from as low as US$1,058.48 in Indonesia to as high as US$22,300.00 in Singapore. The financial development demonstrates that Malaysia is consistently the highest while Indonesia is consistently the lowest for all proxies, DCPS and PCDM. Descriptive statistics of the variables are shown in Table 3. Jarque Bera for normality test shows that all variables are not normally distributed. The median for DCPS and PCDM is 74% and 68%, respectively. The correlation matrix presented in Table 4 reveals that the correlations among the variables are low, with the highest at 0.99 between domestic credit to private sector and private credit to deposit money.

Table 1
Result of Pesaran (2004) cross-section dependence test

Variable	Pesaran (2004) CD Test	Breusch-Pagan LM test
Foreign direct investment inflows	4.404***	30.368***
Domestic credit to private sector	9.598***	113.829***
Private credit by deposit money	10.034***	120.894***
Consumer price index	17.984***	323.499***
Real GDP per capita	15.997***	263.607***

Notes: (i) The null hypothesis of CD test is cross section independence, CD ~ N(0.1).
(ii)*** denotes significant at 1% level.

Table 2
Mean of variables over 1980–2013 for each country

	Foreign direct investment inflows (% of GDP)	Domestic credit to private sector (% of GDP)	Private credit by deposit money banks (% of GDP)	Consumer price index	Real GDP per capita US$ at 2000 prices
Malaysia	8.992	103.944	98.856	72.882	4,365.341
Indonesia	3.066	29.876	27.617	41.683	1,058.476
Thailand	5.830	94.959	90.829	68.011	2,062.662
Singapore	27.287	91.526	87.402	81.843	22,300.000
Philippine	3.455	30.328	27.782	53.297	1,117.028

Table 3
Descriptive statistics of variables

Descriptive statistics	FDI	DCPS	PCDM	CPI	GDP
Mean	9.726	70.127	66.497	63.483	6,180.702
Median	5.617	73.651	68.378	67.086	2,155.881
Maximum	54.042	165.719	165.860	116.910	37,491.080
Minimum	1.000	8.853	8.000	5.554	548.404
Standard deviation	10.663	39.040	38.075	29.768	9,025.840
Skewness	2.024	0.211	0.265	–0.364	2.013
Kurtosis	6.911	1.959	2.036	2.158	5.954
Jarque-Bera	224.467	8.939	8.574	8.773	176.556
Probability	0.000	0.0115	0.014	0.012	0.000
Minimum	1.000	8.853	8.000	5.554	548.404
25% quantile	2.850	32.241	28.886	42.944	1,080.409
Median	5.617	73.651	68.378	67.086	2,155.881
75% quantile	11.071	100.727	97.277	85.772	5,564.186
Maximum	54.042	165.719	165.860	116.910	37,491.080

Notes: FDI = foreign direct investment; DCPS = domestic credit to private sector; PCDM = private credit by deposit money banks; CPI = consumer price index; GDP = real GDP per capita.

Table 4
Correlations of variables

Correlations	FDI	DCPS	PCDM	CPI	GDP
FDI	1.000				
DCPS	0.651	1.000			
PCDM	0.643	0.994	1.000		
CPI	0.567	0.587	0.596	1.000	
GDP	0.856	0.678	0.683	0.587	1.000

Notes: FDI = foreign direct investment; DCPS = domestic credit to private sector; PCDM = private credit to deposit money by banks; INF = inflation; GDP = real GDP per capita

METHODOLOGY

Panel Unit Roots

We apply the IPS (Im, Pesaran, & Shin, 1997) and MW (Maddala & Wu, 1999) panel unit root tests to check the stationary properties of the variables. These tests apply to a balanced panel where IPS represents a heterogeneous panel test and MW panel unit root test is a non-parametric test. However, according to Campbell and Perron (1991), the standard unit root and cointegration tests based on individual time series have low statistical power, especially when the time series is short. In contrast, the use of panel unit root test allows for higher degrees of freedom by considering cross sectional dimension (Levin, Lin, & Chu, 2002).

For the case of ASEAN-5 countries in our study, the common stochastic trends may occur due to global developments or strong relationships between economies, especially when the countries are neighbours or may involve in an integrated process in the economy. According to Pesaran (2004), cross-section dependence can arise for several reasons, such as spatial spillovers, financial contagion, socioeconomic interactions, and common factors. In this study, Pesaran's (2007) unit root test is employed in heterogeneous panels with cross-section dependence for its simplicity and clarity. The standard DF (or ADF) regressions are augmented with the cross-section averages of lagged levels (x_{it-1}) and first-differences (Δx_{it-1}) of the individual series to eliminate cross dependence. Pesaran (2007) obtains a cross-sectionally augmented Dickey-Fuller (CADF) test based on the following model:

$$\Delta x_{it} = \alpha_i + \rho x_{it-1} + v_{it} \quad (4)$$

where $v_{it} = g_i\theta_t + \mu_{it}.\theta_t$ is a common factor and μ_{it} is white noise.

The CADF model is given by, without the autocorrelation of μ_{it}:

$$\Delta x_{it} = \alpha_i + \rho x_{it} + c_i\overline{x}_{t-1} + d_i\Delta\overline{x}_{t-1} + \varepsilon_{it} \quad (5)$$

The Pesaran statistic with the cross-sectionally augmented IPS (CIPS) is given by

$$CIPS(N,T) = \frac{1}{N}\sum_{i=1}^{q} t_i(N,T). \quad (6)$$

where t_i indicates the statistics from each CADF model for each individual *i* of the panel. The critical values of the statistic are given by Pesaran (2007).

The Panel Cointegration Test

The cointegration test among the variables of Equation (2) is tested using Pedroni's (1999; 2004) first-generation and Westerlund's (2007) second-generation panel cointegration tests accounting for the cross-sectional dependence. Pedroni uses the following cointegration equation and this is re-written as:

$$FDI_{i,t} = \alpha_i + \rho_i t + \beta_{1i}Z_{1i,t} + \ldots + \beta_{mi}Z_{mi,t} + u_{it} \quad (7)$$

where *FDI* and *Z* are assumed to be integrated of order one. The specific intercept term α_i and slope coefficients $\beta_{1i}, \beta_{2i}, \ldots, \beta_{mi}$ vary across individual members of the panel. Pedroni (1999; 2004) proposed seven different statistics to test for the cointegration relationship in a heterogeneous panel. The seven test statistics of Pedroni are classified into within-dimension and between-dimension statistics. Within-dimension statistics are referred to as panel cointegration statistics, while between-dimension statistics are called group mean panel cointegration statistics.

The second-generation panel cointegration test has four error-correction-based tests developed by Westerlund (2007), which allows for large degree of heterogeneity, both in the long-run cointegrating relationship and in the short-run dynamics. The underlying idea is to test for the presence of cointegration by determining whether or not there exists error-correction for individual panel members of for the panel as a whole. Equation (2) can be transformed to the following error-correction model:

$$\Delta FDI_{it} = c_{1j} + \varphi_{i1}\sum_{j=1}^{p}\Delta FDI_{it-j} + \varphi_{i2}\sum_{j=0}^{p}\Delta FinDev_{it-j} + \varphi_{i3}\sum_{j=0}^{p}\Delta CPI_{it-j} + \varphi_{i4}\sum_{j=0}^{p}\Delta GDP_{it-j} + \theta_i [\beta_{1i}(FDI_{it-1}) - \beta_{2i}(FinDev_{it-1}) - \beta_{3i}(CPI_{it-1}) - \beta_{4i}(GDP_{it-1})] + \varepsilon_{it} \quad (8)$$

where θ_i measures the speed of error-correction towards the long run equilibrium $FDI_{it} = (\varphi_i/\theta_i) \times x_{it}$ for that series *i*. The G_α and G_τ test statistics test $H_0: \theta_i = 0$ for all *i* versus $H_1: \theta_i < 0$ for at least one *i*. These statistics start from a weighted average of the individually estimate of θ_i's and the *t*-ratio respectively. If H_0 is rejected, it means that cointegration exists for at least one of the cross-sectional units. While, P_α and P_τ test statistics pooled the information over all the cross-sectional units to test $H_0: \theta_i = 0$ for all *i* versus $H_1: \theta_i < 0$ for all *i*. The rejection of H_0 should therefore be taken as evidence of cointegration for the panel as a whole. According to Westerlund (2007), P_α and P_τ test statistics have the highest power and are the most robust to cross-sectional correlation.

Long-run Cointegrated Regression Estimation

If the evidence of cointegration is proven, we proceed with long-run coefficient estimation of FDI determinants (*FinDev*, *CPI* and *GDP*). In the presence of cointegration, OLS estimates do not give efficient results. For this reason, several estimators have been proposed. For example, Kao and Chiang (2000) argue that their parametric panel Dynamic OLS (DOLS) estimator pools the data along the within dimension of the panel. However, the panel DOLS of Kao and Chiang (2001) does not consider the importance of cross-sectional heterogeneity in the alternative hypothesis.

The fully modified OLS (FMOLS) proposed by Pedroni (2000; 2001) that allows for cross-sectional heterogeneity in the alternative hypothesis, endogeneity and serial correlation problems is applied to estimate long-run coefficients in order to obtain consistent and asymptotically unbiased estimates of the cointegrating vectors. The panel FMOLS estimator for the coefficient β is defined as:

$$\hat{\beta} = N^{-1}\sum_{i=1}^{N}\left[\sum_{t=1}^{T}(X_{it} - \overline{X}_1)^2\right]^{-1}\left[\sum_{t=1}^{T}(X_{it} - \overline{X}_1)Y_{it}^* - T\hat{\tau}_i\right] \quad (9)$$

where $Y_{it}^* = (Y_{it} - \overline{Y}) - \frac{\hat{L}_{21i}}{\hat{L}_{22i}}\Delta X_{it}, \hat{\tau}_i \equiv \hat{\Gamma}_{21i} + \hat{\Omega}_{21i}^0 - \frac{\Gamma_{21i}}{\Gamma_{22i}}(\hat{\Gamma}_{22i} + \hat{\Omega}_{22i}^0)$ and $\hat{L}_i$ is a lower triangular decomposition of $\hat{\Omega}_i$. The associated *t*-statistic is assumed to be normally distributed and give:

$$t_{\hat{\beta}^*} = N^{-1/2} \sum_{i=1}^{N} t_{\hat{\beta}^*}, i \text{ where } t_{\hat{\beta}^*}, i = \left(\hat{\beta}_i^* - \beta_0\right)\left[\hat{\Omega}_{11i}^{-1} \sum_{t=1}^{T} (X_{it} - \overline{X}^2)\right]^{1/2} \quad (10)$$

Panel Vector Error-correction Model

The panel Granger causality in the framework of the panel VECM is employed to analyse the direction of the causal effect among foreign direct investment, financial development, inflation and real GDP per capita. The panel VECM approach is based on Engle and Granger's (1987) procedure. In the first step, we estimate the long-run model specified in Equation (2) in order to obtain the estimated residuals. Next, we estimate the Granger causality model based on the error-correction model. The empirical model is represented by the following equations:

$$\Delta FDI_{it} = \alpha_{1i} + \sum_{k=1}^{m} \lambda_{11ik} \Delta FDI_{i,t-k} + \sum_{k=1}^{m} \lambda_{12ik} \Delta FinDev_{i,t-k} + \sum_{k=1}^{m} \lambda_{13ik} \Delta CPI_{i,t-k} + \sum_{k=1}^{m} \lambda_{14ik} \Delta GDP_{i,t-k} + \phi_{1i} EC_{i,t-1} + \mu_{1it} \quad (11a)$$

$$\Delta FinDev_{it} = \alpha_{2i} + \sum_{k=1}^{m} \lambda_{21ik} \Delta FinDev_{i,t-k} + \sum_{k=1}^{m} \lambda_{22ik} \Delta FDI_{i,t-k} + \sum_{k=1}^{m} \lambda_{23ik} \Delta CPI_{i,t-k} + \sum_{k=1}^{m} \lambda_{24ik} \Delta GDP_{i,t-k} + \phi_{2i} EC_{i,t-1} + \mu_{2it} \quad (11b)$$

$$\Delta CPI_{it} = \alpha_{3i} + \sum_{k=1}^{m} \lambda_{31ik} \Delta Bank_{i,t-k} + \sum_{k=1}^{m} \lambda_{32ik} \Delta FinDev_{i,t-k} + \sum_{k=1}^{m} \lambda_{33ik} \Delta FDI_{i,t-k} + \sum_{k=1}^{m} \lambda_{34ik} \Delta GDP_{i,t-k} + \phi_{3i} EC_{i,t-1} + \mu_{3it} \quad (11c)$$

$$\Delta \ln GDP_{it} = \alpha_{4i} + \sum_{k=1}^{m} \lambda_{41ik} \Delta \ln GDP_{i,t-k} + \sum_{k=1}^{m} \lambda_{42ik} \Delta \ln FinDev_{i,t-k} + \sum_{k=1}^{m} \lambda_{41ik} \Delta \ln GDP_{i,t-k} + \sum_{k=1}^{m} \lambda_{43ik} \Delta \ln CPI_{i,t-k} + \sum_{k=1}^{m} \lambda_{44ik} \Delta \ln FDI_{i,t-k} + \phi_{4i} EC_{i,t-1} + \mu_{4it} \quad (11d)$$

where *FDI* is foreign direct investment, *FinDev* is financial development, *CPI* is a proxy for inflation and *GDP* is real GDP per capita, *EC* is error-correction term comes from the FMOLS estimation, and *m* is the lag length. The short-run causality is determined by the statistical significance of the *F*-statistic associated with the corresponding right hand side variables. The presence or absence of long-run causality can be established by examining the significance of the *t*-statistic on the coefficient ϕ, in Equations (11a–11d).

RESULTS AND DISCUSSION

The results of the first-generation panel unit root tests at level and first difference are presented in Table 5. These results are obtained by applying the panel unit root test: IPS and MW panel unit root test. The optimal lag length is fixed to lag 1. The result shows that all variables are stationary at first difference without trend for the first-generation panel unit root. The results of the second-generation panel unit root using Pesaran (2007) with and without trend are presented in Table 6 using two lag orders. The null hypothesis of the unit roots cannot be rejected in level, but rejected in first differences, for all the six variables. Thus, we conclude that all series are integrated of order one or *I*(1) in the panel of ASEAN-5 countries. Using these results, we proceed to test FDI, DCPS, PC, CPI, and GDP for cointegration to determine if there is a long-run relationship in the econometric specifications (Model 1 and Model 2).

Table 5
First-generation panel unit root tests: Im, Pesaran and Shin (IPS) and Maddala-Wu (MW)

Variables	Model	IPS	MW	IPS	MW
		Level		First Difference	
Foreign direct investment	Without trend	–0.31	22.27	–8.54[a]	110.94[a]
	With trend	–2.35[a]	28.99[a]	–7.23[a]	86.42[a]
Domestic credit to private sector	Without trend	–1.14	14.28	–4.36[a]	44.23[a]
	With trend	–0.08	7.36	–3.09[a]	31.40[a]
Private credit to deposit money	Without trend	–2.18	21.26	–4.51[a]	44.58[a]
	With trend	–1.38	15.74	–3.18[a]	30.22[a]
Consumer price index	Without trend	1.78	8.72	–5.26[a]	53.89[a]
	With trend	1.09	3.69	–5.01[a]	53.91[a]
Real GDP per capita	Without trend	2.13	2.38	–5.44[a]	60.25[a]
	With trend	0.67	4.48	–5.19[a]	a

Note: [a] denotes significant at 1% level.

Table 6
Second-generation panel unit root tests: Pesaran (2007) panel unit root test (CIPS)

Variable	Model without trend			Model with trend		
	$q = 0$	$q = 1$	$q = 2$	$q = 0$	$q = 1$	$q = 2$
Level						
Foreign direct investment	–4.09[a]	–1.80	–0.41	–4.01[a]	–1.69	–0.95
Domestic credit to private sector	–1.28	–0.45	0.30	0.33	1.09	1.85
Private credit to deposit money	–0.78	–1.60	–0.15	1.33	0.01	1.62
Consumer price index	0.89	–0.58	–1.88	1.98	1.01	0.09
Real GDP per capita	1.77	0.54	–0.07	4.17	2.97	2.71
First Difference						
Foreign direct investment	–10.03[a]	–7.72[a]	–5.07[a]	–9.71[a]	–6.71[a]	–3.94[a]
Domestic credit to private sector	–8.04[a]	–4.60[a]	–0.57	–7.45[a]	–3.95[a]	0.15
Private credit to deposit money	–3.66[a]	–3.55[a]	–0.83	–2.62[a]	–3.00[a]	–0.24
Consumer price index	–5.43[a]	–3.43[a]	–1.67	–4.63[a]	–2.97[a]	–0.34
Real GDP per capita	–3.64[a]	–3.24[a]	–0.78	–3.76[a]	–3.90[a]	–1.88

Notes: [a] denotes significant at 1% level.

Cointegration among variables is tested using the first and second-generations as presented in Tables 7 and 8. The results of the first-generation using Pedroni's (1999; 2004) panel cointegration tests are reported in Table 7. There are seven different cointegration statistics proposed by Pedroni to capture the within- and between-dimension effects in the panel. It can be classified in two categories which are within dimension and between dimension. From the results, five of the seven panel cointegration tests for Model 1 and Model 2 indicate that the null hypothesis of no cointegration is rejected at 1% and 5% significance levels. Table 8 reports the findings from the Westerlund's (2007) panel cointegration tests, which is allow for cross-sectional dependence. The empirical results indicate that G_τ and P_τ test statistics reject the null hypothesis of no cointegration at 1%, 5% and 10% significance levels for both models, only that the specification is without trend. Both P_α and P_τ test statistics are significant at 1% and 5% in both models. We focus on the P_α and P_τ test statistics since, according to Westerlund (2007), those statistics have the highest power and are the most robust to cross-sectional correlation. Therefore, the evidence from these panel tests supports the

presence of a cointegrating relationship among foreign direct investment, financial development, inflation, and economic development in ASEAN-5 countries.

Table 7
Pedroni (2004) panel cointegration results

	Model 1: (FDI, DCPS, CPI, GDP)	Model 2: (FDI, PC, CPI, GDP)
Within dimension		
Panel *v*	1.026	1.195
Panel ρ	–1.699**	–1.904**
Panel PP	–4.264***	–4.350***
Panel ADF	–2.318**	–2.393***
Between dimension		
Group ρ	–0.77	–1.031
Group PP	–4.496***	–4.546***
Group ADF	–2.305**	–2.322**

Notes: (i) Trend Assumption: No deterministic trend.
(ii) Fixed lag length selection at 1.
(iii) *** and ** indicates the coefficient significant at the 1% and 5% level respectively.

Table 8
Westerlund (2007) panel cointegration results

Statistics	Without trend		With trend	
	Value	*p*-value	Value	*p*-value
Model 1: FD = Domestic credit to private sector				
G_τ	–2.290	0.103	–2.769	0.433
G_α	–8.116	0.457	–8.112	0.981
P_τ	–5.058*	0.053	–5.546	0.484
P_α	–12.533***	0.002	–13.680	0.329
Model 2: FD = Private credit to deposit money				
G_τ	–2.452*	0.052	–2.742	0.461
G_α	–8.862	0.353	–7.020	0.991
P_τ	–5.912**	0.012	–6.113	0.260
P_α	–16.337***	0.000	–11.098	0.623

Notes: (i) Fixed lag length selection at 1.
(ii) *** and * indicates the coefficient significant at the 1% and 10% level respectively.

Table 9 reports that Models 1–2 estimates the linear and nonlinear relations between financial development and real GDP per capita for the long-run estimation by using FMOLS. Long-run covariance estimates pre-whitening with lag 1, where the automatic bandwidth selection is based on Newey-West fixed bandwidth and Bartlett kernel. In the linear specification, the relationship between financial development and FDI is not significant in both models. However, in contrast, our result is consistent with both proxies of the financial development, which has a significant impact on the FDI in the nonlinear relationship. The nonlinear U-shaped relationship between financial development and FDI inflows has been proven where α_1 and α_2 (Equation 3) is negative and positive, respectively indicating that increased finance is related to more FDI inflows. We obtain an empirical support as we expected in earlier discussions for the presence of anti-Kuznet curve or U-shaped in model 1–2 as indicated by the negatively significant coefficient of financial development and significantly positive coefficient of financial development squared.

Our result shows that the negative effect of low level of financial development below the threshold level (70 points) is related to FDI. This result concurred with the findings by Yohanna (2013) who found that the under-developed financial sector was negatively affected on FDI inflows. The higher financial development reflects high financial strength in that particular country. The strength of financial development attracts the inflows of FDI seeking for financial resource in the host country to assist day-to-day business. Foreign investors are thus attracted to expand their business into countries with financial strength. Above the threshold value at 70 points, financial development influences have positive impact on FDI inflows. Based on model 1 (DCPS) in the quadratic specification, the financial development threshold point is 73.38 point (–0.587/(0.004 × 2)) and in model 2 (PCDM), 78.13% point (–0.625/(0.004 × 2)). The result showed that the DCPS exceeded the threshold point at 50% quantile to facilitate FDI inflows, while for PCDM the threshold was at 75% quantile (Table 2).

When financial development in the ASEAN-5 countries exceeded the threshold level at 70% of GDP, FDI inflows increased into the region in a nonlinear relationship. Our results however differed from those of previous studies which examined the relationship between financial development and FDI inflows based on linear model (di Giovanni, 2005; Stein & Daude, 2007; Mohamed & Sidiropoulos, 2010). Alfaro et al. (2004) suggested that the host countries with well-developed financial market benefited FDI. In addition, financial integration reduced information costs and encouraged foreign firms to invest in the ASEAN-5 countries.

Table 9
Panel FMOLS long-run estimates (Dependent variable: Foreign Direct Investment)

Variables	Linear Model		Quadratic Model	
	Model 1: FD = DCPS	*Model 2: FD = PCDM*	*Model 1: FD = DCPS*	*Model 2: FD = PCDM*
GDP	0.001	0.002	0.001	0.002
CPI	–0.345***	–0.317**	–0.478***	–0.437***
FinDev	0.044	0.014	–0.587**	–0.625***
FinDev square	–	–	0.004***	0.004***
Threshold value			73.38	78.13

Notes: (i) Panel method using grouped estimation.
(ii) ***, ** indicates the coefficient significant at the 1% and 5% level respectively.

The GDP, a parameter representing market size, also provides attraction to foreign investors who prefer market-seeking in order to locate their production site to the host countries. The parameter however, is not significantly related to FDI inflows in the ASEAN-5 countries (in long-run estimation) in contradiction to findings by Yohanna (2013). But in the short-run dynamic, GDP is Granger cause FDI directly (Table 10). The price for goods and services is however negatively influence FDI inflows due to the burden ensuing from increment in production cost. An increase in price of goods and services will reflect the increment of production cost that can reduce the potential profitability for foreign firms. In addition, an increase in price will reduce the purchasing power parity of citizens in the host country, and as a result, the innovate products produced by foreign firms may become unmarketable or over-supplied in the host country. This situation tend to reduce foreign investors' attraction to invest in the host country particularly for those with 'market-seeking' objective.

Table 10 reports the Granger causality result based on the panel VECM model with four variables in each model. The estimation is conducted using two models corresponding to two financial development measures. The lag length is fixed at 1. For both models, error correction term is negative and significant for the FDI equation, suggesting that there is a long run relationship when the FDI is dependent variable.

The short-run causality channels from the panel VECM estimations are summarised in Figure 1. As shown in Figure 1, there is a unidirectional causal effect running from real GDP per capita to domestic credit to private sector, domestic credit to private sector to inflation, and real GDP per capita to inflation. However, there exists a broken link between the domestic credit to private sector,

private credit to deposit money and FDI in short term. There are two bidirectional causal effect exists between the FDI and real GDP per capita, and private credit to deposit money and real GDP per capita. Private credit to deposit money effect indirectly on FDI via GDP because the private credit support the money to be hold among the citizen as well as market size is growing. In view of this, the findings tend to support Alfaro et al. (2004; 2009) in the direction of the FDI-growth nexus in the host country, and also Levine (2005) in the finance-growth nexus. The error-correction terms presented in the last column of all models demonstrate that the burden of the short-run endogenous adjustment (to long-run trends) to bring the system back to its long-run equilibrium is borne by the FDI, inflation and real GDP per capita.

Table 10
Granger causality based on panel VECM estimations

Dependent Variable	Independent Variables				ECT_{t-1} Coefficient (*t*-Statistics)
	ΔFDI	ΔFinDev	ΔCPI	ΔGDP	
	(Wald F -Statistics)				
Model 1: FD = Domestic credit to private sector					
Δ*FDI*	–	0.144	0.232	19.795***	–0.728 (–7.019)***
Δ*FinDev*	0.028	–	1.240	6.102***	0.000 (0.190)
Δ*CPI*	0.314	2.574*	–	2.415*	0.001** (2.468)
Δ*GDP*	53.125***	1.634	0.856	–	0.018 (7.839)***
Model 2: FD = Private sector to deposit money					
Δ*FDI*	–	0.129	0.228	16.748***	–0.727 (–7.010)***
Δ*FinDev*	0.065	–	1.707	11.594***	–0.002 (–0.716)
Δ*CPI*	0.313	0.779	–	1.088	–0.001 (2.182)**
Δ*GDP*	47.773***	4.66**	1.162	–	0.017 (7.737)***

Notes: (i) FDI: foreign direct investment; FinDev: financial development; CPI: consumer price index; GDP: real GDP per capital.
(ii) ECT, error-correction term.
(iii) ***, ** and * denotes significant at 1%, 5% and 10% level. t-statistic in parentheses.

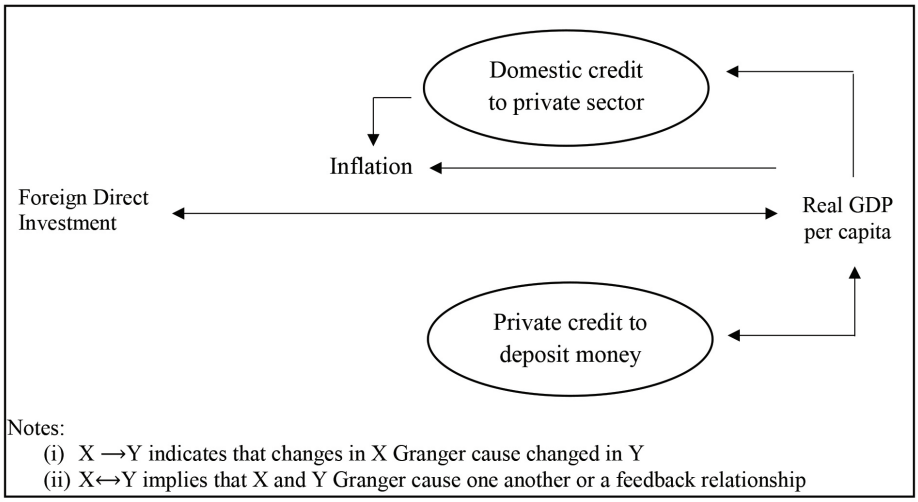

Figure 1. Short run causal channels summarised from panel VECM

CONCLUSION

This study examines the relationship between the financial development, inflation and GDP to FDI in ASEAN-5 countries from 1980 to 2013. In particular, we aim to investigate whether or not the financial development has a nonlinear relationship with FDI. It is important to understand how the financial development affects FDI. The empirical analyses are based on the first- and second-generation panel cointegration to test for long-run and short-run dynamic relationship. The second-generation panel cointegration test which include cross-dependence among ASEAN-5 economic integration is employed (Westerlund, 2007).

Our results demonstrated that there exist cross-sectional dependence among the ASEAN-5 countries which thus supports the argument by Guerin (2005) who showed that there is a role for geographic influence on financial integration as well as on FDI. Economic integration has a direct effect on internationalisation by reducing transaction costs and partial information costs (Guerin, 2005). Foreign enterprises have extended their business activities in ASEAN countries and become regional players. Financial integration among the ASEAN-5 countries strengthened financial development as well as ease transaction activities among the regional players. Economic growth among the ASEAN-5 countries encompass various aspects including business, trading, tourism, foreign skilled-labour movement in the region, which encouraged the positive spill-overs among

the countries. An increase in price of goods and services among the ASEAN-5 will be reflected in the regional price chain.

The existence of cross-sectional dependency shown in this study supported the efforts for ASEAN-5 financial integration. This integration in the ASEAN Economic Community (AEC) Blueprint 2025, will strengthen financial institutions, enhance commitment in implementation and in monitoring and evaluation of finance. Moreover, ASEAN seeks to achieve a well-integrated and smoothly functioning ASEAN region financial system, characterised by more liberalised capital account regime and inter-linked capital markets. Strengthening financial integration as well as financial market infrastructure are therefore aimed at facilitating intra-ASEAN trade and investment by increasing the role of ASEAN indigenous banks, and augmenting integrated insurance and capital markets leading to safe, cost-efficient and more connected regional economy.

The empirical results demonstrate that there is strong evidence in favour of a long-run relationship among FDI, financial development, inflation and real GDP per capita. In the long-run estimation using FMOLS, there exists a nonlinear relationship between both domestic credit to private sector and private credit by the deposit money to FDI in the quadratic model. The nonlinearity between both financial developments on the FDI are anti-Kuznets or U shape. However, the contribution of financial development to the FDI exist in the long run, but not in the short run. In terms of policy implications, these findings suggest that it is important for the ASEAN-5 economies to increase financial development, in accordance with financial integration in the AEC Blueprint 2015. Based on the findings from the quadratic model, financial development contributed towards promoting FDI after a certain level at above 70 point. In general, it can be concluded that countries would need to surpass the median financial development score in order for the FDI to get the benefit from financial development. The attraction of FDI inflows is an important goal of the AEC and largely conditional to the success of the ASEAN-5 integration efforts. Hence, this study suggests that an increases in financial development encourage more FDI inflows into the ASEAN-5 countries.

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DOES THE PROVISION OF NON-AUDIT SERVICES AFFECT AUDITOR INDEPENDENCE AND AUDIT QUALITY? EVIDENCE FROM BAHRAIN

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ABSTRACT

The main aim of this research is to investigate perceptions of respondents (auditors, accountants and financial managers) on the effect of provision of non-audit services (NAS) to audit clients companies upon auditor independence and audit quality. This study expands on previous work done on the effects of providing non-audit services upon auditors' independence and audit quality in Bahrain, which considered as an important subject for both auditing firms and auditing profession. This paper provides insights on the factors which explain the impact of the provision of non-audit services upon auditor independence and audit quality in Bahrain. To achieve the objectives of the research, a questionnaire was prepared and disseminated to a sample of 250 respondents. The results indicate that respondents are supporting the idea that "independence of auditor is impaired with providing non-audit service". Kruskal-Wallis Test revealed that only respondents' occupation is associated with their perceptions. Providing empirical evidence on this issue within the Bahraini environment, as a member of the Gulf Cooperation Council countries, may add a new dimension to the accounting and auditing literature. As the study analysed only one country (Bahrain); generalisation of the results might be a limitation. Future research studies should consider other countries in the region and to include respondents in other non-listed companies with more recent data which may lead to different results.

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INTRODUCTION

The last two decades have witnessed a wide expansion in services rendered by auditing firms to include various non-audit services (NAS) and this was due to the expansion and complication of business environment, the globalisation, the spreading of multinational companies and the improvements of information technology. Companies nowadays receive NAS such as computer hardware and software installation, human resources planning, bookkeeping, tax return preparation, investment banking, internal audit out-sourcing, and finally management advisory services (Jenkins & Krawczyk, 2001).

The globalisation in accounting and other services such as assurance service has formed 'the multidisciplinary nature of big audit firms' (Brierley & Gwilliam, 2003), which would present audit and NAS to audit clients and this became one of the major issues concerning the possible auditor independence dilemma (Craswell, 1999; Quick & Warming-Rasmussen, 2005). Jenkins and Krawczyk (2001) pointed out that histrionic changes in the accounting profession, brought about factors such as globalisation and information technology, have formed the need to rethink independence standards, and therefore explore the influence of NAS on auditor independence. The global financial crisis experienced in the last decade has formed a lot of doubts regarding the usefulness of auditor's report and therefore, NAS fees has been a challenge for further investigation.

The US regulators adopted nine types of NAS that inconsistent with auditor independence. Examples of these services include bookkeeping, the design and implementation of financial information systems and valuation services or fairness opinions, internal auditing services, planning of human resources, actuarial services, and legal services (Sarbanes & Oxley, 2002). Beattie, Fearnley and Brandt (1999) provided evidence from the UK and concluded that most of NAS provided by auditors is accounting services that enable client companies to conform to the legal and regulatory requirements rather than management consultancy. Dykxhoorn and Sinning (1981) concluded that the majority of German auditors believed that auditor independence would be abused when auditors offer widespread accounting consultancy or services.

Lindsay, Rennie, Murphy and Silvester (1987) investigated the influence of providing a number of services (namely, preparation of accounts, executive search and accounting systems design) on auditor independence in the Canadian

environment. They concluded that accounting systems design was seen as the smallest threat on auditor independence. However, they found that about a third of the respondents considered the other two services, preparation of accounts and executive search, makes auditor dependent on client. This expansion is expected to improve the firm's competitiveness, to maintain continuous growth, and to satisfy customers.

However, the extension of services has upraised inquiries about whether auditing firms can sustain their independence while offering NAS to audit clients. Without independence, audit cannot achieve its goals, which is the basic requirement for an auditor to be able to perform an audit. The auditor in public practices must be free of bias with respect to client and must be recognised as independent by users of the audit report.

Performing audit and NAS for the same client might cause a lack on independence for the auditor, because this may create a working relationship that is too close between the auditor and the client. Consistent with this view, Jordan Companies Law (1997) stated in its rule No. 235: An auditor is not allowed to participate in the foundation of the corporation that is being audited by him, nor to be a member of administrative or advisory position, also he is not allowed to be a partner or an employee for any member of that corporations' board of directors.

This study is expected to provide additional empirical evidence on auditors' independence and audit quality in Bahrain, which considered as an important subject for both auditing firms and the audit profession. Independence is viewed as a strong shield that may protect auditors form any threats or pressures from the board of directors of the audit clients' side. This study is likely to contribute to the accounting and auditing literature in the following grounds: (1) to fill the gap in the existing auditing literature because there is little published studies directly investigating NAS models in developing countries in general and Bahrain in particular; (2) to the best knowledge of the researchers, there was only one study conducted in Bahrain by Joshi, Bremser, Hemalatha and Al-Mudhaki (2007) to directly investigate the effect of providing NAS upon auditor independence in Bahrain and by now about 10 years passed and became old and needs to be updated. Another feature that distinguish this study from its previous study in Bahrain (Joshi et al., 2007), is that this study takes into consideration the impact of demographic variables upon auditor independence and financial reporting quality whereas, the previous study did not. Furthermore, this study investigated the impact of providing NAS upon quality of financial reporting.

Further and most importantly, this investigation comes after issuing and applying the Corporate Governance Code (CGC) in Bahrain, which has been

issued by CBB and effective since 2011. The Bahraini CGC aims to make the Corporate Governance practices transparent and understandable for both local and foreign investors in a well liberalised and more transparent economic system (Central Bank of Bahrain [CBB], 2011). Bahrain performed much effort to create the right climate to attract more regional and international investments in order to ensure sustainable growth and to create increased employment opportunities. The 2013 Index of Economic Freedom states that Bahrain is placed as the first in the Middle East and North Africa (MENA) area and ranked as 12 in the world rank (The Heritage Foundation, 2013).

BACKGROUND OF THE STUDY

Bahrain was selected for this study since it enjoys a significant location among Gulf countries, with stable political and economic environment and runs a free market economy. The motivation of this study is the rising concern for providing NAS because of very few studies regarding the influence of providing NAS upon auditor independence and audit quality in Bahrain as one of developing countries with an emerging stock market. Thus, this study is expected to fill the gap in the accounting and auditing literature about this important issue.

In emerging stock markets, the role of auditors as a mean of decreasing conflicts of interest in financial reporting decisions is possibly more significant than in the case of developed stock markets (Chadegani, Mohamed, & Jari, 2011). Consequently investigating that providing NAS by auditors to audit client companies may weaken auditor independence and eventually audit quality, become very important in developing countries such as Bahrain. This study examines the unique condition in Bahrain where the company commonly attempts to negotiate the audit fees and there is a trend for the company to select an auditor who provides variety of NAS and the cheapest audit fees. Therefore, the study is directed towards exploring the effect of providing NAS by external auditors on auditor independence and audit quality.

The main contribution of this study lies in the fact that it has been accomplished in a unique environment (i.e., the Middle East and in particular a Gulf country of Bahrain). Bahrain has a little number of large companies with audit services being concentrated in the hands of only a few audit firms. Providing empirical evidence on the impact of providing NAS upon auditor independence and audit quality within such environment may add a new dimension to the accounting and auditing literature. However, most companies in Bahrain do not disclose audit fees in their annual reports. The findings of this study offer an important insight into this issue in developing countries like Bahrain. In addition,

the findings of this study might help regulators of financial reporting and auditing services in Bahrain in particular, other countries with similar environmental characteristics such as some the Gulf Cooperation Council (GCC) countries in particular and other developing countries in general.

A limited number of studies have been accomplished in GCC countries in general and in Bahrain in particular where the local stock market is not greatly advanced. This could be due to insufficiency of infrastructures, some shortage of transparency and a more conservative approach for revealing and analyzing data relating to auditor independence (Joshi et al., 2007). Studies to investigate the influence of providing NAS to audit client upon auditor independence and audit quality are likely to add value, particularly in Bahrain which is considered as a financial center of the Middle East region. Accordingly, this study focuses on investigating the perceptions of auditors, accountants and financial managers working in listed companies in Bahrain Bourse on the issue of providing NAS to audit client companies and its influence upon auditor independence and audit quality. More specifically, the objectives of this study are as follows:

1. To investigate respondents' perceptions upon the influence of providing NAS to audit clients on their independence and audit quality.
2. To investigate respondents' perceptions about the provisions of NAS has no impact on auditor independence and audit quality.
3. To investigate the impact of demographic variables of the respondents on their perceptions.

Although most previous research on the influence of providing NAS to audit client companies upon auditor independence and audit quality have been conducted in developed countries and very few were done in developing countries, this study is to address this imbalance by having a closer look on this issue in Bahrain. The problem statement is focused upon examining the effect of providing NAS to audit clients upon the auditor independence and audit quality. In addition, examine the effect of three demographic variables namely occupation, years of experience and level of education upon respondents' perceptions on auditor independence and audit quality. Bahrain is characterised as a tax-free country and is a member of the International federation of Accountants (IFAC) since 2004 and also applies International Financial Reporting Standards (IFRS).

Audit services in Bahrain are delivered by variety auditing firms. Some firms are local, others are working as foreign branches, and the residual are interrelated with international audit firms. The Big Four, i.e., Ernst and Young (E&Y), Deloitte & Touche (D&T), KPMG, and Price water house Coopers (PWC)

have a strong presence in Bahrain. Companies in Bahrain are legally requested to have their financial reports audited at reasonable fee without compromising on audit quality. Furthermore, auditors expect to perceive adequate fees for their services to maintain satisfactory level (Khasharmeh, 2015).

Practically, audit firms may need to have two licenses, first for practicing auditing profession and second for providing auditing services to companies of the banking and insurance sector. According to article (205) of the Bahrain CCL No. 21 of 2001, appointment of auditors should be done on an annual basis during the course of the firm's annual general meeting (Said & Khasharmeh, 2014). Concerning auditor's independence, Article (61) of the CBB and Financial Institutions law No. 64 of 2006 presents some conditions for the auditor to be regarded as independent. Before a particular licensee assigns an auditor, it must take accountable steps to make sure that the auditor has the required skills, resources and experience to perform the audit task appropriately, and is independent of the licensee (CBB, 2015).

The results of this study are expected to raise knowledge on how listed companies and audit firms in Bahrain reflect auditors' fees via their reporting practices. As a member of GCC, Bahrain and other members share a number of particular structural economic characteristics. Among these characteristics are: a high reliance on oil as expressed in the share of oil and gas revenues in total fiscal and export revenues; young and rapidly growing national labor forces; and the substantial reliance on expatriate especially in the private sector. Furthermore, listed companies in the GCC members countries are subject to nearly similar financial reporting requirements. Thus, GCC are expected to benefit from the results of this study.

The rest of this paper contains the relevant literature review and hypothesis development, the research methodology, findings and results of the study, and lastly the conclusions.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

More than 50 years ago, auditor independence has been of great importance. For example, Mautz and Sharaf (1961) stated that auditor independence is a keystone of the auditing profession, a critical element in the statutory financial reporting process and a crucial prerequisite for adding value to audited financial reports. Robert Mednick, Chair of the Board of Directors at American Institute of Certified Public Accountants (AICPA), stated that auditor independence is the cornerstone of the accounting and auditing profession and one of its most

valuable assets (AICPA, 1997). The auditor is expected to be objective, impartial and impendent (Osei-Afoakwa, 2013). In addition to be independent in fact, auditors should be seen to be independent in investigating and attesting clients' financial reports (Stevenson, 2002). Specifically, auditors are likely to be able to decide independently on reporting strategies starved of any effect from their client companies' management (Chandler & Edwards, 1996; Cullinan, 2004).

The literature in accounting and auditing provides many previous studies that have been conducted in the area of audit and NAS (Gul & Yap, 1984; Teoh & Lim, 1996; Arrunada, 1999; Beattie et al., 1999; Canning & Gwilliam, 1999; Jenkins & Krawczyk, 2001; Ezzamel, Gwilliam, & Hollan, 2002; Frankel, Johnson, & Nelson, 2002; Chung & Kallapur, 2003; Felix Jr, Gramling, & Maletta, 2005; Quick & Warming-Rasmussen, 2005; Chukwunedu & Okafor, 2014). It has been concluded that the association between providing NAS and auditor independence is a controversial, ambiguous, conflicting issue (Kleinman, Palmon, & Anandarajan, 1998; DeFond, Raghunandan, & Subramanyam, 2002; Frankel et al., 2002; Chung & Kallapur, 2003; Geiger & Rama, 2003; Ashbaugh, 2004; Kinney, Palmrose, & Scholz, 2004; Reynolds, Deis, & Francis, 2004), thus, three views regarding providing NAS were indicated in the literature.

Independence of Auditor is Impaired by Providing NAS

The concern about NAS is established on the supposition that auditors may be willing, at least intensely tempted, to sacrifice their independence in exchange for retaining their audit client companies from which they might accumulate big NAS revenues (DeFond et al., 2002). Because of the provision of NAS, the auditor practice and independence are debatable and third party may think that accounting and auditing practices will be with lower value. However, some authors argued that the auditor provision of NAS creates close working relationship amongst the auditor and the client companies (Wallace, 1995; Sutton 1997).

Chukwunedu and Okafor (2014) concluded that the NAS impair audit independence and audit objectivity. The impairment or absence of auditor independence is a key reason for a lot of corporate collapses and corporate scandals around the world, including the US Case of Enron where the existence of high NAS fees paid to the auditor of Enron was the major instigator to blame for the audit failure. Even though auditors are requested to retain their neutrality and independence, there are some motivations that may induce auditors to compromise their independence. The provision of NAS by auditors to their audit client companies has been seen as a threat to auditor independence (Craswell, 1999). In New Zealand, Gul (1989) investigated respondents' perceptions,

banking staff, and reported that the impact of providing NAS was significantly positively correlated with auditor independence.

The provision of NAS has the possibility to make economic bonding from the substantial amount of fees which received from clients (Simunic, 1984; Beck, Frecka, & Solomon, 1988). This bond might weaken both definite and perceived independence of auditor because of the reluctance of audit firm to criticise the consultancy work provided by one or more of its divisions, and the audit firm may not want to miss lucrative and may, therefore, more unwilling to disagree with management's interpretations of accounting matters (Ping, Carson, & Simmett, 2006). Frankel et al. (2002) reported that auditors may permit further discretion to their clients that pay high payment for NAS compared with total audit fees. Krishnan, Sami and Zhang (2005) provided empirical evidence that investors perceive NAS as weakening auditor independence. Joshi et al. (2007) clearly indicated that auditor independence is impaired when the auditor provides NAS for the audit client.

On the other hand, Abdul Wahab, Zain and Abdul Rahman (2015) conducted a study which contributes to the extant literature through examining the impact of political connections as a threat to auditor independence. They examined the impact of political connections upon auditor independence and investigated the relationship between non-audit fees and audit fees and as to whether political connections moderate such relationship. The results revealed a positive and significant relationship between non-audit fees and audit fees.

Moreover, others researchers (Lowe & Pany, 1995; Frankel et al., 2002; Gendron, Suddaby, & Lam, 2006; Alleyne, Devonish, & Alleyne, 2006; Richard, 2006) claimed that with the provision of NAS, auditors could not be able to deliver the audit services objectively and that the provision of NAS could impair perceived auditor independence because ultimately they could be responsible for auditing their own work and/or acting as management (Security and Exchange Commision [SEC], 2001), and management's power over the auditor may be inflated as a result of auditors' reliance of fees received (Canning & Gwilliam, 1999).

Sori and Karbhari (2006) revealed that auditor independence would considerably threaten when an audit engagement team jointly provide audit and NAS. Similarly, Beattie et al. (1999) reported that a high level of fees from NAS was ranked as the most threat factor on auditor independence by three groups of users namely financial journalists, preparers, and financial directors. Sori, Karbhari and Mohamad (2010) concluded that auditors' independence is perceived to compromise when audit firms jointly offered audit and NAS. Sharma

and Sidhu (2001) surveyed auditors' opinions of bankrupt companies and reported that higher NAS fees have impact on auditor opinion concerning going concern. It is pointed in the literature that the provision of NAS could raise the risk of client retention because of economic incentives, and the tendency to agree with client's choice of accounting policies (Beck et al., 1988; Frankel et al., 2002). Thus, after the collapse of Enron, the Sarbanes Oxley Act 2002 was enacted in the US, with provisions to prevent audit firms from providing specific NAS.

Causholli, Chambers and Payne (2015) examined in their study whether the provision of NAS can impair auditor independence. They argue that it is the potential for new NAS revenue that would most likely cause auditors to have impaired their independence. They found "strong evidence that audit quality suffers when clients are willing to purchase future NAS from their auditors". Patrick, Vitalis and Mdoom (2017) conducted a study to review literature related to auditor independence and audit quality. They found that there is a strong relationship between auditor independence and audit quality. However, Antle, Griffin, Teece and Williamson (1997) stated that the provision of NAS would not affect auditor independence, since it leads to enhance audit quality.

Albaqali and Kukreja (2017) conducted a study to identify the factors influencing auditor independence in Bahrain. The study found a significant role to the audit regulations and related provisions in enhancing audit independence. The study recommended the formation of an independent audit quality board and considering the adoption of a joint audit practice for the listed companies in Bahrain. Based on the above literature review, the following alternative hypothesis was developed:

H1: There are differences in respondents' answers about impairment of auditor independence as a result of providing audit and NAS (questions 1–11 tested this hypothesis).

Audit Quality is Improved and Enhanced by Rendering NAS

According to Wallman (1996), the provision of NAS improves the auditor's capability to learn more about clients, so assisting to make sure that they satisfy their obligation to conduct a better audit. Others showed that provision of NAS certainly improves auditor independence and nevertheless enhances clients' operations (Jenkins & Krawczyk 2001; Kinney et al., 2004; Lowe & Pany, 1995). The auditor client may get better and more complete services especially when consulting in certain areas such as tax services are provided by the auditor.

It was concluded that audit firms providing some of the NAS could bring a great deal of value to audit clients (Antle et al., 1997; TunUda, 2002). Arrunada (1999) stated that the provision of NAS by auditors to their audit clients reduces total costs, increase technical competence and motivates more intense competition and it does not necessarily damage auditor independence or the quality of NAS.

Palmrose and Saul (2001) indicated that the arrangements in which audit firms delivered, both audit and NAS, the NAS has a supportive influence on the effectiveness of the audit. Sawan, Alzeban and Hamuda (2013) found that the provision of NAS improves audit quality. Furthermore, some forensic auditors testified that specific types of frauds might have been eliminated or identified if NAS had been delivered to the audit client or if well communication had ensued between NAS personnel and the audit engagement team (Joshi et al., 2007).

Park, Choi and Cheung (2017) conducted a study to examine how audit quality is affected by an independent auditor providing audit and non-audit service together. The study found that non-audit service significantly affects audit service quality before controlling for endogeneity. Furthermore, Khasharmeh and Nympha (2017) conducted a study to examine the effect of ownership structure upon the audit quality in Bahrain. The results indicated that foreign ownership has a significant relationship with audit quality. Based on the above literature review, the following alternative hypothesis was developed:

H2: There are differences in respondents' answers about improving audit quality as a result of rendering NAS (questions 12–22 tested this hypothesis).

The Provision of NAS Has No Impact on Auditor Independence

It has been reported in the literature that no considerable evidence that investors and their agents are concerned about NAS. For instance, it was reported by Bloomfield and Shackman (2008) that there is a limited evidence to support the concept that companies with more fees of NAS are more expected to restate their earnings, thus casting uncertainty on the public perception that NAS may impair auditor independence.

Sucher and Bychkova (2001) and Quick and Warming-Rasmussen (2005) revealed that NAS has no effect on perceptions of independence. Kinney et al. (2004) and Bugeja (2011) supported this view and found in their study that no statistical associations between fees for the design of accounting information systems and application or internal audit services and restatements. Carmona, Momparler and Lassala (2015) conducted a study to explore whether the provision

of NAS by public accounting firms undermines audit quality. The results of the study found that "high non-audit services do not necessarily result in poor quality financial reporting". Zhang, Hay and Holm (2016) examined in their study the effect of providing NAS upon auditor independence in the Norwegian audit markets. They found that providing of NAS does not suggest loss of independence.

Another study conducted by Sobrinho and Bortolon (2016) upon 154 Brazilian companies to evaluate whether the provision of NAS affects auditor independence. The results indicate that the provision of NAS does not affect auditor independence. From the above discussion, it can be seen that different perceptions exist about the impact of the provision of NAS on auditor's independence. Some previous studies concluded that auditing firms that provided NAS had a higher risk for losing their independence, while others concluded that providing NAS had no effect on independence, as well as on financial statement reliability. Based on the above literature review, the following alternative hypotheses were developed:

H3: There are differences in respondents' answers about the idea that providing NAS has no effect on auditor independence (questions 23–26 tested this hypothesis).

On the other hand, the accounting literature provides evidence that some studies on preparers or users' perceptions reported significant differences among different groups (e.g. Wallace, 1988 and Solas & Ibrahim, 1992), while others did not (Al-Mubarak, 1997 and Desoky, 2002). Accordingly, this study investigates the perceptions of different groups namely auditors, accountants and financial manager in listed companies in Bahrain Bourse on the effect of the provision of NAS by the auditor on auditor's independence and audit quality.

The importance of including financial managers group in the study lies in the fact that they have a major concern in audit reports. For financial managers, auditor independence is very essential factor in the audit function; the more the auditor's independence is sustained, the more the reliability of the financial reports provided by audit firms. Furthermore, demographic information of respondents is used to examine whether the differences in background characteristics of respondents result in differences in their perceptions. Remenyi (1998, p. 154) stated that "background questions provide demographic and socio-economic information on the individual or firm. At the individual level these include evidence on age, gender, occupation, income, education level, …". In this study, demographic information was used to examine whether differences in background characteristics of respondents result in differences in their perceptions. There were two main reasons for examining the background characteristics of respondents:

first, to help in grouping the analysis into several sub-groups in order to ascertain whether their answers were significantly different across the various sub-groups; second, to help in assessing the importance of each sub-group within the total sample.

Respondents were categorised by occupation (three groups), years of experience (four groups) and level of education (four groups).

Based on the above, the following alternative hypotheses were developed:

H4: There is association between respondents' occupation and their perceptions on auditor independence and audit quality.

H5: There is association between respondents' experience and their perceptions on auditor independence and audit quality.

H6: There is association between respondents' education and their perceptions on auditor independence and audit quality.

Non-parametric statistics are used for testing the above hypotheses. For example, the Chi-square Test is used to test hypotheses H1, H2 and H3; while Univariate Analysis and Kruskal-Wallis Test are used to test hypotheses about differences between groups (hypotheses H4, H5 and H6).

RESEARCH METHODOLOGY

This study is an explanatory study which aims to verify the hypotheses about the effect of providing NAS to audit client on auditor independence and audit quality. To gather the data necessary for testing hypotheses stated earlier, a questionnaire was designed and tested for the reliability to check the internal consistency, as a method of assessing the reliability of the instrument or the scales used in the study. Cronbach's Alpha is considered the best known and most frequently used test of internal consistency (Sekaran, 2006). According to Pallant (2013), ideally, the Cronbach alpha coefficient of a scale should be above 0.7. Further, Sekaran (2006) stated that in general reliability less than 0.60 is considered to be poor, those in the 0.7 range, are acceptable, and those over 0.8 are good. This means that whenever the coefficient above 0.7, the scale can be considered reliable with the sample. In this research, Cronbach's Alpha coefficient was good with a scale of 0.801 and is considered high.

In general, the main difficulty often met by researchers using the questionnaire as a data collection method is the poor response rates. In this study, every possible effort was made, in the questionnaire design, distribution and collection stages to make the response rate as high as possible. When a study is applied in local areas and/or the researcher is able to assemble groups of respondents to response to the questionnaire, for the case of this study, administering the questionnaire personally is the best way of data collection. (Ibert, Baumard, Donada, & Xuereb, 2001; Sekaran, 2006). The questionnaires were distributed to and collected from a sample of 250 respondents including three interested groups working in the Bahraini firms (namely: auditors, accountants and financial managers) and 199 questionnaires were received, however, the researchers exclude 4 questionnaires because a lot of questions are kept unanswered and leaving 195 useable questionnaires which representing 78% of the questionnaires distributed.

SAMPLE SIZE AND SELECTION

Since this study focuses on investigating the respondents' perceptions at listed companies in Bahrain Bourse on the issue of providing NAS to audit client and its influence upon auditor independence and audit quality. Auditors, accountants and financial managers were selected to be the sample of the study. Auditors are chosen because they are the key subjects of the issue of interest that offer information credibility assessment to the stakeholders (Humphrey, 1997).

Managers are the agent of the owners, who conducts business on behalf of the owners and, hence, necessitates a monitoring mechanism (i.e., an auditor) to give report on their performance (Jensen & Meckling, 1976). On this basis, financial managers' perceptions of auditor independence and audit quality are valued to the study. Accountants are directly involved in providing credible information and their perceptions are valuable to the study. The sample of the study was contacted personally and the questionnaire was distributed either via e-mail or personally by hand. However, some respondents presented apprehension concerning responding, despite the awareness of confidentiality. This is may be due to the nature of the information required and the sensitivity of the topic of this study.

The sample size depends on a number of factors such as available time, funds, access to possible participants, proposed techniques of statistical analysis, the desired degree of precision (de Vaus, 2001). Regarding the estimation of the actual sample size, Saunders, Lewis and Thornhill (2012) proposed a formula that can be used for this purpose. This formula requires two main factors to be estimated: first, the expected response rate, and second, the minimum or the

adjusted minimum sample size. This formula is as follows: $n^a = (n \times 100) / re\%$, where n^a is the definite sample size required, n is the minimum (or the adjusted minimum) sample size, and $re\%$ is the expected response rate expressed as a percentage (Saunders et al., 2012). Based on the above formula, total of 180–200 respondents was considered to be enough as a minimum sample size, with subgroups of sufficient size to enable the researchers to compare them (Desoky, 2002), and a response rate of between 65% and 80% was expected. Consequently, the sample size could be calculated as follows: $n^a = (180 \times 100) / 75 = 240$ respondents. Accordingly, it was decided to distribute 250 questionnaires, to allow for unexpected circumstances. Table 1 explains the response rates of the sample.

Table 1
Distributions of the questionnaires and response rates

Respondents	No. of QD	No. of QR	No. of IQ	No. of UQ	% of UQ
Auditors	120	101	2	99	82.5*
Accountants	65	55	1	54	83.1*
F. Managers	65	43	1	42	64.6*
Total	250	199	4	195	78.0**

Notes: *Percentage of UQ to QD of each group of respondents; ** Percentage of total UQ to total QD.
QD = questionnaire distributed; QR = questionnaire received; IQ = unusable questionnaire; UQ = usable questionnaire.

Table 1 shows that a total of 250 questionnaires were disseminated and 199 questionnaires were received. It has been noted that "If a substantial number of questions - say, 25% of the items in the questionnaire - have been left unanswered, it may be advisable to throw out the questionnaire and not excluded it from the data set for analysis" (Sekaran, 2006). Therefore, 4 unusable questionnaires were not considered in the analysis and thus the final usable questionnaires were 195 representing 78%.

DATA ANALYSIS

To test the research hypotheses formulated earlier in this study, the analysis of the data collected was carried out on two various levels: the first, for the overall sample; the second, for the various sub-groups. Demographics were done according to respondents' occupation, experience and education. The SPSS technique was used in the analysis of the survey data. Along with the descriptive statistics, which mostly depend on the percentages, the mean, and the standard deviation, a statistical analysis was provided using a number of non-parametric tests such as the Chi-square Test, the Kruskal-Wallis Test and Univariate analysis.

These statistical tests were utilised to test for significant differences for the overall sample and between various sub-groups. As the data collected for this study were mainly nominal and ordinal data, it was decided to use the non-parametric tests that many statisticians (Bryman & Cramer, 2000; Pallant, 2013; Siegel & Castellan, 1988) have recommended to be used in such cases. For instant, Pallant (2013) stated that non-parametric tests are ideal for use when a researcher has data that is measured on nominal (categorical) and ordinal (ranked) scales.

Data Collection

This study implicated the questionnaire survey to gather information from the sample on the impact of providing NAS on auditor independence and audit quality. The questions included in this survey are provided in the Appendix. The questionnaire includes two parts: Part A: contains demographic information about the respondents. Part B: contains 3 sections that include questions related to audit and NAS. These sections are; Section 1: Independence of auditor is impaired by providing NAS, Section 2: Audit quality is improved and enhanced by rendering NAS, and Section 3: The provision of NAS has no impact on auditor independence.

Most questions are based on a 5 point Likert scale. They are ranging from 1 to 5, where 1 refers to strongly disagree and 5 refers to strongly agree. One open-ended question was also included to gather respondents' opinions on the issue of the study. Companies listed in Bahrain Bourse and audit firms are covered in this study. By end of 2014, the total number of companies listed was 47 (Bahrain Bourse, 2014).

FINDINGS

Description of the Sample

Table 2 describes the sample in details. Regarding the experience and the education variables, the results in the table shows that about 95% of the respondents have BSc, Masters or PhD which means that the population have knowledge and experience and they can provide valuable information for the study. Also, the results in Table 2 shows that 58.4% of the respondents have experience of 5 years or above which means that the respondents have enough experience and thus can add important information to be used in the study.

Table 2
Details of usable questionnaire in sample groups

Variable	Number of respondents	%*
Occupation		
Auditors	99	50.8
Accountants	54	28.2
F. Managers	42	21.0
Total	195	100
Experience		
Less than 5 years	81	41.6
5–10 years	69	35.4
10–15 years	19	9.7
More than 15 years	26	13.3
Total	195	100
Education		
Below BSc	10	5.1
BSc	114	58.5
Masters or Professional Degree	53	27.2
PhD	18	9.2
Total	195	100

Note: * = Percentage of UQ in a specific group to total UD of the groups.

The Overall Sample

Table 3 shows the descriptive statistics and the Chi-square results for each group of questions. The Chi-square for one sample test was adopted to test for significant differences in respondents' choice of answers on these groups of questions. In other words, it was employed to see if any choice of answer was favored significantly more than the others.

Table 3 shows that Section 1 of questions has a mean score of 3.821 with a standard deviation of 0.819 which is less than half of the mean which reveals that there is no dispersion among respondents' perceptions regarding this group of questions. The above result indicates that respondents are supporting the idea that independence of auditor is impaired by providing NAS. This result is supporting what was reported earlier in the literature. For instance, the above result is supporting what was reported in Bahrain by Joshi et al. (2007) who indicated that independence is impaired if the auditor renders NAS. In the light

of the above finding, it can be concluded that the issuance of the Bahraini CGC in 2011 improved, or at least protected, respondents' awareness of the auditor's independence in the Bahraini environment.

Moreover, the above result is consistent with a number of previous studies outside Bahrain. The result is in line with what was reported by Causholli et al. (2015) who found a strong evidence that audit quality suffers when clients are willing to purchase future NAS from their auditors. It is also in agreement with what was reported by Quick and Warming-Rasmussen (2005) who found that providing of NAS impairs auditor independence; and by Chukwunedu and Okafor (2014) who found that the NAS impair audit independence and audit objectivity. Furthermore, the above finding is in line with other previous studies in this area of research (Knapp, 1985; Mitchell, Sikka, Puxty, & Wilmott, 1993; Krishnan et al., 2005; Sori & Karbhari, 2006; Sori et al., 2010). These previous studies concluded that the provision of NAS impairs audit independence and audit objectivity. As a final outcome on this section of questions, the result of this study is in line with earlier conclusions reported by previous research accomplished in Bahrain or in other countries, including the more recent previous studies as all are supporting the idea that independence of auditor is impaired by providing NAS. This would suggest that the market perceives that auditor independence is at risk when providing NAS to the same audit client.

Concerning Section 2 of questions, Table 3 shows that it has a mean score of 3.424 with a low standard deviation of 0.632 which is also less than half of the mean. This result indicates that respondents support the idea that audit quality is enhanced and auditor objectivity is improved if NAS were provided by the auditor. The above result is consistent with most previous studies (Hartley & Ross, 1972; Goldman & Barlev, 1974; Glezen & Millar, 1985; Gul, 1989; Wallman, 1996; Antle et al., 1997; Arrunada, 1999; Sawan et al., 2013). These results can be justified since the auditor's awareness and knowledge of the client's company would be improved by the provision of NAS, leading to increase objectivity and independence (Goldman & Barlev, 1974); that providing NAS would lead to improve audit quality (Antle et al., 1997); or that the auditor provision of NAS to their audit clients decreases total costs, increase technical competence and motivates more intense competition (Arrunada, 1999).

Regarding Section 3 of questions, Table 3 indicates that Section 3 of questions has a low mean score of 2.955 with standard deviations of 0.8474 which is also less than half of the mean. It is clear that this section of questions, which is about the idea that providing NAS has no effect on auditor independence, has the lowest mean score among the three sections of questions. This result indicates

that respondents marginally support the above idea. The above result is consistent with most previous studies (Bloomfield & Shackman, 2008; Carmona et al., 2015; Sobrinho & Bortolon, 2016; Zhang et al., 2016). For instance, it is in line with what was reported in Norway by Zhang et al. (2016), who concluded that providing of NAS does not suggest loss of independence; in Brazil by Sobrinho and Bortolon (2016) who concluded that the provision of NAS does not affect auditor independence.

As a general comment on the above results, the three groups of respondents included in this survey highly supported the argument that independence of auditor is impaired by providing NAS (Section 1 of questions) as it received the highest mean score. However, little support was found regarding the argument that the provision of NAS does not affect auditor independence which has the lowest mean score.

Table 3
Descriptive statistics and Chi-square results of sections of questions (the overall sample)

Sections of Q	N	Min	Max	Mean	SD	Chi-Square	df	Asymp. Sig.
Section 1 (Q 1–11)	195	1.18	5.00	3.821	.8193	86.938	33	**.000**
Section 2 (Q 12–22)	195	1.55	4.73	3.424	.6319	93.067	28	**.000**
Section 3 (Q 23–26)	195	1.25	5.00	2.955	.8474	105.508	16	**.000**

Note: Asymp. Sig. = Asymptotic Significance; SD = Standard Deviation; Q = Question.

Furthermore, Table 3 shows that values of Chi-square were entirely significant for the three groups of questions at ($p < 0.05$). Therefore, it is possible to conclude that respondents' selection of answers were not equally distributed among the different levels of agreement on: "impairment of auditor independence as a result of providing audit and NAS (Section 1); "improving audit quality as a result of rendering NAS (Section 2); and providing NAS has no effect upon on auditor independence (Section 3). Based on the above, all of the first three alternative hypotheses (H1, H2 and H3) formulated earlier in this study are accepted and the null ones are rejected.

Table 4 shows the descriptive analysis (means and standard deviation for each of the 26 questions). For the purpose of this study, it is assumed that any question with a mean greater than 3 indicates the importance of the question. It appeared from the table that values of Chi-square for all questions were significant at ($p < 0.05$). Consequently, it can be concluded that respondents' answers for each of the 26 questions were not equally dispersed among the different levels of agreement. Furthermore, Q6, Q4, Q17, Q1 and Q22 respectively are the

most important questions since they have got the highest means (ranging from 4.21–3.85).

Table 4
Descriptive statistics and Chi-square results for each question (the overall sample)

Questions	N	Min	Max	Mean	Std. Dev.	Chi-square	df	Asymp. Sig.
Q1	195	1	5	**3.87**	1.216	30.205	4	**.000**
Q2	195	1	5	3.68	1.252	19.128	4	**.001**
Q3	195	1	5	3.63	1.290	13.231	4	**.010**
Q4	195	1	5	**4.09**	1.180	46.513	4	**.000**
Q5	195	1	5	3.09	1.080	78.667	4	**.000**
Q6	195	1	5	**4.21**	1.255	46.256	4	**.000**
Q7	195	1	5	2.85	1.242	19.077	4	**.001**
Q8	195	1	5	3.56	1.156	47.795	4	**.000**
Q9	195	1	5	3.77	1.096	49.641	4	**.000**
Q10	195	1	5	3.70	1.204	30.000	4	**.000**
Q11	195	1	5	3.73	1.231	23.077	4	**.000**
Q12	195	1	5	3.54	1.150	34.359	4	**.000**
Q13	195	1	5	3.63	1.188	27.128	4	**.000**
Q14	195	1	5	3.37	1.034	66.923	4	**.000**
Q15	195	1	5	3.57	1.191	30.821	4	**.000**
Q16	195	1	5	2.81	1.171	34.308	4	**.000**
Q17	195	1	5	3.92	1.176	34.256	4	**.000**
Q18	195	1	5	2.99	1.149	35.333	4	**.000**
Q19	195	1	5	3.20	1.103	58.308	4	**.000**
Q20	195	1	5	3.13	1.159	42.769	4	**.000**
Q21	195	1	5	3.31	1.107	41.949	4	**.000**
Q22	195	1	5	**3.85**	1.111	57.179	4	**.000**
Q23	195	1	5	2.59	1.142	40.000	4	**.000**
Q24	195	1	5	3.26	1.142	35.744	4	**.000**
Q25	193	1	5	3.15	1.159	35.109	4	**.000**
Q26	195	1	5	2.82	1.199	26.923	4	**.000**

Of the 26 questions, 21 were perceived as important with mean scores above 3. Further, the standard deviations of these questions are less than half of the mean score for each which reveals that there is no dispersal among respondents'

perceptions regarding these questions. Other questions such as question 7, 16, 18, 23 and 26 were of lower importance as having mean scores of 2.85, 2.81, 2.99, 2.59 and 2.82 respectively. The table also shows the results of the statistical analysis for each question using Chi-Square. It reveals that values of Chi-square for all questions were significant at ($p < 0.05$). Hence, it can be concluded that respondents' answers for each question were not equally dispersed among the different levels of agreement.

The Effect of Demographic Variables

In this section, respondents' perceptions were analysed in relation to their occupation, experience and education. The purpose of this analysis is to investigate whether the differences in demographic features of respondents affect their perceptions on the topic of this study. In other words, this part of the study concentrates on describing the different study groups according to their occupation, education and experience, as this classification will help in determining whether or not any of the background variables relating to the profile of the respondents influences their opinions.

The Univariate Analysis

The univariate analysis presents evidence on the relationship between the demographic variables and the three sections of the questions included in this study. Research hypotheses (H4, H5 and H6) are tested in this section of the study. Table 5 presents a number of significant associations and suggests that there is a potential for, at least, a number of hypotheses to be supported. For example, it shows that there is a significant positive association between occupation variable from one side and two sections of the questions in the study, namely, Section 1 (Independence of auditor is impaired by providing NAS) and Section 2 (Audit quality is improved and enhanced by rendering NAS) from the other, but there is no significant association with the Section 3 of questions (The provision of NAS has no impact on auditor independence). No significant association was found concerning the other two demographic variables, experience and education.

The above results revealed that there is no significant association between respondents' experience and education on the one hand and their perceptions on the other. These results are greatly significant ($p < 0.01$). Based on the above, it can be concluded that two demographic variables of respondents are not associated with their perceptions, while occupation is the only variable that has a relationship with their perceptions. This clearly indications that some demographic variables are affecting respondents' perceptions while others are not. Based on the above

findings, H4, is accepted for only Section 1 and Section 2 of questions, while it is rejected for third section of questions. Furthermore, H5 and H6 are rejected for all of the three sections of questions. The above result suggests that being auditors, accountants or financial managers has an influence on their perceptions only on "Independence of auditor is impaired with providing NAS" and "Audit quality is improved and enhanced if the auditor renders NAS".

Table 5
Correlation coefficients

	Experience	Occupation	Education	Group 1	Group 2	Group 3
Experience	1.000					
Occupation	**.197***	1.000				
Education	**.370***	.134	1.000			
Section 1	.004	**.293***	.004	1.000		
Section 2	–.106	**.223***	.041	**.348***	1.000	
Section 3	–.123	–.021	–.044	.041	**.453***	1.000

Note: *Correlation is significant at 0.01 level (2-tailed).

The Kruskal-Wallis Test (Demographic Variables)

The Kruskal-Wallis Test, a non-parametric test alternative to a parametric one way analysis of variance test, was used to examine the significant differences among the various groups of respondents. Tables 6, 7 and 8 show the results regarding occupation, experience and education groups. Table 6 reveals that there are statistically significant differences in perceptions of occupation groups concerning Section 1 and Section 2 of questions. This result confirms the univariate results which reported earlier. Results in Tables 7 and 8 refer that there are no significant differences between experience and education groups regarding respondent's perceptions on all sections of questions. This result shows some consensus among experience and education groups on their perceptions. Generally speaking, the above results are in line with other results reported by previous surveys on the effect of demographic variables, experience and education, on respondents' perceptions. Finally, it can be concluded that results of non-parametric tests confirm those of univariate analysis. All revealed that occupation is the only demographic variable which associated with respondents' perception, while experience and education do not. Based on the above, it is clear that H5 and H6 are rejected, while H4, is accepted for Section 1 and Section 2 of questions.

Table 6
Statistical analysis of occupation groups

Questions	Chi-Square	df	Asymp. Sig.
Section 1 (Q 1–11)	24.138	2	**.000**
Section 2 (Q 12–22)	10.127	2	**.006**
Section 3 (Q 23–26)	2.628	2	.269

Notes: Kruskal Wallis Test; Grouping Variable: Occupation.

Table 7
Statistical analysis of experience groups

Questions	Chi-Square	df	Asymp. Sig.
Section 1 (Q 1–11)	.454	3	.929
Section 2 (Q 12–22)	4.681	3	.197
Section 3 (Q 23–26)	5.790	3	.122

Notes: Kruskal Wallis Test; Grouping Variable: Experience.

Table 8
Statistical analysis of education groups

Questions	Chi-Square	df	Asymp. Sig.
Section 1 (Q 1–11)	.133	3	.988
Section 2 (Q 12–22)	1.493	3	.684
Section 3 (Q 23–26)	1.401	3	.705

Notes: Kruskal Wallis Test; Grouping Variable: Education.

CONCLUSIONS

This study investigated perceptions of three groups working in the Bahraini firms namely, auditors, accountants and financial managers, on the influence of providing NAS to audit clients on auditor independence and audit quality. A questionnaire was designed, developed and distributed to a sample of 250 respondents to gather information needed for testing the hypotheses of the study. One hundred and ninety-five (195) or 78% useable questionnaires were received. One of the main findings was that respondents are supporting the ideas that independence of auditor is impaired by providing NAS; and audit quality is improved and auditor objectivity is enhanced if the auditor renders NAS. Furthermore, they marginally support the idea that providing NAS has no effect on auditor independence. The descriptive analysis shows that of the 26 questions, 21 were perceived as important with high mean scores which is ranging from 4.21 to 3.13 and only few

questions were perceived as unimportant. Chi-square values for all questions were significant at ($p < 0.05$) indicating that respondents' answers for each question were not equally distributed among the different levels of agreement. Kruskal-Wallis Test, which confirmed the univariate analysis, revealed that respondents' occupation is associated with their perceptions only on the first and the second sections of questions.

Concerning theoretical implications, this study contributes to the extant literature on the effects of providing non-audit services upon auditors' independence and audit quality in Bahrain, which considered as an important subject for both auditing firms and auditing profession. Regarding practical implications, this paper provides insights on the factors which explain the impact of the provision of non-audit services upon auditor independence and audit quality in Bahrain. Providing empirical evidence on this issue within the Bahraini environment, as a member of the Gulf Cooperation Council countries, may add a new dimension to the accounting and auditing literature.

This study is limited to respondents in listed companies working in Bahrain. Then the question raised is how the situation would be formed in case of privately held companies are another venue for a future research. Also in order to generalise the findings of the study, there is a need to conduct a similar study over long period of time. Other factors can be considered in implementing the study such as the economic conditions of the country. Findings of this research may not be generalised to other countries at diverse stages of development, or with varied business environments and cultures.

Future research could be conducted to investigate this important issue of research in other developing countries in general and GCC countries in particular. Other respondent groups such as external auditors, shareholders, regulators and members of the audit committees can be included in a future study.

APPENDIX

Questions included in the survey

Q. No.	Statement
Group 1:	**Independence of auditor or audit quality is impaired with providing NAS.**
1	Provision of NAS impairs the independence of the auditor or audit quality.
2	An auditor who provides NAS is more willing to give an unqualified opinion of the client's financial statements.
3	When providing NAS, auditors often gain a close relationship with management that can cause a situation where the auditors take sides with the client instead of following regulations.
4	The globalization in accounting and assurance service has created 'the multidisciplinary nature of large audit firms' which would offer audit and NAS to audit clients and this became one of the major issues regarding the potential auditor independence dilemma.
5	Income from NAS could make an audit firm economically dependent on an audit client, and in turn this might reduce the auditor's willingness to challenge possible misstatement of a client's financial statements.
6	An auditor should not be allowed to participate in the foundation of the corporation that is being audited by him or to be a member of administrative or advisory position.
7	There should be outright ban or prohibition on accounting firms providing consulting and other services to their audit clients.
8	Auditors are willing to sacrifice their independence or audit quality in exchange for retaining the audit clients from which they might accrue large NAS revenues.
9	Auditor independence or audit quality might be adversely affected by the provision of NAS if those services are perceived as escalating the economic bond between auditors and their clients.
10	Provision of audit and NAS would cause unfair competition due to the use of audit services to sell NAS, and believed that auditors should be banned from offering both services to the same client.
11	With the provision of NAS, auditors would not perform their audit services objectively and that the provision of NAS would impair perceived independence or audit quality because ultimately they would be auditing their own work or acting as management.
Group 2:	**Audit quality is improved and auditor's objectivity and independence are enhanced, not impaired, if the auditor renders NAS.**
12	The provision of NAS is expected to improve the firm's competitiveness, to maintain continuous growth and to satisfy customers.
13	The majority of NAS supplied by auditors is accounting services that facilitate listed companies to conform to the legal and regulatory requirements rather than management consultancy.
14	The provision of NAS activities enhance the auditor's ability to learn more clients, thereby helping to ensure that they satisfy their obligation to conduct a better audit.

Q. No.	Statement
15	The provision of NAS positively enhance auditor independence and/or audit quality and on the other hand improve clients' operations.
16	The basis of banning non-audit work should be the size of the fees.
17	The basis of banning non-audit work should be the nature of the work.
18	The provision of NAS reduces total costs and increase technical competence.
19	The provision of NAS has a positive impact on the effectiveness of the audits.
20	Certain frauds might have been prevented or detected if NAS had been provided to the client or if better communication had occurred between NAS personnel and the audit engagement team.
21	Disclosure of NAS fees would enhance perceived auditor independence or audit quality.
22	Auditor's knowledge of the client company would be improved by the provision of NAS.
Group 3:	**The provision of NAS has no effect on auditor independence.**
23	The service of accounting systems design provided by auditors to audit clients has no threat to auditor independence or audit quality.
24	J The provision of NAS does not necessarily damage auditor independence or the quality of NAS.
25	The provision of NAS is considered to be minor threat to auditor independence or audit quality.
26	There is no influence of providing NAS on perceptions of independence or audit quality.

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IMPACTS OF OWNERSHIP CONCENTRATION AND LIQUIDITY ON STOCK MOMENTUM PROFITABILITY IN MALAYSIA

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ABSTRACT

This paper explores the effects of two characteristics ubiquitously relevant to the emerging markets in Asia concerning on momentum profitability. By utilising the data of 776 stocks listed on Bursa Malaysia from the period of 2006 to 2014, the study examined how ownership concentration affected momentum profitability. The results of this study revealed that the higher the ownership concentration, the more profitable the momentum investment strategy. It is posited that concentrated ownership led to lower corporate transparency and higher information asymmetry. Hence, resulting to stronger momentum effect. The study also investigated the impacts of liquidity on the profitability of momentum trading strategy. Our results show that price momentum strategies worked better among higher liquidity (smaller spread) stocks.

Keywords: investment, portfolio selection, momentum strategies, ownership concentration, liquidity

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INTRODUCTION

Technical trading strategy is predicated upon a belief in return predictability and recurring trends in stock prices over time. Following that claim, it is believed that such trading strategy dictating that past information can be used to predict future direction in a consistent manner violates the Efficient Market Hypothesis (EMH). According to the weakest form of EMH, current stock prices incorporate all past information, and thus investors should not be able to generate significant abnormal profits on the basis of past information. Despite this theory, it is notable that many empirical studies have presented contrary evidence. That is, return-based trading strategies have been found to be capable of producing significant profit.

One such popular strategy is the momentum trading strategy. Also known as relative strength strategy, the momentum strategy is based on the notion that the current trends of stocks will continue in the same direction over short to medium term, through which abnormal profit is exploitable by investors. It involves the activities of purchasing stocks that have outperformed in the recent past (winners) and simultaneously taking a short position in the underperforming stocks (losers) over the same horizon. The excess return of the strategy is then derived from the difference between the returns of the extreme (winner and loser) portfolios. This strategy was first formally documented by Jegadeesh and Titman (1993) and has since earned intense interest from academicians and practitioners.

On the basis of the substantial literary evidence currently available, it seems fair to suggest that momentum trading strategy is profitable. These extensive evidence; however, primarily stemmed from studies on US and other mature international markets such as Europe. While the existence of momentum was found to be remarkably consistent in developed countries, evidence was at best mixed in the emerging markets. Emerging Asian markets differ in numerous key aspects against the Western developed markets. Some of the most common characteristics embedded in the emerging markets are the rich diversity of cultures and uniqueness in the institutional and political dimensions. It is plausible that some of the underlying attributes fundamental to the emerging markets in Asia could be responsible for the mixed evidence of momentum effect. Among the most widely discussed peculiarities of the emerging Asian markets is concentrated ownership. A great deal of research has shown that corporate ownership is highly concentrated in the emerging countries.[1] Liquidity concern such as thin trading of stocks has also found to be more pervasive in the emerging markets. While trading behaviour of institutional investors may greatly impact the movement of stock prices (Yu, 2008), evidence reveals that participants in the emerging

stock markets were overall dominated by individual investors. Other qualities that may segregate the emerging markets from the developed ones include heavy government interventions in the economic and business spheres (Ang, 2008), and direct involvement of politics in businesses. It has also been demonstrated that the state has been and is becoming an increasingly important owner of firms in the Asian markets. For example, it has been shown that government-linked-companies accounted for 34% of stock market capitalisation in Malaysia as a whole (Asian Development Outlook 2004 Update).

Given the ubiquitous characteristics of the Asian markets, it is relevant to inquire how these characteristics may affect the efficacy of momentum trading strategy in this region. As a middle-income economy in the region, Malaysia is generally regarded as having a well-developed capital market. Interestingly, it is also a market that displays many of the characteristics peculiar to the emerging markets. Not only that Malaysia is uniquely characterised by a large number of family-owned and state-owned companies, it has also a high degree of ownership concentration: almost 89.6% of the firms in Malaysia have a controlling shareholder (Krishnamurti, Sevic, & Sevic, 2003). In addition to pervasive dominating family ownership, ties between government and business have also been inseparable. For example, while families have control over the majority of corporations in Malaysia, Indonesia, Thailand, Korea and Hong Kong, state control was common in Malaysia and Singapore (Claessens, Djankov, & Lang, 2004). Carney and Child (2013) reported that even though family control remained largely prevalent, state control has become increasingly important in Southeast Asian countries. Although concentration of ownership is a heavily-researched topic in relation to corporate transparency and agency cost, the causal effect of ownership concentration and corporate transparency is unsettled. On one hand, there is vast amount of literature pointing out to the expropriation of minority shareholders by controlling shareholders through tunneling of resources (Cheung, Jing, Lu, Rau, & Stouraitis, 2009). On the other hand, there is also evidence of controlling shareholders propping up share prices of distressed firms (Friedman, Johnson, & Mitton, 2003). In this paper we conjecture that firms dominated by controlling shareholders have lower corporate transparency and hence greater information asymmetry. We argue that this leads to stronger momentum effect. Our findings show that momentum return intensified when ownership became more concentrated in the hands of a few. This suggest that momentum trading strategies work better among firms with higher ownership concentration. We suggest that it may be easier for firms with concentrated ownership to manipulatively move money and carry on inter-group transactions with minimal publicity and external monitoring. This creates an opaque information environment and thus results in greater information asymmetry. It follows that in an environment where corporate

transparency is low, investors are more likely to exhibit psychological conditions such as investor overconfidence and self-attribution bias (Daniel, Hirshleifer, & Subrahmanyam, 1998). The result is greater stock price mis-pricing and hence stronger momentum.

Another dimension that reflects the peculiarities of emerging markets is thin trading of stocks. A basic intuition is that the lower the market liquidity, the lower the efficiency of price-discovery mechanism. That is, the speed of price adjustment is sluggish due to low volume of transaction. On the other hand, high liquidity and turnover empowers traders to react to new information promptly and efficiently. This line of thought seems to suggest that lower liquidity stocks are more likely to exhibit stronger momentum. Hence, we first hypothesised that firms with lower liquidity exhibits stronger momentum effect. Interestingly, we found that it was the more liquid stocks that yielded stronger momentum effect. This is contrary to the common notion that anomaly-based trading strategies are more profitable with less liquid stocks. The result is, however, consistent with a related research by Avramov, Cheng and Hameed (2016).

RELATED RESEARCH

Pursuant to the work of Jegadeesh and Titman (1993) that documented significant positive momentum profits in the US stock market, numerous studies have been similarly conducted in other developed markets.[2] In these studies, most have reported pervasive momentum profitability. However, evidence of such overwhelming consistency was not observed in emerging markets. In Chui, Titman and Wei (2000), the authors examined eight Asian stock markets (Hong Kong, Indonesia, Japan, Korea, Malaysia, Singapore, Taiwan and Thailand) and found that momentum strategies were highly profitable when they were applied simultaneously in all markets except for Japan. When individual Asian countries were examined, six of them except Korea and Indonesia exhibited the presence of momentum effect. However, the effect was reportedly weak and statistically significant only in Hong Kong for the entire period. Hameed and Kusnadi (2002) implemented unrestrictive momentum trading strategies on stocks traded in six Asian markets (Hong Kong, Malaysia, Singapore, Korea, Taiwan and Thailand) between 1979 and 1994 and found no evidence of the strategies being profitable. Those prior evidence demonstrated that momentum profits were not a pervasive phenomenon in the emerging markets. Cakici, Fabozzi and Tan (2013) argued the lack of momentum effect in the emerging markets could be due to the lack of high quality and comprehensive data in these markets. In spite of those, there were some recent studies that show that momentum strategies could be positive in the

short run. These include the studies of Tan, Cheng, and Taufiq (2014) that used Malaysia as database and Shi and Zhou (in press) which found momentum effect in the short-run but contrarian effect in the long-run in the Chinese stock markets. A more related paper is Husni (2006). Husni (2006) examined momentum effect using Malaysian stock market data from 1988 to 2002, and found positive momentum effect. In particular, the author found that momentum effect is particularly pronounced among stocks with high trading volume. Of noteworthy is that Husni (2006) constructed portfolios using non-overlapping periods, which is different from the original methodology of Jegadeesh and Titman (1993). In addition to the above, there was also some literature demonstrated the effectiveness of the enhanced versions of momentum strategies in delivering abnormal profits.[3]

In this study, we explored the relationship between momentum and ownership concentration. The latter has been widely discussed in the context of corporate transparency and agency costs. In a recent study of Malaysian firms, Hamdan (2017) shows that there is discrepancy of information between informed and uninformed investors of firms with high level of ownership concentration. Using Korean database, Kim, Lim and Sung (2007) provided evidence of group control motive, which was the desire of controlling shareholders to structure intra-group ownership in such a way that allows them to maximize their control over the group. In the corporate landscape, there are instances of controlling shareholders expropriated interests of minority shareholders. Expropriation of minority shareholder interests has always been in the form of tunneling, that is, the transfer of resources from lower-level to higher-level firm in the same group or pyramidal ownership structure. Company management by the controlling shareholder has made it easier for management to siphon resources within the same group. Claessens, Fan and Lang (2006) argued that controlling shareholders are likely to channel corporate resources to projects that benefit themselves at the expense of minority shareholders. This intra-group movement of funds by controlling shareholders may result in greater information asymmetry and opacity. Johnson, Boone, Breach and Friedman (2000) has also found evidence of controlling shareholders tunneling wealth from minority shareholders. The evidence suggested that this does not only happen in emerging markets but also in advanced countries. In addition to appropriating funds for self-gain, controlling shareholders also showed tendency of releasing less information. For example, in the event of negative news, insiders may filter or conceal information to protect firm's value (Johnson et al., 2000). Therefore, the effect of their undesirable behaviors provides inadequate information disclosure and corporate opacity. In other words, it is quite likely that concentrated ownership leads to lower corporate transparency and thus greater information asymmetry. It follows in a sense that in an environment where corporate transparency is low, investors are more likely

to exhibit psychological conditions such as investor overconfidence and self-attribution bias (Daniel et al., 1998). In another study, investor overconfidence was shown to be more pronounced when investors need to value stocks that require interpretation of ambiguous information (Daniel & Titman, 1999). As a result, mispricing is possibly more severe in firms with higher degree of information asymmetry (Hirshleifer, 2001). Hence, it is possible that lower corporate transparency stemming from concentrated share ownership results in greater information asymmetry, thereby further induces greater mispricing of stock prices. The resulting prolonged deviation of stock prices from their fundamental values leads to greater synchronous price movements, and thus, stronger momentum. An alternative view argues that controlling shareholders prop up firm in distress and benefiting the minority shareholders through the process. If controlling shareholders take actions to stabilise stock prices, thereby inducing the price stabilisation effect or a reversal in share prices, the momentum effect is likely to be weaker. It is also possible that agency cost is lower for firms with more concentrated ownership. Amran and Ahmad (2013) shows that an increased proportion of insider ownership such as family ownership enhances firm performance. So in theory, there are potentially two sources that affect momentum in two opposite directions. The net effect of ownership concentration on momentum constitutes an empirical issue to be examined.

Markets with high concentration are often associated with low liquidity, a quality that is more likely to be associated with emerging markets. Intuitively, lower liquidity impedes information flow and thus accentuate momentum. Notwithstanding this logic, some extant studies documented that higher turnover stocks improved the performance of momentum trading strategy (Chordia, Subrahmanyam, & Tong, 2014; Chui et al., 2000; Lee & Swaminathan, 2000; Chan, Hameed, & Tong, 2000). However, a more recent study by Avramov et al. (2016) provide evidence otherwise. The authors suggested that market liquidity could indeed be an indicator of overconfidence. When overconfidence is high, there will be excessive trading and that leads to more prominent momentum effect. While much have been researched on whether liquidity is a priced factor for stock returns, little attention was given to how momentum effect interacted with liquidity. Out of the few limited studies that did, attention has been predominantly given to the developed markets. Since the thinness of stock trading is generally a more pervasive phenomenon in the emerging markets, insights into such interactions are more relevant in such environments.

DATA AND METHODOLOGY

Data

This study employed firms listed on Bursa Malaysia as data. They were first extracted from Datastream Thomson Reuters and Standard and Poor Capital IQ. Spanning from September 1995 to September 2014, the computing liquidity data were obtained for a period of 19 years or 229 months. This time frame spanned across the 1997 Asian Financial Crisis and the 2007 Global Financial Crisis that impacted Asian financial markets at varying degrees. Data before 1995 were not considered to be extracted over the concern that data coverage may be sparse prior to this date. There were a few steps involved in the overall sample selection and filtering processes.

First, the sample removed stocks that have had less than two years of price histories due to the overlapping nature of momentum strategy which requires a longer time frame for any meaningful portfolio construction. However, companies that were delisted during the study period were not omitted to eliminate the possibility of any survivorship bias problems. Next, when there were missing values of stock prices due to the non-trading periods, the missing values were left blank and not substituted with any preceding observations. The sample obtained as a result of the above screening criteria consisted 776 stocks that were traded on Bursa Malaysia during the research period. This sample represented almost the entire market given that there were approximately 900 stocks traded on Bursa Malaysia in 2014. In terms of market capitalisation, our sample accounted for 62.8% of the total market cap on average. This study used stock prices obtained from Datastream and the prices were adjusted for capital actions. Based on the price data obtained, monthly returns for each stock were computed for all subsequent tests.

The data on ownership concentration were then extracted from Standard & Poor Capital IQ (S&P Capital IQ). The examination of the relationship between ownership concentration and momentum profitability spanned across the study period of January 2006 to September 2014. S&P Capital IQ began compiling ownership data in 2004 and closer scrutiny of the data revealed that ownership data in earlier years were less stable. In view of this, the research period to study for this objective only started in the year 2006. This also allows a reasonable length of research period that is required for any momentum studies. The variable used to calculate ownership concentration was the "% of CSO" or "percentage of common shares outstanding" in S&P Capital IQ. An advantage of using S&P Capital IQ ownership data was that they were collected from multiple

sources. Specifically, data were sourced not only from the annual reports filed by companies but also the quarterly/interim filings that may have been submitted after publications of annual reports. These included proxies, mutual fund portfolio disclosures, institutional investment manager portfolio disclosures (13Fs), stock exchange notifications, 13D/G filings, insider filings, and the like. Deriving information from multiple sources is benefiting as the data being updated on a quarterly rather than annually basis. On rare occasions, ownership percentages exceed 100% due to various reasons such as double-counting and inconsistency in reporting timing. As a result to that, the observations would be omitted from the sample to avoid producing dubious results.

Methodology

To construct a stock momentum trading strategy, we adopted the portfolio-based approach by Jegadeesh and Titman (1993). We initially ranked our sample pool of stocks based on their past formation-month lagged returns. We denote *J* as formation period henceforth. Specifically, we ranked stock in ascending order based on their past *J*-month cumulative returns at the end of every month. The stocks were then sorted into terciles or quintiles. We avoided stock sorting into ten deciles to avoid having too little stocks in each portfolio. The best-performing stocks during the past *J*-months were then stored into the winner portfolio and the worst-performing stocks into the loser portfolio. These portfolios were invested for *K* subsequent months (henceforth *K* denoted investment period). Following the literary convention, we skipped one month between the *J* and *K* periods to attenuate microstructure issues such as bid-ask bounce and short-run stock return reversal effect. The problem of overlapping happened when the investment period exceeded one month as the study used monthly returns. To address this concern, we constructed the overlapping portfolios which required the strategies to hold a series of portfolios that were selected in the month before as well as in $K - 1$ month for every given month *t*. As a result, the study formed *K*-composite portfolios, which was initiated one month apart from each other. Analogous approach was adopted to form the loser portfolio. Lastly, we derived the momentum profits by computing the excess of winner portfolio's returns over the loser portfolio's returns.

Next, we examined if momentum profitability was confined to any particular subsamples of each characteristic. For this purpose, we computed the average monthly returns of momentum portfolio (W – L) within each subsample. If the momentum returns obtained within each subsample differed in their significant levels, the profits may be characteristic-related. The method of creating ownership-momentum portfolios was detailed as follows. First, for each

firm, ownership concentration variable based on the fraction of total company shares outstanding (percentage of ownership) held by the five largest shareholders was set up. We denoted this variable as own_5. This method was consistent with some of the prior researches that used the ten largest shareholders to measure ownership concentration (Ghazali & Weetman, 2006). As own_5 was defined as percentage of shareholdings held by the five largest shareholders, a higher own_5 was regarded as having higher ownership concentration than a lower own_5. Since data were available only on quarterly basis, own_5 was computed on a three-month basis. These procedures were necessary for the construction of concentration-sorted relative strength portfolios (called concentration-momentum portfolios hereafter). Concentration-momentum portfolios were formed by stratifying the entire sample of stocks according to the degree of ownership concentration. At the outset, the study attempted segregating the sample stocks into three levels of ownership concentration. The three levels were low concentration (bottom 30%), medium concentration (middle 40%), and high concentration (top 30%) groups, respectively. Within each segment and at the end of the formation period, all stocks were ranked in ascending order based on their past lagged returns. That is, the top 30% stocks with the highest returns represented the winner portfolio while the bottom 30% stocks with the lowest returns represented the loser portfolio. This procedure was repeated for each segment, one at a time. As the sample pool was stratified twice, it may not contain sufficient stocks to construct narrower relative strength portfolios. Hence, stocks within each concentration-sorted group were divided into terciles rather than quintiles.

According to Tan et al. (2014), the most profitable combination of momentum trading strategy performed in Malaysia was the one with a three-month formation and three-month investment period (J3K3). Hence, we focused on J3K3 strategy in this study. Since the frequency of ownership data that was on quarterly basis did not match the frequency of the monthly price data, adjustment was needed to align the two sets of data. Therefore, fraction of ownership was taken to be constant throughout the three months in any given quarter. In addition to denoting ownership concentration as the five largest shareholdings, this study also attempted the alternative specification where concentration was measured as the total of the top 10 largest shareholdings (denoted as own_10). Subsequent procedures were repeated analogously as it were before. Finally, as an alternative specification and robustness, this study sorted sample stocks into five levels of ownership concentration. The lowest concentration group was the bottom 20% and the highest concentration group went to the top 20%. Momentum strategies were then performed within each of the five concentration-sorted portfolios. Subsequent steps were repeated as mentioned earlier. Table 1 summarises the alternative specifications for concentration-sorted momentum portfolios.

Table 1
Specifications of concentration-sorted momentum portfolios

	Denotation of concentration	
Level of concentration	3 levels of ownership concentration by 5 largest shareholders	3 levels of ownership concentration by 10 largest shareholders
	5 levels of ownership concentration by 5 largest shareholders	5 levels of ownership concentration by 10 largest shareholders

To examine the impact of liquidity on momentum profitability, the study used bid-ask spread to proxy for liquidity. While the earlier literature has used turnover and trading volume as proxy for liquidity, there were some contentions that these were not good measurements for liquidity (Lee & Swaminathan, 2000; Novak, 2014). In this paper, we used bid-ask spread to provide fresh perspective into this research area. Bid-ask spread was measured as the amount by which ask quote exceeded bid quote and the difference was scaled by the bid-ask midpoint. This was essentially the difference between the highest price a buyer was willing to pay and the lowest price a seller was willing to sell. Bid-ask spreads (called spreads hereafter) were narrower for stocks that were widely traded and wider for lightly-traded shares. Additionally, large spreads indicated that investors may be overpaying for the stocks. To construct liquidity-momentum portfolios, we sorted stocks into five spread-based portfolios on a monthly basis. As such, high liquidity portfolio represented the smallest-spread group and low liquidity portfolio represented the largest-spread group. In terms of concentration-momentum analysis, we examined the most profitable J3K3 strategy among all. The remaining procedures were analogous to the construction of concentration-momentum portfolios.

RESEARCH FINDINGS

Ownership-momentum Profitability

As the research period of the study of ownership-concentration momentum portfolio was from January 2006 to September 2014, we examined the momentum profitability over the same period of time as a frame of reference. Table 2 depicts the momentum returns derived from strategies performed over the period of January 2006 to September 2014. For brevity, only excess returns of winner over loser portfolios were shown. It can also be seen from Table 2 that strategy J3K3 remained to be the most profitable strategy among all, which is consistent with the findings by Tan et al. (2014). This strategy generated a monthly momentum returns of 0.52% (6.43% annualised return) with the *t*-value of 3.44. It can be seen that

over the time span of 2006–2014, the shorter-horizon strategies produced stronger and more significant results. This is intuitively acceptable since behavioral bias is expected to be more pronounced in the more recent past. When more information becomes available later, mis-pricing will be corrected and momentum reverses. This is evident in Table 2 where momentum turned negative from J9 onwards.

Table 2
Returns of momentum strategies (January 2006–September 2014)

Strategies	Winner-Loser	Strategies	Winner-Loser
J1K3	**0.0035*****	J6K9	0.0003
	3.57		0.31
J1K6	**0.0018*****	J6K12	–0.0010
	2.52		–1.20
J1K9	**0.0011****	J9K3	0.0018
	2.14		0.80
J1K12	**0.0008****	J9K6	–0.0001
	2.01		*–0.05*
J3K3	**0.0052*****	J9K9	–0.0014
	3.44		*–1.26*
J3K6	0.0035 ***	J9K12	–0.0024***
	2.83		*–2.83*
J3K9	**0.0020****	J12K3	–0.0004
	2.32		–0.17
J3K12	0.0009	J12K6	–0.0018
	1.49		*–1.15*
J6K3	**0.0038****	J12K9	**–0.0030*****
	1.79		–2.53
J6K6	0.0020	J12K12	**–0.0037*****
	1.35		–3.97

Notes: Sample stocks were sorted into terciles. t-statistics are italicised.
** represents 5% significance level; *** represents 1% significance level; all returns were on monthly basis.

Next, we analyse ownership-concentration related momentum profitability. In Table 3, we present the summary statistics of the different levels of ownership concentration. In Panel A, shareholdings of the five largest shareholders (own_5) were divided into three levels namely low, medium and high concentrations. Low concentration denoted the lowest shareholdings among the three levels with

an average shareholding of 41.26% while high concentration represented the largest shareholdings with a mean of 75.35%. Overall Malaysian sample firms have an ownership concentration of 59.09% where concentration was defined as the percentage of shareholdings held by the five largest shareholders. This concentration level was in line with the statistics published by the World Bank Group and consistent with the view that shareholdings in Malaysian public listed companies were highly-concentrated. Panel B shows the summary statistics of ownership concentration defined as the total percentage of shareholdings held by the 10 largest shareholders (own_10). The average of this variable was 67.16%. Panels C and D show the statistics of percentage of ownership that were sorted into five varying degrees of concentrations. The five levels were low, medium low, medium, medium high and high concentrations respectively. In Panel C (D), ownership concentration was expressed as the total shareholdings of the top five (10) largest shareholdings. In addition to ownership concentration, average sizes of companies were also computed for each level. It was evident from Table 3 that there is a positive relationship between the degree of ownership concentration and sizes of Malaysian companies. Unsurprisingly, it was discovered that companies with more concentrated shareholdings were larger in size on average. This was already hypothesised at the beginning of the study since larger firms in Malaysia tend to be more politically-linked (Ghazali & Weetman, 2006), thus were concentrated in shareholdings.

To examine the relation between ownership concentration and momentum, we focused on the most profitable strategy with the highest significance level: J3K3. Table 4 presents the performances of concentration-momentum portfolios into two parts. Panel A and B of Table 4 depicts momentum returns of each three level of concentration where concentration was expressed as total percentage of shareholdings of the top five or ten largest shareholders. In Panel C and D of Table 4, we show results of a more sensitive approach where firms were stratified into five levels of concentration.

Table 3
Summary statistics of different levels of ownership concentration

	No. of observation	Shareholdings		Average size	
		Mean	Std. Dev.	Mean	Std. Dev.
Panel A: 3 levels of ownership concentration by 5 largest shareholders (own_5)					
Lowest concentration (C1)	21691	41.26	9.33	4.41	1.45
Medium concentration (C2)	21657	60.67	4.39	4.81	1.56
High concentration (C3)	21635	75.35	5.47	5.43	1.76
Average	64983	59.09			
Panel B: 3 levels of ownership concentration by 10 largest shareholders (own_5)					
Lowest concentration (C1)	21533	49.27	10.78	4.38	1.44
Medium concentration (C2)	21499	69.39	4.00	4.90	1.60
High concentration (C3)	21466	82.82	4.87	5.38	1.74
Average	64498	67.16			
Panel C: 5 levels of ownership concentration by 5 largest shareholders (own_5)					
Lowest concentration (C1)	13032	35.72	8.02	4.28	1.40
Medium low concentration (C2)	12996	51.23	3.12	4.63	1.48
Medium concentration (C3)	13000	60.79	2.71	4.77	1.55
Medium high concentration (C4)	12996	68.95	2.30	5.17	1.71
High concentration (C5)	12959	78.82	4.22	5.58	1.76
Average	64983	59.10			
Panel D: 5 levels of ownership concentration by 10 largest shareholders (own_10)					
Lowest concentration (C1)	12549	42.70	9.46	4.28	1.39
Medium low concentration (C2)	12516	59.92	3.55	4.56	1.52
Medium concentration (C3)	12514	68.90	2.53	4.87	1.54
Medium high concentration (C4)	12515	76.18	2.24	5.19	1.68
High concentration (C5)	12475	84.28	2.95	5.33	1.74
Average	62569	66.40			

Table 4
Returns of concentration-momentum portfolios (January 2006 – September 2014)

Concentration level	Winner	Loser	Winner–loser
Panel A: 3 levels of ownership concentration by 5 largest shareholders			
Low concentration (C1)	0.0103	0.0081	0.0022
	3.22	2.35	*1.66*
Medium concentration (C2)	0.0121	0.0069	**0.0051*****
	4.37	2.31	2.97
High concentration (C3)	0.0123	0.0070	**0.0053*****
	4.88	2.54	4.48
High minus Low(C3–C1)			***0.0032******
			2.61
Panel B: 3 levels of ownership concentration by 10 largest shareholders			
Low concentration (C1)	0.0105	0.0076	**0.0029****
	3.30	2.04	*1.99*
Medium concentration (C2)	0.0122	0.0071	**0.0051*****
	4.74	2.77	3.60
High concentration (C3)	0.0123	0.0065	**0.0058*****
	4.78	2.35	4.64
High minus Low(C3–C1)			***0.0029*****
			2.22
Panel C: 3 levels of ownership concentration by 5 largest shareholders			
Low concentration (C1)	0.0099	0.0080	0.0020
	3.05	2.09	1.01
Medium low concentration (C2)	0.0090	0.0092	–0.0001
	2.97	2.91	–0.08
Medium concentration (C3)	0.0097	0.0075	0.0022
	4.45	2.39	1.18
Medium high concentration (C4)	0.0126	0.0083	**0.0043*****
	5.40	3.75	3.11
High concentration (C5)	0.0134	0.0070	**0.0064*****
	4.98	2.31	4.54
High minus Low(C5–C1)			***0.0045*****
			2.36

(*continue on next page*)

Table 4 (*continued*)

Concentration level	Winner	Loser	Winner–loser
Panel D: 3 levels of ownership concentration by 10 largest shareholders			
Low concentration (C1)	0.0102	0.0086	0.0016
	3.04	2.10	0.80
Medium low concentration (C2)	0.0105	0.0072	**0.0033****
	3.64	2.31	1.88
Medium concentration (C3)	0.0148	0.0090	**0.0058*****
	5.52	3.62	4.88
Medium high concentration (C4)	0.0129	0.0102	**0.0027****
	5.55	3.97	1.81
High concentration (C5)	0.0127	0.0075	**0.0053*****
	5.75	2.84	3.49
High minus Low(C5–C1)			***0.0037*****
			1.90

Notes: 3 levels of ownership concentration denoted dividing the whole sample into terciles by its level of concentration. 5 (10) largest shareholders represented total percentage of shareholdings held by the 5 (10) largest shareholders. Within each concentration group, momentum strategy was applied as in preceding sections. Winner minus Loser denoted momentum returns while High minus Low was calculated as the difference between the returns of high concentration and low concentration groups. t-statistics were italicized and measured the significance levels of returns.
** represents 5% significance level; *** represents 1% significance level; all returns were on monthly basis.

It is apparent from Panel A and B of Table 4 that momentum returns increased when ownership became more concentrated in the hands of a few. In Panel A, for instance, return of the winners minus losers of low concentration group (C1) was 0.22% per month (2.65% per year). This was the lowest among the three groups. Meanwhile, high concentration group (C3) generated the highest momentum returns at 0.53% per month (6.60% per year). In addition, positive return was not statistically significant for the low concentration group (C1) while highly significant for the high concentration group (C3). Consistent patterns were also observed in Panel B where concentration was expressed as total holdings of the 10 largest shareholders.

To further assess how concentration of ownership may influence momentum profitability, we computed the difference between momentum returns of low concentration and high concentration group. It can be seen from Panels A and B that the momentum investment strategy that was applied on the group of firms with high ownership concentration outperformed the same strategy that was implemented on firms with low ownership concentration. The momentum

spreads between the high concentration group and the low concentration group were 0.32% per month (3.85% per year) where concentration was defined as the five largest shareholdings. Meanwhile, it was 0.29% per month (3.51% per year) when measured as the top 10 shareholdings. Both positive returns were statistically significant. In general, the result appeared to support the hypothesis that momentum effect was stronger among the firms with more concentrated shareholdings. To increase the strength of the test, we looked further into the profitability of momentum in which firms were sorted into five groups according to their degrees of concentration. Panel C and D of Table 4 presents the results of this partition.

Results of Panels C and D were consistent with the preceding findings. Panel C clearly demonstrated that the higher the concentration level, the more profitable the momentum investment strategy. While the lowest concentration group (C1) yielded 0.20% monthly return (2.39% per year), the highest concentration group (C5) generated monthly return of 0.64% (8.02% per year). The difference between the two groups' momentum returns (C5–C1) was 0.45% per month (5.51% per year) and was significant at the level of 5%. In Panel D, the same pattern was observed. Momentum strategy implemented on the highest concentration group noticeably outperformed the same strategy applied on the lowest concentration group in which case the outperformance was 0.37% per month (4.49% per year) and significant at 5% level. It was pointed out earlier that there are potentially two opposing effects of ownership concentration that may affect the performance of momentum strategy. In this respect, the results obtained seem to endorse the first view that momentum strategies performed on the most concentrated shareholding group offered the best returns. Therefore, we argue that concentrated ownership led to lower corporate transparency and higher information asymmetry, thus resulting in stronger momentum effect.

It has been shown that information asymmetry and agency cost were more pronounced in firms with higher concentrated ownership (see Cheung, Stouraitis & Wong, 2005, Fan & Wong, 2002, and Johnson et al., 2000). For example, controlling shareholders may abuse their dominant position for their own benefits but at the expense of minority shareholders. Block shareholders and insiders may also collude with each other to expropriate minorities. The self-serving activities of controlling shareholders are often accompanied by significantly less information disclosure (Cheung et al., 2009). Besides, firms with controlling shareholder system display tendency to release selective information to their own advantage. Political involvement in economic enterprises also affected transparency. Some of the largest firms in Malaysia were government-controlled or possess strong political connections. Tam and Tan (2007) documented that firms with the highest

level of ownership concentration were state-owned. In Malaysia, cultural and political involvement in capital market formed an integral part of information environment (How, Verhoeven, & Abdul Wahab, 2012). Faccio, Masulis and McConnell (2006) reported that among the 35 countries examined, Malaysia was ranked second in terms of having the largest number of politically-connected companies. Further evidence revealed that the major institutional investors in Malaysia comprised of government-related agencies such as Employees Provident Fund and national unit trusts. It is likely that these institutional investors were less motivated to monitor the companies they have invested in since they often obtain interventional support from the government. Suto (2003) argued that firms in this environment faced more serious information asymmetry problems. In this context, it is possible that firm-specific information was suppressed following the restriction of information flow to avoid public scrutiny. Moreover, the media was influenced to obstruct dissemination of information (Bushman, Piotroski, & Smith, 2004). For those reasons, these highly concentrated firms that were likely to be government-controlled or politically-linked disclosed less information to protect the economic interests of their ultimate owners or their political linkages at the expense of corporate transparency. Furthermore, information asymmetry may be aggravated due to the "nature of highly personal and close-knit business networking and information sharing" (Tam & Tan, 2007, p. 211). Building on these intuitions, it is perceivable that concentrated ownership has a strong positive association with corporate opacity and information asymmetry in this market.

Many studies have explained the effects of cognitive biases among investors on the mispricing of securities. Daniel and Titman (1999) theorized that investors' overconfidence was most pronounced when they need to value stocks that required interpretation of ambiguous information. Along the same line, Hirshleifer (2001) argued that mispricing was likely to be more severe in firms with greater information asymmetry. Therefore, it is likely that ambiguous corporate environment accentuate investors' overconfidence and subsequently led to stronger momentum effect. The results of the current study in the Malaysian context offers a strong support to the above arguments and were consistent with a few other studies which documented a more pronounced price momentum effect for stocks with higher information uncertainty (see Daniel & Titman, 1999 and Zhang, 2006). The findings can therefore be construed as accrediting the conjecture of ownership concentration as a determinant of momentum effect. Specifically, in the Malaysian context, ownership concentration was positively linked to momentum returns.

Liquidity-Momentum Profitability

An analysis of the relation between liquidity and momentum in Malaysia was conducted over the period of January 2000 to September 2014. Table 5 presents the summary statistics when sample stocks were sorted into five levels of liquidity. The total number of liquidity-month observations was 86,361. From Table 5, it can be seen that firms with lower liquidity tend to be smaller in size. This was consistent with the literary evidence which showed that smaller firms tend to receive lesser attention from investors, fewer following analysts and less frequently traded. There was also a positive relationship between liquidity level and stock past returns. This observation was consistent with Lee and Swaminathan (2000). Prior evidence on the predictability of liquidity on asset pricing has been concentrating predominantly on developed and mature markets. In spite of this, a few recent studies highlighted an ambiguous effect of liquidity on asset pricing and results varied according to different characteristics of the markets that were surveyed (Hearn, 2011). Table 6 reports on the results of this set of analysis.

Table 5
Summary statistics of different levels of liquidity

	Spread		Average size		Return	
	Mean	S. D.	Mean	S. D.	Mean	S. D.
Low liquidity/large spread (L1)	0.0637	0.0181	4.08	0.94	–0.01872	0.1362
Medium low liquidity (L2)	0.0319	0.0091	4.55	1.05	–0.0040	0.1385
Medium liquidity (L3)	0.0176	0.0048	5.07	1.20	0.0060	0.1429
Medium high liquidity (L4)	0.0099	0.0024	5.71	1.40	0.01575	0.1426
High liquidity/small spread (L5)	0.0053	0.0019	6.52	1.62	0.0249	0.1397

Note: Mean returns were on monthly basis. Average size denoted market value, which is share price multiplied by the number of ordinary shares in issue. Market value was displayed in natural logarithm of millions of Malaysian Ringgit.

One of the key results from Table 6 is the fact that both winner and loser portfolios with the smallest spread (highest liquidity) performed better than those with the largest spread (lowest liquidity). This explaines that smaller spread group generated higher momentum return than larger spread group. For example, a J3K3 momentum strategy implemented within the smallest spread (highest liquidity) group produced profits as high as 1.34% per month or 17.29% per annum. This economic magnitude was much larger than the returns attained using the unrestrictive momentum strategy. The return was significant at the level

of 1%. Besides, momentum effect was small or even negative for the "illiquid" stocks. To gain further insight, the performance of the highest liquidity stocks (L5) was compared with the performance of the lowest liquidity stocks (L1). The result indicated that L5 outperformed L1 by 1.69% per month or 22.26% per annum. Comparison was further made between the average return of medium high liquidity group and the average return of medium low liquidity firms (C4–C2. The result was a significant positive return of 0.79% per month or 9.95% per year. Robustness check was also performed whereby sample stocks were partitioned into three levels of liquidity. Since the results did not differ materially from the five-level partitions, it is not reported here. Overall, the results seemed to indicate that higher positive return was confined to the narrowest spread (high liquidity) stocks.

Table 6
Returns of liquidity-momentum portfolios (January 2000 – September 2014)

Level of liquidity/ spread size	Winner	Loser	Winner–loser
Low liquidity/large spread (L1)	–0.0051	–0.0016	–0.0035
	–1.84	*–0.55*	*–1.59*
Medium low liquidity (L2)	0.0006	–0.0017	0.0023
	0.18	*–0.54*	*1.36*
Medium liquidity (L3)	0.0163	0.0041	**0.0122*****
	5.64	*1.30*	*5.86*
Medium high liquidity (L4)	0.0175	0.0073	**0.0102*****
	5.24	*2.35*	*5.93*
High liquidity/small spread (L5)	0.0216	0.0082	**0.0134*****
	7.30	*2.76*	*6.87*
High minus Low(L5–L1)			**0.0169*****
			5.86
High minus Low(L4–L2)			**0.0079*****
			3.36

Note: Strategy of J3K3 was used. Sample stocks were first segregated into 5 levels of bid-ask spread. L1 denoted largest spread/lowest liquidity and L5 denoted smallest spread/highest liquidity. Within each liquidity group, momentum strategy was performed as in preceding sections. Winner minus Loser denoted momentum returns. High minus Low (L5–L1) was calculated as returns of high liquidity group minus returns of low liquidity group. *t*-statistics were italicised and measured the significance levels of returns. ** (***) represents 5% (1%) significance level. All returns were on monthly basis.

The results of this set of analysis provided evidence of a positive relation between liquidity and momentum profitability in Malaysia. As a whole, after controlling for liquidity, stocks with high level of liquidity (small spread) outperformed stocks that were either illiquid or highly illiquid (large spread) in terms of momentum profits. The results obtained in this study were consistent with some prior research (see Avramov et al., 2016, Hameed & Kusnadi, 2002, Lee & Swaminthan, 2000 and Chan et al., 2000). Avramov et al. (2016) find large momentum profits with more liquid market states. Using trading volume of US stocks as measurement of liquidity, Lee and Swaminathan (2000) argued that high volume stocks behaved like glamour stocks and were more difficult to value. The authors asserted that analysts tend to be over-optimistic (or over-pessimistic) about the future profitability of high (or low) volume stocks. If this proposition holds, high volume stocks are expected to outperform low volume stocks in the momentum context. On the international front, Chan et al. (2000) documented higher momentum profits when applying strategies on international equity markets with higher trading volume. The authors attributed the finding to herding behavior of investors. In another cross-country study, Hameed and Kusnadi (2002) found significant momentum returns for high-turnover portfolios in Malaysia but not for the whole sample of 244 Malaysian stocks. Therefore, the authors concluded that significant momentum profits in this country were confined only to high-turnover stocks.

In this study, we demonstrated that price momentum strategies worked better among higher liquidity (smaller spread) stocks. This result is thus broadly consistent with Husni (2006). The relationship between momentum and liquidity could be explained in the local context of investor characteristic. Wang (1994) demonstrated a close link between the behaviour of trading volume and the underlying heterogeneity of investors. Trading activities in Malaysian stock market were still generally dominated by individual investors despite an increasing upward trend of institutional involvement. As mentioned, retail participation in the stock market accounted for nearly 50% of total trading volume. On the other hand, institutional ownership in Malaysia constituted a mere 15% of total market capitalisation (Abdul Wahab, How, & Verhoeven, 2007). Mutual fund investment accounts for only 20% of the local stock market cap (Lai & Lau, 2010). Individual investors have proved to be unsophisticated and uninformed. They were reportedly behaving actively and aggressively in their trading while simultaneously being speculative (Barber & Odean, 2000; Barber, Odean, & Zhu, 2009). Besides that, individual investors were more likely to be influenced by sentiments that were not fully supported by firms' fundamentals. This attested to the common view that Malaysian stock market was rather rumor-driven. In addition, Barber et al. (2009) documented that individual investors tend to

exhibit a strong herding behaviour and were very likely to repeat their buy/sell decisions within a short time frame. In other words, individual investors are trend chasers. In Wang (1994), the author showed that higher trading volume in the past contributed to positive return continuation if the increased volume was due to private information of informed traders. Huberman and Stanzl (2005) agreed with this claim when they purport that risk-averse liquidity traders tend to trade more when price volatility and liquidity increased. As Malaysian stock market trading activities were dominated by uninformed individual investors (the liquidity traders) who chase the trading behaviour of informed traders, any attention that is given to the "glamour stocks" may drive the return continuation effect. It is also plausible that the unique institutional and social-economic structures of Malaysia, namely concentrated ownership and the inseparable link between businesses and politics, played a role in aggravating the information uncertainty environment and thus led to greater momentum effect among high liquidity stocks in the country.

CONCLUSION

This study was motivated by the lack of evidence in association with the relationship between ownership concentration and momentum effect. It therefore contributed by establishing a link between ownership concentration and stock momentum. The present research demonstrated that high-concentration portfolios consistently outperformed low concentration portfolios in Malaysia. Using the Malaysian context as a platform, the findings are evidently consistent with the notion that information uncertainty associated with concentrated ownership led to more synchronous price movements. We also investigated the implementation of momentum strategies on liquidity-conscious sub-samples and proved that bid-ask spread was capable in predicting the strength and persistence of return continuation. Although it may seem intriguing that it was the narrower spread (higher liquidity) stocks that generated better momentum returns, the results can be explained in the local context of investor heterogeneity of this market. In addition, the findings validated the conjecture that liquidity plays a determining role in momentum and it has shed light on the relationship between liquidity and momentum returns in the emerging market context.

NOTES

1. See, for example, Claessens et al. (2000; 2004).
2. See for instance, Rouwenhorst (1998) and Hurn and Pavlov (2003).
3. See Brown, Du, Rhee, and Zhang (2008) and Gwilym, Clare, Seaton, and Thomas (2010).

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BOARD GENDER DIVERSITY AND ITS RISK MONITORING ROLE: IS IT SIGNIFICANT?

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ABSTRACT

In recent years, there is an urgent call to strengthen board composition to safeguard against expropriation of shareholders' interest and to reinforce public confidence, specifically in a weaker governance setting. Board gender diversity receives considerable attention within the issues of corporate governance. This is because female directors are found to be more active in monitoring activities, cautious in decision making, less aggressive and risk averse as compared to male directors. We support this argument with evidence from a sample of listed firms in Malaysia. In line with the literature, we show that female directors play a significant monitoring role in reducing corporate risk taking behaviour. Our results are robust to endogeneity concern. Since board gender diversity plays a significant risk monitoring role, we recommend that there should be a continuous call to appoint female directors to the boardrooms among Malaysian listed firms to diversify the 'old boys club' corporate boardrooms.

Keywords: board gender diversity, female directors, risk monitoring, corporate risk taking, corporate governance

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INTRODUCTION

Board gender diversity can create better understanding of business environment to improve decision making process. Having gender diversity in the boardroom can also improve the quality of board's discussion and the ability to provide effective oversight of a firm's financial reporting and disclosure (Gul, Srinidhi, & Ng, 2011). This is because female directors are found to be more active in monitoring activities (Adams & Ferreira, 2009) and cautious in decision making, less aggressive and risk averse as compared to male directors (Huang & Kisgen, 2013; Levi, Li, & Zhang, 2014; Powell & Ansic, 1997) who are likely to be overconfident in their corporate decisions making (Lundeberg, Fox, & Punccohar, 1994). For these reasons, women are frequently associated with less risk taking compared to men who tend to favour risky investment (Charness & Gneezy, 2012; Dwyer, Gilkeson, & List, 2002; Khaw, Liao, Tripe, & Wongchoti, 2016).

Corporate risk taking to some degree is fundamental to a firm survival and growth. Risk taking is an important source of competitive advantages. Firms have to take risk to innovate and to create economic value in the competitive and complex global economy. Growth-oriented corporate risk taking could contribute to the growth of the firms and shareholders' value (Faccio, Marchica, & Mura, 2011). Though riskier investment policy leads to increased shareholders' value and higher growth rate, excessive risk taking and mismanagement of risk in a weaker governance setting could lead to expropriation of shareholders' interest (John, Litov, & Yeung, 2008). Considerable attention is given to the issue related to corporate governance and risk taking behaviour, specifically in the aftermath of Global Financial Crisis in 2008 that revealed the shortcomings of corporate governance. The shortcomings of corporate governance have translated into a chained and magnified negative impact to the local and international markets.

In recent years, board gender diversity has received substantial attention within the issues of corporate governance. The proportion of female representatives in the corporate boardrooms becomes an important concern for the policymakers. Norway is the first country to mandate their listed firms to have at least 40% of women in the boardrooms and it managed to achieve full compliance in 2009. It is then followed by other countries adopting either mandatory quota (Germany, France, Belgium, Iceland and Italy) or voluntary target ratio ranging from 25% to 40% (Austria, Finland, the Netherlands, Spain, Sweden and the UK). Firms that could not achieve the target ratio have to explain the non-compliance in the annual reports and steps to be taken to achieve the target ratio in the subsequent years. Asian countries are also following suit, such as India, Japan, Singapore, including Malaysia.

In 2011, Malaysian regulators announced a policy that requires the public listed firms to have at least 30% of female directors on boards by 2016. The policy is echoed in the Malaysian Code on Corporate Governance (MCCG) 2012 that focuses on strengthening the structure and composition of corporate board. One of the recommendations calls for the board nominating committee to ensure women candidates are sought as part of the requirement exercise. To promote more women in the boardrooms, NAM Institute for the Empowerment of Women (NIEW) offers various courses to prepare the women to be part of the board members. However, the proportion of female board members among the public listed firms is still far behind the 30% target ratio. As of June 2016 according to Bursa Malaysia, the target ratio only reached 15.2% for the Top 100 listed firms based on their market capitalisation and 10.7% across the public listed firms. On 26 April 2017, Security Commission of Malaysia (SC) released a new MCCG that aims to increase female directors' ratio of the Top 100 firms from 16.8% (as of April 2017) to 30% by 2020.

Though there is an increase in female representation, the change is slow. The low representation of women on boards is not merely an inequality issue. Instead, it may signal a lack of confidence among the male-dominated management teams with the presence of female directors in the boardrooms. In other words, they could be doubtful as to how and to what extent board gender diversity can enhance corporate governance or be beneficial to the firms. The male-dominated boards could also feel uncomfortable to comply with the change since they are used to the ″old boys club″ or single gender corporate boardroom. This suggests an urgency to examine if the debated benefits of board gender diversity also extend to Malaysian firms in enhancing corporate governance from the risk taking perspective.

The issue of board gender diversity and corporate risk taking are relatively unexplored in the context of Malaysia, where majority of the public listed firms have fewer incentives to increase women participation in the boardrooms. Furthermore, existing studies on board gender diversity in Malaysia mainly examine the direct relationship between board gender diversity and firms' performance (see for example Low, Roberts, & Whiting, 2015; Yap, Chan, & Zainudin, 2017). To provide further insight, this study aims to examine if gender diversity in the boardrooms can be a significant monitoring tool to mitigate firms' risk taking behaviour that would ultimately affect firms' performance.

We utilise a sample of 631 non-financial firms listed in Malaysia with 5,019 firm-year observations over the 2000 to 2014 sample period to examine the research question. Our results suggest that corporate risk taking behaviour can

be mitigated by promoting gender diversity in the corporate boardrooms. This finding is not only statistically significant, but is also economically significant and is consistent with existing studies (e.g. Adams & Ferreira, 2009; Huang & Kisgen, 2013; Khaw et al., 2016; Levi et al., 2014). Robustness tests further confirm the negative relationship. Furthermore, we show that large and/or highly levered firms as well as firms run by male CEOs are more reluctant to change their existing risk taking behaviour, and hence have less incentive to elect female directors to their boardrooms even after the policy announcement in 2011 that calls for 30% female ratio.

Our main contribution is twofold. First, our findings further contribute to the ongoing debate on the importance of promoting board gender diversity as a governance tool to mitigate corporate risk taking behaviour. We provide empirical evidence from a developing market perspective, where the study on board gender diversity and risk taking is still relatively unexplored. Second, the results of this study offer significant implications to Malaysia policymakers. Our results convey that having female directors on boards is beneficial to promote good corporate governance. Therefore, it is recommended that policymakers should further promote board gender diversity among Malaysian firms by creating new and/or revising the existing policy to increase the presence of women in the boardrooms.

LITERATURE AND HYPOTHESIS DEVELOPMENT

The presence of more female directors in the boardrooms could create better public image of the firms and contribute to the improvement of firms' performance (Low et al., 2015). Firms with gender diverse board could increase creativities and innovations, as well as enhancing problem-solving given the better understanding of business environment, the differences in skills, knowledge and experience among the board members (Campbell & Minguez-Vera, 2008; Robinson & Dechant, 1997). The behavioural literature asserts that individual's risk taking preference is likely to depend on gender differences. Men and women have different emotional reaction to uncertainties that are likely to affect the possibility of outcomes.

Commonly, men are claimed to be overconfident, whereas women are emotional, more cautious, and less individualistic (Byrnes, Miller, & Schafer, 1999; Powell & Ansic, 1997). Moreover, women are found to be risk averse than men, thus are more likely to take less risk (Byrnes et al., 1999; Croson & Gneezy, 2009; Powell & Ansic, 1997). For example, women tend to trade less and prefer the buy and hold strategy, but men trade more often and opt for riskier investment (Barber & Odean, 2001). Dwyer et al. (2002) also find that women are

more conservative and less risky in handling their mutual fund investment, but Bliss and Potter (2002) find otherwise, where female fund managers hold slightly riskier portfolios than male fund managers.

On the other hand, Huang and Kisgen (2013) find that male executives have greater tendencies to engage in value destroying acquisitions. However, female directors are less likely to participate in merger and acquisition and if they do, female directors are more likely to pay lower acquisition premium (Levi et al., 2014) and the acquisitions made tend to offer higher returns (Huang & Kisgen, 2013). Furthermore, Faccio, Marchica and Mura (2016) find that CEO gender does affect corporate decision. Female CEOs are associated with less risk taking. Hence, firms run by female CEOs are less levered and less volatile in comparison to firms managed by male CEOs. The differences in risk attitudes between genders are, therefore, could explain the variation of corporate risk taking behaviour.

Gender diverse board create better understanding to improve the quality of board discussion and decision making process (Gul et al., 2011). Female directors appear to be tougher monitors and are likely to join the monitoring committee. Female directors also have better attendance at the board meetings than male directors (Adams & Ferreira, 2009). In other words, women tend to take their role more seriously while in the boardrooms, thus leading to better corporate governance (Singh & Vinnicombe, 2004). Though having women in the boardrooms contributes to a better monitoring, corporate decision making process would take longer time (Berger, Kick, & Schaeck, 2014) as women tend to be more cautious in their decision-making process. Hence, the presence of women in the boardrooms may lead to over monitoring for firms that already have strong corporate governance. However, Khaw et al. (2016) show that over monitoring is not an issue in a weak investor protection environment, like China. Instead, the presence of female directors is significant in alleviating excessive risk taking that may be harmful to firms, specifically in an emerging market environment. For these reasons, we hypothesise that:

Hypothesis: Board gender diversity is negatively related to corporate risk taking.

DATA AND METHODOLOGY

Sample Description

Sample consists of non-financial firms, publicly listed on the Bursa Malaysia stock exchange over the 2000 to 2014 sample period. Financial firms are excluded

due to the different risk characteristics in the financial structure and regulations compared to other non-financial industries. Final sample consists of 641 non-financial firms, with 5,019 firm-year observations after excluding any firm-year observations with missing financial information. To examine the research question, we have to hand-collect the data on board gender diversity, as well as board size, independent directors, female independent directors, CEO duality, and CEO gender from the firms' annual reports. Firms' specific data, which include risk taking and other related control variables are collected from the Datastream database.

Variables Description

We use four different measures of risk taking. Based on Boubakri, Mansi and Saffar (2013), Faccio et al. (2011), John et al. (2008) and Khaw et al. (2016), *Risk 1* refers to the volatility of a firm's return on asset (ROA) over three-year overlapping periods. For example, the amount of risk-taking in year 2000 is measured as the volatility of ROA from year 2000 to 2002. *Risk 2* refers to the difference between maximum and minimum ROA in three-year interval. *Risk 3* is the firm's total risk measured by the standard deviation of daily stock return, while *Risk 4* is the systematic risk (Sila, Gonzalez & Hagendorff, 2016). Systematic risk is the beta coefficient on stock market portfolio from a market model regression using the FTSE Bursa Malaysia KLCI index[1].

The main variable of interest, board gender diversity is measured by (1) *Female ratio*, calculated as the number of female directors divided by the number of all directors on the board, and (2) *Female dummy* is equal to one if there is/are female director(s) in the boardroom and zero otherwise. We also control for other board characteristics that are found to affect corporate risk taking behaviour. *Board size* is the natural log of the total number of directors on a board. Firms with smaller board are less likely to accept riskier projects since smaller board with more independent directors provides greater monitoring (Raheja, 2005). In addition, it is more difficult to reach to an agreement in large groups (Cheng, 2008; Sah & Stiglitz, 1991). *Board independence* is the ratio of number of independent director to total number of directors. To preserve their market reputation, independent directors have the incentives to effectively carry out the monitoring task (Fama & Jensen, 1983) in protecting shareholders' interest. In line with the literature, board size (board independence) is expected to be positively (negatively) related to corporate risk taking.

However, board monitoring is found to be weak when CEO duality is present. A chair-CEO may have more discretion to allow hubris to drive the firm

to take up risky investments (Crossland & Hambrick, 2007). *CEO duality* is equal to one if a firm's CEO also serves as the chairman of the board of directors, and zero otherwise. Similarly, a male CEO is more likely to engage in higher risk taking. Firms run by male CEOs are found to have higher leverage, more volatile and lower chance of survival compared to firms run by female CEOs (Faccio et al., 2016). *Male CEO* is equal to one if the CEO is a male, and zero otherwise.

In addition, we control for a number of firm-specific variables such as firm size, profitability, sales growth, leverage, and tangibility. *Firm size* is measured by the natural logarithm of total assets. Firm size is expected to be negatively related to the corporate risk taking behaviour. Smaller firms are found to be more risk-seeking than larger firms (Faccio et al., 2011; Boubakri et al., 2013; John et al., 2008) to expand their business operations. *Profitability*, measured by firm's ROA is argued to be negatively related to risk taking. Less profitable firms have greater tendencies to take more risk to increase the firms' profitability than more profitable firms (Faccio et al., 2011). Firms with higher growth opportunities are expected to be positively related to corporate risk taking behaviour (Faccio et al., 2011; Sila et al., 2016) because this risk taking could contribute to the growth of the firms and shareholders' value. We use sales growth (*Sales growth*) as the proxies for growth and investment opportunities and is defined as the annual growth rate of sales.

When firms are highly leveraged, these firms are exposed to greater risk of uncertainty that would lead to higher risk of financial distress. Thus, leverage is found to be positively related to corporate risk taking (Faccio et al., 2011). *Leverage* is measured as total debt to total equity. *Tangibility*, measured by the ratio of net plant and equipment to total asset, is expected to be positively related to risk taking. Firms with higher tangibility have more capacity to take up more investment because the tangible assets can be used as collateral. Moreover, firms with higher tangible assets have higher liquidation value in the event of bankruptcy. The description of each variable is summarised in the Appendix.

RESULTS AND DISCUSSION

In this section, we present and discuss the results of the effects of board gender diversity on corporate risk-taking behaviour. We also present the results of the robustness checks.

Summary Statistics

Table 1 presents the summary statistics of the variables. On average, 52.78% of the firms' board consist exclusively of male directors, while female directors make up an average 8.71% of the directorships, with a maximum ratio of 50%. The average board size is reported as 7 and reaches a maximum number of 18.[2] For board independence, sample firms on average have 42.41% of independent directors on boards, with a maximum ratio of 100%. Eighty-nine percent (89%) of the sample firms have a male CEO, while 37.9% of the firms' CEOs also serve as the chairman of the board of directors.

Table 1
Summary statistics of the variables

Variable	Obs.	Mean	Std. Dev.	Min	Max
Risk 1	5,019	3.7348	4.3583	0.0200	34.7923
Risk 2	5,019	6.4305	7.5538	0.0000	77.3500
Risk 3	4,944	0.5085	0.3496	0.0000	4.6881
Risk 4	4,944	0.8136	0.6487	–3.2588	5.0618
Female dummy	5,019	0.4722	0.4993	0.0000	1.0000
Female ratio	5,019	0.0871	0.1099	0.0000	0.5000
Board size	5,019	2.0009	0.2544	1.0986	2.8904
Board independence	5,019	0.4241	0.1151	0.1111	1.0000
Male CEO	5,019	0.8900	0.3129	0.0000	1.0000
CEO duality	5,019	0.3790	0.4852	0.0000	1.0000
Firm size	5,019	12.7931	1.3467	9.6103	18.2982
Profitability	5,019	0.0490	0.0693	–0.2569	0.3767
Sales growth	5,019	0.0670	0.1653	–0.4260	0.9559
Leverage	5,019	0.4825	0.5959	0.0000	3.9460
Tangibility	5,019	0.3808	0.2062	0.0000	0.9875

Notes: Obs = observations; Std. Dev. = standard deviation; Min = minimum; Max = maximum.

Table 2 reports the pairwise correlation matrix of the key variables. As per our expectation, the *Female ratio* is negatively related to *Risk 1* to *Risk 4*. The correlation matrix does not suggest any serious multicollinearity concerns.

Univariate Analysis

We conduct univariate analysis to examine whether firms with female directors on boards and firms without female directors on boards have different risk-taking levels. We estimate both the t-test and z-test. Table 3 shows that the differences in mean and median of the four risk-taking measures between firms with female directors on boards and male-only boards are statistically significant at the 1% level except the median difference of *Risk 1*. The univariate analysis indicates that firms with female directors on boards take less risk than firms without female directors on boards.

Baseline Regression Results

To examine the effects of board gender diversity on corporate risk-taking behaviour, we use multivariate regression of panel data, controlling for industry and year fixed-effects with robust standard errors. The initial regression specification is as follows:

$$Risk = \alpha + \beta_1 Female\ ratio + \beta_2 Board\ size + \beta_3 Board\ independence + \beta_4 Male\ CEO + \beta_5 CEO\ duality + \beta_6 Firm\ size + \beta_7 ROA + \beta_8 Sales\ growth + \beta_9 Leverage + \beta_{10}\ Tangibility + \varepsilon$$

We estimate the regression model using the four risk-taking measures defined earlier. Following existing studies, *Risk 1 and Risk 2* are the dependent variables for the first year of the rolling period over which the risk-taking measures are computed (Boubakri et al., 2013; John et al., 2008). The regression results are presented in Panel A of Table 4. *Female ratio* is used to measure gender diversity on board. *Female ratio* is negatively related to *Risk 1* to *Risk 4*. The results are statistically significant at the 1% level, respectively, supporting our hypothesis. The coefficient of *Female ratio* in Model 1 indicates that on average one standard deviation increase in the proportion of female directors on board leads to a 4.0417% decrease in the level of risk-taking measured by *Risk 1*. The result is also economically significant given the mean value of the risk measure of 3.7348%.[3] For robustness checks, we repeat the regressions using *Female dummy* as the measure for board gender diversity. The results reported in Panel B of Table 4 are qualitatively similar to the results reported in Panel A, except *Risk 2* which is insignificant though the coefficient is negative.

Table 2
Correlation matrix of the identified variables

	Risk 1	Risk 2	Risk 3	Risk 4	Female dummy	Female ratio	Board size	Board independence	Male CEO	CEO duality	Firm size	ROA	Sales growth	Leverage	Tangibility
Risk 1	1														
Risk 2	0.0243	1													
Risk 3	–0.0008	0.1655	1												
Risk 4	0.0255	0.079	0.1132	1											
Female dummy	–0.0448	–0.0493	–0.0471	–0.0562	1										
Female ratio	–0.0354	–0.0523	–0.0282	–0.0693	0.8383	1									
Board size	0.0185	–0.1263	–0.2175	–0.0145	0.152	–0.0179	1								
Board independence	–0.0529	0.0705	0.0651	0.0675	–0.0806	–0.0122	–0.3656	1							
Male CEO	0.0164	–0.0498	–0.0374	0.01	–0.0566	–0.0986	0.0755	–0.0425	1						
CEO duality	–0.0288	–0.0379	0.0473	–0.0256	0.0386	0.0609	–0.0718	–0.0693	0.0593	1					
Firm size	0.0032	–0.1353	–0.3899	0.1978	–0.0127	–0.0415	0.3229	0.0129	0.0301	–0.0941	1				
Profitability (ROA)	–0.0109	–0.1472	–0.3277	–0.1436	0.0696	0.0535	0.1083	–0.0492	0.0593	–0.0109	0.146	1			
Sales growth	0.0051	–0.0745	–0.192	–0.031	0.0317	0.0251	0.0739	–0.0529	0.0341	–0.0162	0.124	0.3898	1		
Leverage	0.0455	0.0531	0.1238	0.1585	–0.0773	–0.0971	0.0214	–0.0009	0.0496	0.0024	0.2032	–0.2072	–0.0084	1	
Tangibility	0.0477	–0.0783	–0.002	0.0175	0.0527	0.0398	0.0563	–0.0411	0.0842	0.0206	0.0857	–0.1236	–0.0396	0.0508	1

Table 3
Univariate analysis

	Board with female director	Board without female director	Board with female director		Board without female director		Board with female director minus board without female director	
Variable	Obs.	Obs.	Mean value	Median value	Mean value	Median value	Mean difference (*t*-value)	Median difference (*z*-value)
Risk 1	2370	2649	3.5285	2.2111	3.9193	2.2748	–3.1736***	1.5400
Risk 2	2370	2649	6.0368	3.8650	6.7827	4.3000	–3.4959***	–4.2710***
Risk 3	2325	2619	0.4910	0.4050	0.5240	0.4387	–3.3153***	–4.3380***
Risk 4	2325	2619	0.7749	0.6820	0.8479	0.7674	–3.9556***	–4.4370***

Notes: *, ** or *** indicates significance at the 90%, 95% or 99% confidence levels, respectively.
Obs. = Observations

For the control variables, board size is negatively related to *Risk 2*, *Risk 3* and *Risk 4*, indicating that large board provides better monitoring. CEO duality is also negatively related to *Risk 1* and *Risk 2*, indicating that the duality leads to risk averse, which is inconsistent with our expectation. We argue that the relationship between board size, CEO duality and risk-taking may not be linear. We further address this issue by conducting a robustness check in the following section. On the other hand, board independence shows mixed results. For example, it is negatively associated with *Risk 1* but is positively related to *Risk 2 and Risk 4*, which is inconsistent with our expectation. In addition, well performing firms are found to take less risk, whereas highly levered firms take more risk, in line with Faccio et al. (2011). These firms are exposed to higher risk of financial distress; therefore have to take riskier investment projects for higher returns. *Tangibility* is positively related to risk taking in Models 1 and 3, in which firms with higher tangibility have more capacity to take up riskier projects, but not in Models 2 and 4.

Overall, the panel data regression results indicate that female directors mitigate the risk-taking behaviour among Malaysian listed firms. As discussed, women tend to take their role more seriously than men while in the boardrooms, thus they have greater incentive monitoring the firm operations and management. A good level of monitoring is also beneficial to the female directors' reputation. In brief, our findings support the board gender diversity's policy that calls for the public-listed firms in Malaysia to appoint more female directors to the boardrooms.

Table 4
Board gender diversity and corporate risk-taking

Panel A: Gender diversity is measured by the proportion of female directors on board to total board size (Female ratio)				
	Risk 1	Risk 2	Risk 3	Risk 4
Female ratio	–1.3735***	–2.9254***	–0.0994**	–0.2410***
	(0.0099)	(0.0020)	(0.0110)	(0.0012)
Board size	–0.1593	–1.8488***	–0.0863***	–0.1429***
	(0.5712)	(0.0002)	(0.0000)	(0.0002)
Board independence	–2.0768***	3.0128***	0.0337	0.3822***
	(0.0001)	(0.0035)	(0.4507)	(0.0000)
Male CEO	0.0777	–0.9227**	–0.0218	0.0362
	(0.6871)	(0.0262)	(0.1792)	(0.2261)
CEO duality	–0.2788**	–0.6617***	0.0022	–0.0037
	(0.0278)	(0.0026)	(0.7989)	(0.8348)
Firm size	–0.0475	–0.5840***	–0.1028***	0.0999***
	(0.3727)	(0.0000)	(0.0000)	(0.0000)
Profitability	–0.0003	–0.1309***	–0.0109***	–0.0133***
	(0.9799)	(0.0000)	(0.0000)	(0.0000)
Sales growth	0.0019	–0.0084	–0.0006**	–0.0001
	(0.6466)	(0.3254)	(0.0224)	(0.8903)
Leverage	0.0027**	0.0075***	0.0009***	0.0008***
	(0.0182)	(0.0029)	(0.0000)	(0.0000)
Tangibility	1.1016***	–2.4817***	0.0830***	–0.0792*
	(0.0007)	(0.0002)	(0.0001)	(0.0807)
Constant	5.1390***	18.9319***	1.9915***	–0.2926**
	(0.0000)	(0.0000)	(0.0000)	(0.0157)
Industry fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Observation	5019	5019	4944	4944
Adj R^2	0.0083	0.0641	0.3591	0.1654

(*continue on next page*)

Table 4 (*continued*)

Panel B: Gender diversity is measured by a dummy variable that is equal to one if there is/are female director(s) in the boardroom and zero otherwise (Female dummy)				
	Risk 1	Risk 2	Risk 3	Risk 4
Female dummy	–0.4202*** (0.0014)	–0.2730 (0.2254)	–0.0161* (0.0575)	–0.0347** (0.0477)
Board size	–0.0149 (0.9590)	–1.7490*** (0.0006)	–0.0807*** (0.0000)	–0.1308*** (0.0008)
Board independence	–2.1018*** (0.0001)	3.0659*** (0.0030)	0.0346 (0.4387)	0.3852*** (0.0000)
Male CEO	0.0775 (0.6880)	–0.8469** (0.0411)	–0.0202 (0.2117)	0.0406 (0.1735)
CEO duality	–0.2756** (0.0290)	–0.6889*** (0.0017)	0.0016 (0.8517)	–0.0054 (0.7620)
Firm size	–0.0571 (0.2865)	–0.5802*** (0.0000)	–0.1029*** (0.0000)	0.0997*** (0.0000)
Profitability	0.0004 (0.9732)	–0.1320*** (0.0000)	–0.0109*** (0.0000)	–0.0133*** (0.0000)
Sales growth	0.0018 (0.6622)	–0.0087 (0.3088)	–0.0006** (0.0207)	–0.0001 (0.8605)
Leverage	0.0027** (0.0180)	0.0077*** (0.0020)	0.0009*** (0.0000)	0.0008*** (0.0000)
Tangibility	1.1181*** (0.0006)	–2.5504*** (0.0001)	0.0817*** (0.0001)	–0.0829* (0.0674)
Constant	5.0527*** (0.0000)	18.4990*** (0.0000)	1.9798*** (0.0000)	–0.3226*** (0.0072)
Industry fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Observation	5019	5019	4944	4944
Adj R^2	0.0093	0.0626	0.3587	0.1645

Note: *, ** or *** indicates significance at the 90%, 95% or 99% confidence levels, respectively.

Robustness Checks

We perform robustness checks to further explore the effect of gender diversity on board in this section.

Interaction of Board Size and CEO Duality

In the previous section, we argue that the relationship between board size, CEO duality and risk-taking may not be linear. Board monitoring is expected to be weak when CEO duality is present. The powerful chair-CEO may have more discretion to allow hubris to drive firms to take up risky investments (Crossland & Hambrick, 2007). In this section, we further test the relationship between board size, CEO duality and risk-taking by creating an interaction term, *Board size* × *CEO duality*. We argue that boards play a weaker monitoring function in CEO duality firms because the coordination problem becomes much more complicated in these firms. The free-riding problem (Jensen, 1993) becomes more likely in any CEO influential boards.

Table 5
Interaction of board size and CEO duality and risk taking

	Risk 1	Risk 2	Risk 3	Risk 4
Female ratio	–1.3199**	–2.8681***	–0.1022***	–0.2363***
	(0.0135)	(0.0026)	(0.0083)	(0.0015)
Board size	–0.5758	–2.2938***	–0.0662***	–0.1758***
	(0.1060)	(0.0004)	(0.0035)	(0.0002)
Board independence	–2.0441***	3.0477***	0.0322	0.3847***
	(0.0002)	(0.0032)	(0.4703)	(0.0000)
Male CEO	0.0906	–0.9089**	–0.0223	0.0371
	(0.6396)	(0.0287)	(0.1689)	(0.2143)
CEO duality	–2.4203**	–2.9498*	0.1067	–0.1748
	(0.0115)	(0.0886)	(0.1544)	(0.2257)
Board size × CEO duality	1.0763**	1.1499	–0.0524	0.0859
	(0.0245)	(0.1705)	(0.1416)	(0.2232)
Firm size	–0.0459	–0.5823***	–0.1029***	0.1000***
	(0.3893)	(0.0000)	(0.0000)	(0.0000)
Profitability	–0.0002	–0.1308***	–0.0109***	–0.0133***
	(0.9872)	(0.0000)	(0.0000)	(0.0000)

(*continue on next page*)

Table 5: (*continued*)

	Risk 1	Risk 2	Risk 3	Risk 4
Sales growth	0.0018	–0.0085	–0.0006**	–0.0001
	(0.6705)	(0.3176)	(0.0239)	(0.8746)
Leverage	0.0026**	0.0074***	0.0009***	0.0008***
	(0.0190)	(0.0030)	(0.0000)	(0.0000)
Tangibility	1.1255***	–2.4563***	0.0820***	–0.0776*
	(0.0006)	(0.0002)	(0.0001)	(0.0874)
Constant	5.9193***	19.7655***	1.9535***	–0.2304*
	(0.0000)	(0.0000)	(0.0000)	(0.0828)
Industry fixed effect	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Observation	5019	5019	4944	4944
Adj R^2	0.0090	0.0642	0.3593	0.1655

Note: *, ** or *** indicates significance at the 90%, 95% or 99% confidence levels, respectively.

Table 5 shows the results when the interaction term, *Board size* × *CEO duality*, is added into the regression model. The coefficients of *Board size* are still negatively significant in Models 2 to 4, while the coefficients of *CEO duality* are negatively significant in Models 1 to 2. However, the coefficient of *Board size* × *CEO duality* is significantly positive in Model 1 at the 5% level. These results may imply that large board size in a powerful board presents weak monitoring because a chair-CEO is more likely to have more says in the decision making when board size is large. Furthermore, when we control for the possible non-linear relationship between board size and CEO-duality, *Female ratio* remains negatively related to the risk-taking measures, further supporting our hypothesis.

Sub Period Analysis

In 2011, Malaysian regulators announced a policy that requires the public listed firms to have at least 30% of female directors on board by 2016. In this section, we examine this regulation effect by conducting a sub period analysis. We divide the whole sample into two sub periods; 2000 to 2010 and 2011 to 2014. The intuition is that there should be a significant increase in the female directors' ratio after the announcement of the board gender diversity policy in 2011. Moreover, we expect to find a sizable negative relationship between board gender diversity and corporate risk taking indicating an enhanced monitoring role in the post-policy period (2011–2014) that contributes to the policy success. However, we could not find the expected results whereby the monitoring effect is expected to be more

pronounced in the post-policy period than in the pre-policy period (2000–2010). The results are not reported here, but are available upon request.

To answer this puzzle, firstly, we perform a time trend analysis of the female representation in the boardrooms as shown in Table 6. Our sample observations show that there is an increasing trend of female directors on board. On average, in the pre-policy period (2000–2010), 7.72% of the board members are female and the average increased to 9.63% in the post-policy period. Nonetheless, the increased is still too minor to achieve the 30% requirement and the anticipated improvement in the monitoring role.

Table 6
Time trend of female directors' representation on boards

Year	Mean	Min	Max
2000	5.44%	0.00%	57.14%
2001	6.35%	0.00%	57.14%
2002	7.09%	0.00%	50.00%
2003	7.45%	0.00%	42.86%
2004	7.97%	0.00%	50.00%
2005	7.95%	0.00%	50.00%
2006	8.01%	0.00%	50.00%
2007	8.42%	0.00%	50.00%
2008	8.48%	0.00%	50.00%
2009	8.77%	0.00%	50.00%
2010	8.99%	0.00%	50.00%
2011	9.24%	0.00%	50.00%
2012	9.14%	0.00%	50.00%
2013	9.85%	0.00%	60.00%
2014	10.29%	0.00%	60.00%

Determinants of Having Female Directors on Boards

Furthermore, we examine the determinants of having female directors on board using a logistic regression where the dependent variable is *Female dummy*. The results are presented in Table 7. Model 1 shows that firms with large board, firms with CEO also serving as the board's chairman, well-performing firms, and firms with more tangible assets are more likely to have female directors on board, while large firms, firms with male CEOs, and firms with higher leverage are less likely to

have female directors serving on boards. This is because firms run by male CEOs and highly levered firms have higher tendencies to take riskier projects (Faccio et al., 2011), thus the lower tendencies to appoint female directors to monitor their risk taking behaviour. Conversely, firms that adopt board independence as their governance tool are less likely to have female directors on boards because outside directors are effective in monitoring corporate risk taking behaviour (Brick & Chidambaran, 2008).

Table 7
Determinants of having female directors on boards

	Model 1	Model 2	Model 3
Board size	1.4979***	1.1193***	2.3917***
	(0.0000)	(0.0000)	(0.0000)
Board independence	–0.7357**	–0.7782**	–0.5940
	(0.0108)	(0.0174)	(0.1675)
Male CEO	–0.5365***	–0.3550***	–0.9503***
	(0.0000)	(0.0011)	(0.0000)
CEO duality	0.2327***	0.2390***	0.2415***
	(0.0002)	(0.0005)	(0.0094)
Firm size	–0.1742***	–0.2097***	–0.1166***
	(0.0000)	(0.0000)	(0.0031)
Profitability	0.0165***	0.0191***	0.0118*
	(0.0010)	(0.0004)	(0.0932)
Sales growth	0.0010	–0.0017	0.0077***
	(0.6039)	(0.4143)	(0.0042)
Leverage	–0.0020***	–0.0006	–0.0062***
	(0.0002)	(0.3034)	(0.0000)
Tangibility	0.7223***	0.4934***	1.2253***
	(0.0000)	(0.0031)	(0.0000)
Constant	–1.6829***	–0.9749	–5.0967***
	(0.0019)	(0.1384)	(0.0000)
Industry dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Observation	5019	4237	3431
Pseudo R^2	0.0567	0.0454	0.1075

Note: *, ** or *** indicates significance at the 90%, 95% or 99% confidence levels, respectively.

Models 2 and 3 repeat the analysis using alternative samples. Model 2 includes firms without female directors and firms with only one female directors on boards, while Model 3 consists of firms without female directors and firms with more than one female directors on boards. Results are qualitatively similar to those reported in Model 1. In brief, we argue that to mitigate the risk taking behaviour, particularly among the riskier firms and/or firms that have higher tendencies to take risk, there is an urgency to increase board gender diversity. We argue that this could also be the reason why we could not find more significant monitoring role of board gender diversity in the post-policy period than in the pre-policy period where the appointment of female directors to the boardrooms is voluntarily. Putting it in other words, firms that intend to be more risk-taking are reluctant to appoint female directors on board.

Endogeneity

In this section, we address the possible endogeneity concern related to our results. The endogeneity concern is that female directors could self-select firms that exhibit lower risk-taking. We use the dynamic generalised method of moments (GMM) approach to address this causality issue. The dynamic GMM is argued to have advantages compared to the traditional fixed effect estimates (Wintoki, Linck, & Netter, 2012). It is recommended that the GMM approach should be applied in the corporate governance studies (Wintoki et al., 2012). Utilising the GMM, in Table 8, we find that the coefficients of *Female ratio* are highly significant at the 1% level when regressing on *Risk 1* and *Risk 4*. The *Female ratio* coefficients are still negative although not significant when regressing on *Risk 2* and *Risk 3*, confirming that firms with female directors are less risk-taking.

Table 8
Endogeneity test: Board gender diversity and corporate risk-taking

	Risk 1	Risk 2	Risk 3	Risk 4
L. Risk 1	0.7911***			
	(0.0102)			
L. Risk 2		0.8194***		
		(0.0091)		
L. Risk 3			0.4366***	
			(0.0107)	
L. Risk 4				0.1149***
				(0.0161)
Female ratio	–1.2837**	–0.7062	–0.0595	–0.5348***
	(0.5963)	(1.2699)	(0.0721)	(0.1679)

(*continue on next page*)

Table 8 (*continued*)

	Risk 1	Risk 2	Risk 3	Risk 4
Board size	0.6667**	1.7728***	–0.0761**	0.0811
	(0.3091)	(0.5750)	(0.0310)	(0.0789)
Board independence	1.1143**	–1.9231**	–0.0662	–0.4520***
	(0.5527)	(0.9614)	(0.0598)	(0.1492)
Male CEO	0.7889**	–0.3424	0.0027	0.1875***
	(0.3198)	(0.5788)	(0.0302)	(0.0628)
CEO duality	0.0799	–0.8405*	0.0392	–0.0291
	(0.1852)	(0.4318)	(0.0253)	(0.0531)
Firm size	0.1922**	0.7963***	–0.1207***	–0.1288***
	(0.0955)	(0.2312)	(0.0101)	(0.0311)
Profitability	–0.0095	–0.0474***	–0.0009	0.0023
	(0.0089)	(0.0157)	(0.0009)	(0.0018)
Sales growth	–0.0027	0.0266***	–0.0001	0.0003
	(0.0020)	(0.0045)	(0.0002)	(0.0006)
Leverage	0.0025	–0.0068***	0.0013***	0.0022***
	(0.0016)	(0.0027)	(0.0001)	(0.0004)
Tangibility	–0.7727**	–0.6348	–0.4507***	0.1756*
	(0.3767)	(0.7803)	(0.0410)	(0.0920)
Constant	–3.9984***	–10.5209***	2.1066***	2.0185***
	(1.5510)	(3.2786)	(0.1383)	(0.4247)
Observation	4,220	4,220	4,157	4,157
Chi^2 (*p*-value)	0.0000	0.0000	0.0000	0.0000

Note: *, ** or *** indicates significance at the 90%, 95% or 99% confidence levels, respectively.

CONCLUSION

Significant attention is given to the issue related to board composition. Being the first line governing body of firms, boards oversee strategies that address firms' sustainability and stakeholders' interests. Globally, regulators are actively promoting board gender diversity, including Malaysia to enhance corporate governance. In 2011, Malaysia regulators announced a policy that requires the public listed firms to have at least 30% of female directors on boards, but to date the target ratio is yet to be achieved. The examination of the relationship between board gender diversity and corporate risk taking is lacking for emerging markets. Though corporate risk-taking is often viewed to have a positive impact on firm value and growth, excessive risk taking has received much blame following the

2008 global financial crisis. Excess risk-taking is suggested to be associated with worse shareholder protection in weak institutional settings.

Consistently, in the univariate and multivariate panel tests, we show that firms with female director ratio on boards are associated with less risk taking. In other words, our results indicate that female directors can mitigate the risk-taking behaviour among Malaysian listed firms. Our findings add support to the much debated argument that board gender diversity can be an effective corporate governance tool, mainly in a weaker governance environment like the emerging markets. This is because female directors are more cautious and can change the decision-making dynamics of the boards. Moreover, female directors are tougher monitors and more active in joining monitoring committees, or demanding for a higher audit effort than male directors. Therefore, we recommend that public listed firms in Malaysia should appoint more female directors to their boardrooms in support of the board gender diversity policy.

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NOTES

1. For robustness, we also use weekly and monthly stock returns and FTSE Bursa Malaysia EMAS index to determine *Risk 3* and *Risk 4*. Results are qualitatively similar to those reported.
2. We report the value of the natural log of the total number of directors on boards in Table 1.
3. We use the standard approach to calculate the economic significance as the coefficient of a variable multiplies with the standard deviation of the variable divided by the mean value of the dependent variable.

APPENDIX

Variable	Definition
Risk taking measures:	
Risk 1	Standard deviations of a firm's return on asset (ROA) over three-year overlapping periods.
Risk 2	Difference between maximum and minimum ROA in three-year interval.
Risk 3	Standard deviation of daily stock return.
Risk 4	Beta coefficient on stock market portfolio from a market model regression using the FTSE Bursa Malaysia KLCI index.
Board characteristics	
Female ratio	Number of female directors divided by the number of all directors on the board, and (2) *y* is equal to one if there is/are female director(s) in the boardroom and zero.
Female dummy	Dummy variable equals to one if there is/are female director(s) in the boardroom and zero.
Board size	Natural log of the total number of directors on board.
Board independence	Number of independent directors divided by the total number of directors on board.
Male CEO	Dummy variable equals to one if the CEO is a man and zero otherwise.
CEO duality	Dummy variable equals one if the CEO is also the chairman of the board and zero otherwise.
Control variables:	
Firm size	Natural log of total assets.
Profitability	Profitability proxy measured by return on assets (ROA).
Sales growth	Annual growth rate of sales.
Leverage	Total debt to total equity.
Tangibility	Net plant and equipment to total asset,

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WHAT DRIVES BANK MARGINS DURING AND POST-CRISIS? A COMPARISON BETWEEN ISLAMIC AND CONVENTIONAL BANKS

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ABSTRACT

This paper examines the margins of Islamic and conventional banks particularly in countries where Islamic banking is systemically important using the Generalized Method of Moments (GMM) estimator technique. In evaluating the impact of the global financial crisis, we separately consider the entire period (2006–2013), during crisis period (2007–2009) and post-crisis period (2010–2013) to gain new insights on the determinants of margins in a dual banking system. The findings indicate that the determinants differ across Islamic and conventional banks during crisis and post-crisis periods. We uncovered evidence suggesting that size, regulatory quality, inflation and overhead costs are important determinants of margins of Islamic banks. The results suggest the significant effects of market concentration, credit risk and overhead costs on conventional banks' margins. Interestingly, the results reveal different impacts of the crisis on both types of banking system.

Keywords: Islamic banks, conventional banks, margins, crisis, Generalized Method of Moments (GMM)

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INTRODUCTION

The global financial crisis has revealed the complexity of the financial system that has raised concerns over the banking system. The fragility of the banking system requires assessment of bank margins as a measure of financial intermediation costs. High margins reflect high financial intermediation costs and inefficiencies (Chortareas, Garza-garcía, & Girardone, 2012). The crisis and its consequences to bank margins highlight the importance of a stable and efficient banking system. In response to the crisis, several financial policies were introduced by the government to improve banking intermediation services. Therefore, understanding the determinants of bank margins is crucial for improving banking efficiency and achieving greater social welfare.

The significant growth of Islamic finance in recent years has led to the emergence of the systematically important Islamic banking sector (accounts for 15% or more of the market share of the total banking sector) that requires a strong policy and regulatory response (Islamic Financial Services Board, 2016). The resilience of Islamic banking during the crisis has boosted its credentials as an alternative to the conventional banking system. Most academics and policymakers find that Islamic banks are less susceptible to crisis compared to their conventional counterparts (Cihak & Hesse, 2010; Beck, Demirgüç-Kunt, & Merrouche, 2013). Although Islamic banks have demonstrated great resilience during the crisis, there is little evidence on the link between crisis and financial intermediation costs in a dual banking system. In this context, the ambiguous relationship between crisis and margins provides direct motivation to examine the impact of the crisis on the costs of intermediation that may hinder the role of banks in contributing to the stability and efficiency of the banking system.

Despite the ongoing debate on the effect of the crisis, there are limited empirical studies that compare the impact of the crisis on the margins of Islamic banks and conventional banks. Existing studies concentrated on conventional and Islamic banks' performance (Mobarek & Kalonov, 2014; Rashid & Jabeen, 2016; Sun, Mohamad, & Ariff, 2017) or focused their analysis on the convergence in bank performance after the crisis (Olson & Zoubi, 2017). There has been few research on the link between conventional banks' margins and crisis (Dietrich & Wanzenried, 2011; Das, 2013). However, little research provides comparison of the factors that influence Islamic and conventional banks' margins during and post-crisis.

This paper investigates the determinants of margins of Islamic and conventional banks during and post-crisis. In particular, we evaluate whether the determinants vary between conventional and Islamic banks in different time

periods. We separately consider the entire period (2006–2013), during crisis period (2007–2009), and post-crisis period (2010–2013). This paper makes several important contributions to the literature on bank margins in several ways. First, we provide new insights on the determinants of margins during and after the crisis. Second, we examine the factors determining the margins for both conventional and Islamic banks and can thus compare the results for both types of banks. Third, unlike other papers, we focus our analysis on countries where Islamic banking is systemically important.

LITERATURE REVIEW

Empirical research to capture the costs of financial intermediation in banking is mainly based on the dealership model of Ho and Saunders (1981) where the bank is viewed as a risk averse dealer in the credit market. Following the dealership model, several cross-country and country level studies have been conducted to identify the determinants of bank margins with varying and conflicting results. To date, research has tended to focus on individual countries (Williams, 2007; Naceur & Kandil, 2009; Beck & Hesse, 2009; Trinugroho, Agusman, & Tarazi, 2014; Entrop, Memmel, Ruprecht, & Wilkens, 2015) or cross-countries (Saunders & Schumacher, 2000; Demirgüç-Kunt, Laeven, & Levine, 2004; Kasman, Tunc, Vardar, & Okan, 2010; Naceur & Omran, 2011; Sufian & Hassan, 2012; Poghosyan, 2013; Dietrich & Wanzenried, 2014; Islam & Nishiyama, 2016).

The existing literature suggests several factors that are likely to influence the costs of financial intermediation in the conventional banking sector. These could inter alia be bank-specific, market structure, macroeconomic, regulatory and institutional factors. Bank-specific factors such as default risk, credit risk, liquidity risk, operating costs, bank size, managerial efficiency, maturity transformation and risk aversion can have important repercussions on bank margins (Maudos & Fernández de Guevara, 2004; Poghosyan, 2010; Trinugroho et al., 2014; Entrop et al., 2015; Islam & Nishiyama, 2016). Focusing on ownership, Micco, Panizza and Yañez (2007) found that foreign banks in industrial countries have slightly lower margins than domestic private banks. Market structure, such as competition and market concentration, also contributes to the margins (Hossain, 2012; Trinugroho et al., 2014). Macroeconomic variables such as inflation, growth rate, tax rate, and exchange rate play an important role in determining the margins (Maudos & Solís, 2009; Chortareas et al., 2012; Soedarmono & Tarazi, 2013). Furthermore, Poghosyan (2013) found that the rule of law, regulatory quality, control of corruption and reserve requirement are important in explaining the margins.

With regards to crisis, Dietrich and Wanzenried (2011) investigated the impact of crisis on bank profitability of commercial banks in Switzerland over the 1999–2009 period. They considered three different measures of profitability, namely return on equity, return on assets and net interest margins. The results show that larger banks have lower margins than smaller banks during the crisis. Das (2013) assessed the impact of financial crisis on bank margins in Indian banks for the 1992–2010 period taking into account the impact of ownership specifically for the public sector, new private sector and foreign banks. The author demonstrated that public sector banks' margins reduce significantly during crisis compared to other ownership types. Furthermore, banks with high capitalisation and liquidity display higher margins during crisis.

For comparative analysis, Hutapea and Kasri (2010) evaluated the margins of Islamic and conventional banks in Indonesia and found a negative relationship between margins and interest rate volatility. Abedifar, Molyneux and Tarazi (2013) failed to find evidence that Islamic banks charge rents to customers in terms of higher financing or lower deposit rates for offering Shariah compliant products. Sun, Hassan, Hassan and Ramadilli (2014) evaluated cross-country data of conventional banks and Islamic banks in the Organisation of Islamic Cooperation (OIC) countries and found that operating costs and capital adequacy are key determinants of intermediation margins for both conventional banks and Islamic banks. Sun et al. (2017) suggested that conventional and Islamic banks in a dual banking system are not significantly different. Recently, Lee and Isa (2017) found that there are significant similarities with minor differences in terms of determinants of bank margins between conventional and Islamic banks in Malaysia. However, the studies only dealt with the relationship between microeconomic factors and margins without capturing the influence of the external factors and the crisis.

To conclude, the empirical literature detailed above suggests a number of factors that are likely to influence the margins across countries. However, the role of the global financial crisis on the determinants of margins in a dual banking system has not been adequately dealt with. Furthermore, there is scant empirical evidence on the effect of the crisis in countries where Islamic banking is systemically important. Therefore, this paper sheds light on the behaviour of Islamic and conventional banks' margins during and post-crisis.

METHODOLOGY AND DATA

Empirical Model

In order to analyse the impact of the crisis on margins, the empirical model is specified as follows:

$$NFM_{it} = \alpha_i + \beta_1 NFM_{it-1} \beta_2 X_{it} + \beta_3 CrisisDummy + \varepsilon_{it} \quad (1)$$

where *i* and *t* refer to bank and time, respectively. The dependent variable, *NFM/NIM* represents net financing/interest margins. NFM_{it-1} is the lagged dependent variable, X_{it} are the explanatory variables and ε_{it} is the residual. We include the crisis dummy, taking the value of one for the crisis period (2007–2009) to capture the impact of crisis on the margins.

Empirical Variables

The dependent variable used in this research is the net financing margin (Islamic bank)/net interest margin (conventional bank). We select the explanatory variables as suggested in the literature and examine the extent to which the determinants explain the margins based on different periods. The description of the variables, data sources, and the expected signs are presented in Table 1.

In line with previous research, we adopt the net interest margin as a measure of the cost of financial intermediation, which represents the charge required by the bank for providing financial intermediation services (Poghosyan, 2013). It is computed as the difference between interest income and interest expense to average earning assets (Saunders & Schumacher, 2000). As for Islamic banks, net financing margin is defined as the difference between financing income and income paid to depositors over average earning assets. The ratio measures the gap between income from financing and income distributed to depositors (Hutapea & Kasri, 2010).

Table 1
Description of the variables

Variables	Definition	Source	Expected sign
Net financing margin (Islamic bank)	Net financing income (financing income minus income paid to depositors) over average earning assets.	Bankscope	
Net interest margin (conventional bank)	Net interest income (interest income minus interest expense) over average earning assets.	Bankscope	
Overhead costs	Ratio of overhead costs to total assets.	Bankscope	+
Capital	Ratio of total equity to total assets.	Bankscope	+/–
Bank size	Logarithm of total assets.	Bankscope	+/–
Credit risk	Ratio of net loans to total assets.	Bankscope	+
Inflation	Consumer prices index.	WDI	+
Concentration	Assets of three largest banks to total banking assets in the country.	Worldbank	+/–
Regulatory quality	Index reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.	WGI	–

To proxy credit risk, we use the ratio of net loans to total assets. Banks with higher ratio are exposed to higher credit risk and are expected to charge higher margins to compensate for exposure to expected and unexpected credit risk (Kasman et al., 2010; Naceur & Omran, 2011).

Overhead costs are often considered important determinants of margins. As in most studies in banking, e.g. Maudos and Fernández de Guevara (2004), Beck and Hesse (2009) and Islam and Nishiyama (2016), we use the ratio of overhead costs to total assets. Banks demand higher margins to compensate the higher overhead costs. Hence, we expect a positive sign between overhead costs and margins.

We use equity to total assets ratio as a measure of capital strength. A higher ratio indicates that the bank is well capitalised with long-term bank solvency (Kasman et al., 2010). Capital is expected to be positively related to margins.

Bank size is measured by the logarithm of total bank assets. There are contrasting views on the relationship between size and margins. Larger banks are expected to impose greater margins to cover potential losses as the exposure to risk increases (Sufian & Hassan, 2012). Moreover, an increase in the size of the banks may reflect the monopoly power that enables banks to raise the cost of intermediation. In contrast, due to economies of scale, larger banks can offer lower margins than small banks (Maudos & Fernández de Guevara, 2004; Beck & Hesse, 2009).

To take into account the impact of macroeconomic uncertainty on margins, we use the inflation variable. Inflation rate is calculated as the rate of change in the consumer price index for each country. High inflation rates are generally associated with high interest rates and thus are reflected in higher margins (Demirgüç-Kunt et al., 2004; Beck & Hesse, 2009). Banks will charge a higher financing price leading to higher margins to cover the risk of default in a highly volatile economic environment. Inflation is expected to be positively related to margins.

We measure market concentration by the asset concentration ratio of the three largest banks in the country. The relationship between market concentration and margin is ambiguous. On the one hand, a highly concentrated banking market might enhance the market power of the bank and leads to higher intermediation margins (Demirgüç-Kunt et al., 2004; Maudos & Solís, 2009; Hossain, 2012). On the other hand, a concentrated banking sector might reflect high bank efficiency, which translates into lower margins (Naceur & Omran, 2011; Sufian & Hassan, 2012).

The regulatory quality index covers the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development (Kaufmann, Kraay, & Mastruzzi, 2010). Stronger government regulation may contribute to lower margins (Poghosyan, 2013). We expect a negative relationship between regulatory quality and margins.

We include a crisis dummy to highlight the impact of the global financial crisis on margins. Crisis is a dummy variable that takes a value of one for the years 2007–2009 and zero otherwise.

Estimation Approach

For the estimation approach, this study employs the Generalized Method of Moments (GMM) estimator developed by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1998). GMM estimation has gained attention over the years and has provided significant theoretical and applied contributions to the econometrics literature. Following recent studies on bank margins for example by Carbó Valverde and Rodríguez Fernández (2007), Maudos and Solís (2009) and Soedarmono and Tarazi (2013), the use of a dynamic model is important to capture the persistence of margins over time. Therefore, this study considers that the current values of the bank margins may be determined by their previous values.

In estimating the margins, one of the challenges faced in the banking analysis is the endogeneity problem. Most of bank-specific variables are endogenous, which are possibly correlated with the error terms, leading to inconsistent estimates (Hossain, 2012). Another important challenge is the unobservable heterogeneity across banks, which is likely to be very large in the banking industry because of the differences in corporate governance that is difficult to measure (García-Herrero, Gavilá, & Santabárbara, 2009). Thus, the application of the GMM estimator allows us to control for the endogeneity, unobserved heterogeneity autocorrelation and the persistency of the margins to produce consistent and efficient estimates.

The system GMM estimator helps for the significant improvements in the efficiency of estimation that reduces potential biases (Arellano & Bover, 1995; Blundell & Bond, 1998). Furthermore, the system GMM is a more appropriate choice to capture the short panel that has a small numbers of years and a large number of cross sections (Beck, Levine, & Loayza, 2000). The system GMM allows the introduction of more instruments and provides more efficient estimates. In order to reduce the instrument proliferation problem, Roodman (2009) proposed collapsing the instrument matrix and selecting certain lags to be included in the instruments. We perform two diagnostic tests, namely the Hansen test for over-identifying restrictions and the autocorrelation test to determine the consistency and validity of the GMM estimator.

Data

Our sample is unbalanced panel dataset of 37 Islamic banks and 52 conventional banks operating in countries where Islamic banking is systemically important and accounts for more than 15% of total banking assets (IFSB, 2016). We select five countries that have the largest shares of global Islamic banking assets, namely the

United Arab Emirates (UAE) (8.14%), Kuwait (5.9%), Malaysia (9.3%), Qatar (5.1%), and Saudi Arabia (19.0%). We include only countries operating in a dual banking system and exclude Iran (37.3%), as the entire banking system is Islamic. As outlined in Table 2, there are 22 banks from the UAE, 10 banks from Kuwait, 37 banks from Malaysia, 9 banks from Qatar, and 11 banks from Saudi Arabia. We estimate the model for the entire time period, during crisis and post-crisis period.

Table 2
Banks in sample by country

	UAE	Kuwait	Malaysia	Qatar	Saudi Arabia
Number of Islamic banks	7	5	17	4	4
Number of conventional banks	15	5	20	5	7
Total number of banks	22	10	37	9	11

To construct the sample, the bank-level data are obtained from Bankscope database of Fitch Ratings and Bureau van Dijk that contains comprehensive information on banks across the globe. The macroeconomic and market structure data are obtained from the World Development Indicators (WDI) and Global Financial Development Database by the World Bank while the regulatory quality data are taken from Worldwide Governance Indicators (WGI).

Table 3
Summary statistics

Variables	Islamic banks			Conventional banks		
	Obs.	Mean	Std. dev.	Obs.	Mean	Std. dev.
Net financing margin/ Net interest margin	276	3.62	1.35	467	3.14	1.09
Size (ln total assets)	276	15.46	1.11	467	16.19	1.32
Capital	276	15.07	12.23	467	13.26	5.57
Credit risk	276	56.76	15.00	467	57.00	15.58
Overhead costs	276	1.83	1.93	467	1.33	0.62
Market concentration	276	73.22	13.60	467	69.55	14.23
Inflation	276	3.48	3.40	467	3.98	3.71
Regulatory quality	276	0.44	0.22	467	0.45	0.22

Notes: Obs. = number of observations; Std. dev. = standard deviation

Table 3 presents the summary statistics for the variables used in our analysis. On average, the Islamic banks have substantially higher margins (3.62%) than the conventional banks (3.14%) over the entire period. We also observe that the size of the Islamic banks (15.46%) on average is smaller than the conventional banks (16.19%). Islamic banks are better capitalised than conventional banks where equity over total assets on average is 15.07%. Further, the Islamic banks exhibit higher overhead costs (1.83%) than the conventional banks (1.33%).

EMPIRICAL RESULTS

In this section, we provide separate estimations for the three different periods. First, we estimate the model for the entire period from 2006 to 2013 in Table 4. Then, we split the sample into two time periods, namely during crisis including years 2007 to 2009 in Table 5 and post-crisis from 2010 to 2013 in Table 6. The first and second columns report for Islamic banks and conventional banks respectively. The number of observations, number of banks and number of instruments for each regression are presented at the bottom of the tables. The results show that the Hansen test value is insignificant implying no evidence of over-identifying restrictions. The value test for second-order autocorrelation AR (2) indicates that the model is valid. The magnitude and significance of the coefficient of the lagged dependent variable suggest persistency in margins and confirm the use of a dynamic model. Overall, we find some significant differences between Islamic and conventional banks for the three different periods.

Table 4 presents the results for Islamic and conventional banks for the entire period of study from 2006 to 2013. The results suggest that size has a significant and negative impact on the margins of Islamic banks. It does not significantly affect the conventional banks. Larger Islamic banks are likely to have lower margins as they are able to benefit from economies of scale and advanced technology. This result is in line with the findings of Lee and Isa (2017). The results underline the importance of regulatory quality on margins of Islamic banks compared to conventional banks. The regulatory quality has a negative and significant effect on margins of Islamic banks reflecting that government policies and regulations could help in lowering the margins of Islamic banks. This result confirms the findings of Poghosyan (2013) for conventional banks in low income countries.

Conventional banks incur higher overhead costs, subsequently leading to higher margins. Bureaucratic processes and higher management costs may reduce operational efficiency of business operations. Conventional banks tend to pass the costs to the customers in the form of higher margins. This result supports the

findings of Beck and Hesse (2009), suggesting that larger branch networks lead to higher costs of operation.

Table 4
Islamic vs conventional banks' margins for entire period (2006–2013)

	Islamic banks	Conventional banks
L. Margin	0.552***	0.737***
	(3.89)	(4.25)
Size	–0.541**	–0.110
	(–2.38)	(–0.93)
Capital	–0.0123	–0.00203
	(–0.62)	(–0.12)
Credit risk	0.0157	0.0132**
	(1.59)	(2.22)
Overhead costs	0.136	0.309*
	(0.58)	(1.65)
Concentration	0.00292	0.00581*
	(0.22)	(1.66)
Inflation	0.00426	–0.00182
	(0.29)	(–0.14)
Regulatory quality	–1.066*	0.0480
	(–1.73)	(0.29)
Crisis	0.350*	0.0516
	(1.90)	(0.80)
Constant	9.239***	1.011
	(2.73)	(0.47)
Number of observations	239	415
Number of banks	37	52
Number of instrument	28	28
Hansen test *p*-value	0.438	0.283
AR(1) *p*-value	0.102	0.0109
AR(2) *p*-value	0.359	0.725

Note: Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

We find evidence that credit risk is positively and significantly related to the conventional banks' margins. One possible reason could be that conventional banks focusing on loans are less diversified and exposed to greater degree of credit risk. Thus, the banks charge higher margins to compensate the credit risk. Diversification may reduce the effects of risk on margins. The result is consistent

with the findings of Kasman et al. (2010), indicating that banks tend to impose higher margins to compensate for exposure to expected and unexpected credit risk.

Market concentration is positively and significantly related to the margins of conventional banks. Conventional banks with higher market power may enlarge monopoly profits by charging higher loan rates and offering lower deposit rates that lead to higher intermediation margins. This result is similar with the results of previous studies by Demirgüç-Kunt et al. (2004) and Maudos and Solís (2009). In contrast, the result reveals that market concentration seems to have no significant impact on the margins of Islamic banks. This reflects the inability of Islamic banks to exploit market concentration to increase their margins.

Further, we examine the impact of the crisis on both types of banks. Interestingly, the crisis dummy has a positive and significant impact on Islamic banks' margins. The coefficient of the crisis is 0.350, implying the Islamic banks' margins increased by 35% during the crisis. The findings suggest that the crisis may have exposed Islamic banks to higher margins. The effect of the crisis caused Islamic banks to be more conservative in their operations. Islamic banks were more conservative in their financing portfolio during the crisis because of weaknesses in risk management practices. Islamic banks still lack effective risk management practices for liquidity risk and rate of return risk that may threaten their sustainability during crisis (Rosman & Rahman, 2014). The higher margins serve as an additional cushion protecting Islamic banks against external shocks in volatile and uncertain market conditions. In contrast, conventional banks' margins were not significantly affected by the crisis. Conventional banks seem to be able to withstand financial shocks in developing countries due to limited contagion effect compared to developed countries.

The results in Table 5 uncover notable differences in the behaviour of Islamic and conventional banks during the crisis period. Based on the results, two key findings emerge from our analysis. First, overhead costs enter positively and significantly into Islamic banks' margins. The impact of overhead costs is more pronounced in Islamic banks than in conventional banks during the crisis. This result is in contrast with the entire period's findings where overhead costs appear to be significant determinant of margins in conventional banks. Furthermore, the higher overhead costs during the crisis could stem from managerial inefficiencies in Islamic banks' operations. Lack of management skills, risk management, labor productivity, technical expertise and technology would imply greater inefficiency, causing Islamic banks to be more vulnerable to financial shocks. They may demand higher margins to compensate for the riskier financing associated with

higher monitoring and control costs. Ahmad and Abdul Rahman (2012) showed that conventional banks are more efficient than Islamic banks, mainly due to managerial efficiency and technological advancement.

Table 5
Estimation results during crisis (2007–2009)

	Islamic banks	Conventional banks
L. Margin	0.748***	0.804***
	(2.79)	(3.59)
Size	0.0564	–0.210
	(0.14)	(–0.63)
Capital	0.0277	–0.0117
	(0.63)	(–0.54)
Credit risk	0.0162	0.0126**
	(1.50)	(2.35)
Overhead costs	0.622**	0.287
	(2.12)	(0.84)
Concentration	0.00358	0.00600
	(0.12)	(0.47)
Inflation	0.0164	–0.00684
	(1.08)	(–0.63)
Regulatory quality	1.083	0.0656
	(0.75)	(0.20)
Constant	–2.752	2.597
	(–0.42)	(0.51)
Number of observations	79	156
Number of banks	31	52
Number of instrument	16	16
Hansen test *p*-value	0.795	0.499
AR(1) *p*-value	0.374	0.0512
AR(2) *p*-value	0.437	0.235

Note: Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0$.

Second, the results reveal that credit risk tends to influence the conventional banks' margins during crisis. In an extremely risky environment, conventional banks generate more risk through lending activities due to higher default rates of bank loans. The business model and risk appetite of conventional banks may not warrant risky financing during crisis. Accordingly, conventional banks tend to tighten their credit policies during crisis by increasing financing rate and reducing deposit rate to serve as a premium charged to riskier borrowers. Conventional

banks might transfer the risk to the customers in the form of higher margins. The higher margins serve as an additional cushion protecting conventional banks against external shocks in volatile and uncertain market conditions.

Table 6
Estimation results post-crisis (2010–2013)

	Islamic banks	Conventional banks
L. Margin	0.546***	0.586***
	(4.90)	(3.21)
Size	–0.680**	–0.173
	(–2.56)	(–0.81)
Capital	–0.0195	0.0321
	(–1.23)	(1.55)
Credit risk	0.00777	0.0176*
	(0.66)	(1.70)
Overhead costs	–0.0510	0.206
	(–0.24)	(0.48)
Concentration	–0.00619	0.00769*
	(–0.87)	(1.84)
Inflation	–0.150**	–0.0115
	(–2.44)	(–0.37)
Regulatory quality	–1.111**	0.0167
	(–2.08)	(0.07)
Constant	13.35***	1.805
	(3.15)	(0.46)
Number of observations	143	208
Number of banks	37	52
Number of instrument	20	20
Hansen test *p*-value	0.708	0.124
AR(1) *p*-value	0.0185	0.0472
AR(2) *p*-value	0.962	0.830

Note: Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6 reports the results analysis for the post-crisis period. Credit risk and market concentration consistently play an important role in determining the margins of conventional banks post-crisis. Another striking implication of the results is that inflation and margins of Islamic banks are negatively and significantly related. The findings seem unexpected and contradict with previous studies by Demirgüç-Kunt et al. (2004) and Beck and Hesse (2009), which suggest that banks tend to charge higher financing rates due to the risk of default in an

inflationary environment. One possible reason is that Islamic banks might try to attract customers to use Islamic banking facilities by offering favorable financing rates despite highly volatile economic environment thus leading to lower margins. Naceur and Kandil (2009) found negative impact of inflation on margins of Egyptian banks, indicating higher inflation is associated with higher uncertainty and reduces the demand for credit and bank margins. Size remains significant for Islamic banks confirming the benefits of economies of scale. Another important finding that emerges is that regulatory quality has significant impact in lowering the Islamic banks' margins after the financial crisis period.

The findings provide some interesting insights on the determinants of margins of Islamic and conventional banks during crisis and post-crisis periods. The behaviour of Islamic banks differs from conventional banks in terms of determinants between these two periods. During the post-crisis period, regulatory quality is essential in narrowing the margins of Islamic banks. Policy direction towards enhancing the resilience of the financial system during crisis probably have improved the intermediation efficiency of Islamic banks after the crisis, which translates to lower margins. Furthermore, the regulatory reforms introduced in Basel after the crisis to foster financial stability may help to strengthen the Islamic banking operations. The analysis on the impact of overhead costs for Islamic banks during the crisis shows the effect is positive and significant. In contrast, this variable seems to have no impact on margins of Islamic banks after the crisis period. These results highlight the important role of prudent cost management particularly on banking infrastructure spending after the crisis period that may help to improve the operational efficiency of Islamic banks.

CONCLUSION

This paper provides a comparative analysis on the impact of crisis on the behavior of Islamic and conventional banks' margins over the period of 2006 to 2013. Our sample consists of a panel dataset of systemically important Islamic banking sector in selected countries, namely the United Arab Emirates, Kuwait, Malaysia, Qatar and Saudi Arabia. In order to have a better understanding on the impact of the crisis on the margins, we estimated the sample into three time periods, namely entire period (2006–2013), during crisis (2007–2009) and post-crisis (2010–2013) using GMM estimator technique.

Our main findings are as per the following. The findings indicate consistently that size and regulatory quality are important determinants of Islamic banks' margins for the entire period and post-crisis. However, inflation only plays an important role in influencing the margins of Islamic banks after the crisis

period. Overhead costs have a positive impact on margins of Islamic banks during crisis but not in conventional banks. We find evidence that credit risk and market concentration are important determinants for conventional banks for the entire period and post-crisis. Interestingly, the results reveal a different impact of the crisis on both types of banks. The impact of the crisis on margins is significant and positive in Islamic banks. In contrast, conventional banks' margins were not significantly affected by the crisis.

The impact of crisis provides important lessons to the regulators, policy makers and bank managers in restoring financial sustainability. From policy perspective, the findings suggest that regulators need to focus on strengthening the regulatory framework that promotes greater financial intermediation efficiency and stability in the banking system. An effective crisis management and regulatory framework are important to promote a more resilient banking system. For policy makers, particular attention needs to be paid in providing sound risk management framework by improving risk management tools and practices in banking operations. The policies need to address the unique characteristics of Islamic banking in terms of the deposits, cost, capital adequacy and risk. Furthermore, greater competition by improving the competitive environment in the dual banking system is required for efficient intermediation services. Islamic banking licenses should be generously awarded and foreign Islamic banks' entry should be promoted that may dampen the margins. For bank managers, efforts to bring down operating costs are pertinent to strengthen the resilience of the Islamic banks during crisis specifically in improving their managerial ability, documentation and technological capabilities. It is also crucial to diversify their banks' financing portfolio and embark on new business lines and markets that can lower the cost of financing. The findings highlight the importance of scale effect to Islamic banks' margins. They need to expand their size of operations to benefit from economies of scale and diversification advantage that can reduce the cost of intermediation. Moreover, consolidation will create differentiation in the market through specialisation and cost efficiency that can result in lower margins.

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FIRM LEVEL, OWNERSHIP CONCENTRATION AND INDUSTRY LEVEL DETERMINANTS OF CAPITAL STRUCTURE IN AN EMERGING MARKET: INDONESIA EVIDENCE

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ABSTRACT

This study evaluates the impact of firm and industry level determinants plus ownership concentration on the capital structure decisions in Indonesia. This study finds that growing firms seem to employ high level of debt, taking advantage of the tax shield as explained by the trade-off theory. However, if the firms are operating in a highly dynamic environment they tend to take on less debt as to avoid bankruptcy risk. Known to be in a highly concentrated ownership structure, firms in Indonesia opt to debt financing perhaps to act as a controlling mechanism to mitigate agency conflicts that may exist between the large controlling shareholders and the minority. Aged and highly profitable firms with high tangible and intangible assets and liquidity level operating in a high munificence environment follow the pecking order theory. The insights on the impact of industry characteristics are novel especially on emerging market thus fill the gap in the literature.

Keywords: capital structure, emerging market, ownership concentration, Indonesia

INTRODUCTION

Capital structure decision is when a firm chooses its financing method between debt and equity or the best mixture of both to finance its operations and future

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investments and at the same time aiming at reducing its cost of capital. It has been the most debatable issue in finance literature globally regardless of the economic environment, developed or emerging markets and has received tremendous attention from researchers and policy makers over the decades due to its influence over firm value.

Focussing on the emerging market in the East Asian region, these markets were badly hit by the 1997 Asian financial crisis. This turmoil has been frequently documented to be attributed by a very poor corporate governance system (Carney & Child, 2013). The need for a more strategic and effective corporate governance becomes paramount over the years and ownership structure is one of the crucial mechanisms needs to be scrutinised and studied. As documented by Claessens, Djankov, Fan and Lang (2002), East Asian markets are known with the reputation of having a high level of ownership concentration and family control. In such an environment where high ownership concentration and family control are prevalent, the agency problems may arise between the controlling shareholder and minority shareholders and can consequently give a significant impact on the financial decision of the firms.

Therefore, by using a set of recent data from the year 2000–2014 over 402 firms, this study firstly examines the impact of commonly cited firm level determinants on the financing choices of firms in Indonesia, being an emerging market; secondly investigates the influence of industry characteristics: the industry dynamism, industry munificence and industry concentration on leverage; thirdly examines the impact of ownership structure on the financing decision of the Indonesian firms. Indonesia's capital market is featured by higher ownership concentration and family control (Claessens et al., 2002; Carney & Child, 2013), weaker legal system and investor protection, and weaker disclosure requirements (La Porta, Lopez de Silanez, & Shleifer, 1999; Claessens & Fan, 2002) thus offers a unique case for this study. Finally, to analyse the governing capital structure theories to better explain the findings. These objectives shine out this study from the existing once and offer policy implication to not just Indonesia but other economies as well.

The rest of the study proceeds as follows. The next section deals with literature review of related theories, related studies of capital structure, a brief explanation of the determinants examined with the development of hypotheses. Then follows by the data and methodology employed for the purpose of this study. Later comes the analysis of the findings, discussion and the last section concludes the study.

LITERATURE REVIEW

Extensive studies have been carried out in understanding the capital structure of firms ever since Modigliani and Miller (1958), later referred to as the MM irrelevance theory, argue that in an efficient and perfect market capital structure is irrelevant to the value of the firm and firms should be indifferent in choosing between debt and equity financing. Streams of capital structure studies emerge in the literature mostly arguing that the proposition is unrealistic and there are in fact unavoidable frictions like taxes in the capital market. In 1963, they then modify and include tax in their study and claim that the presence of tax shield on debt has significant influence on the value of firm. This documentation has initiated the introduction of new theories to explain the variations in debt ratios across firms. The trade-off theory (TOT) emphasises on the trade-off between the benefit of debt due to debt tax shield and the cost of bankruptcy. The pecking order theory (POT) promotes the use of internal rather than external resources, and secured rather than unsecured securities (Myers & Majluf, 1984). The financing method chosen signals the credibility of the manager and the performance of the firm.

The agency theory on the other hand, argues that optimal capital structure can be achieved when the costs arising from conflict between the shareholders and managers known as agency conflict is mitigated (Jensen & Meckling, 1976). Good corporate governance is therefore crucial to mitigate this agency conflict and ownership structure is one mechanism that helps in ironing off the conflicts between shareholders and the managers as well. In the case of concentrated ownership, the large shareholder, being the controlling party has greater opportunities to expropriate the firm's wealth at the expense of the minority shareholders (Shleifer & Vishny, 1997). The agency theory elaborates that being the controlling shareholders they enjoy substantial private benefit which may lead to misalignments of interests between the controlling shareholder and minority shareholders. Firms with a higher level of ownership concentration, as well as in less-developed markets with weaker minority shareholders protection are more susceptible to be affected by this agency problem (La Porta et al., 1999).

Later the years, Baker and Wurgler (2002) argue that current capital structure is actually the cumulative outcome of past attempts to time the market. This argument introduces the market timing theory and stresses that market valuation impacts capital structure persistently.

Past Studies on Indonesia

Indonesia underwent several reformations in its financial system as its financial market activities decades ago were dull and there were a lot of flaws in the firms'

financing choices with state-owned banks dominating the debt market and over shadowed the capital market (Moosa & Li, 2012). It was apparent that Indonesian financial systems then needed robust deregulations and reformations. The government control over initial offering prices and the daily movement of stock prices was lifted, providing a fair game between the state and private banks, the choices between debt and equity as well as between internal and external sources of equity. At present after several financial reformations and severe experiences during several financial crises, the Organisation Economic Cooperation and Development (OECD) (2016) predicts in the long term perspective of 2016 to 2020, Indonesia's average real growth rate is predicted to remain high at 5.5% per year, higher than the average real growth rate of 5.2% of ASEAN (10 countries).

Ang, Fatemi and Tourani (1997) conduct a survey on capital structure and dividend policy on the CEOs of all 180 firms listed on the IDX. Firms are found to have good access to various sources of funds like debt and equities. Nevertheless, that access is not because of information asymmetry but because of fairly reasonable interest rates, thus no influence of the POT in this case. Ruslim (2009) analyses a sample of 18 firms of Indonesian firms for the period of 2000 to 2006, and finds that profitability has no significant impact on the capital structure of firms in Indonesia, again implying no evidence of POT influence in the financing decisions in Indonesia. Bunkanwanicha, Gupta and Rokhim (2008), on a different strand, incorporate corporate governance arrangement in their study on Indonesia and find that weaker corporate governance seem to have higher debt level especially during financial crisis. They also highlight that country level determinants could also impact empirical results.

Moosa and Li (2012) reveal that some firm level determinants may not have similar impacts on the firms' capital structure as evidenced in the literature. They also discover that the financial reformation experienced by Indonesia have indeed eliminated the inefficient corporate financial policies and financial market during the dominance of state banks.

Saadah and Prijadi (2012) examine the capital structure of 53 manufacturing firms in Indonesia over a study period from 2001–2008. Using the determinants representing the main capital structure theories, they reveal that the TOT and POT are quite pronounced, working side by side in the financing decisions of the firms. This supports Myers (2003) statement that a collaboration of theories is needed to better explain the financing choices of firms. Hardiyanto, Achsani, Sembel and Maulana (2014) using a panel data from year 2005 to 2011 on 228 companies, conclude that firms in Indonesia have specific level of debt ratio in their capital structure and try to maintain that debt ratio level for

value maximisation. They also argue that certain firm level determinants do play significant roles in maintaining the debt ratio, thus, managers should take into account the costs that the firm may incur should they change or adjust their capital structure in striving for maximum firm value.

Very recently, Haron (2018) investigates 402 listed companies using a panel data from year 2000 to 2014 concludes that POT has significant influence on the capital structure of firms in Indonesia, with several determinants affecting the financing decisions. This is perhaps, due to the effects of the financial deregulations taken place where internal financing is also significantly preferred in financing investments and projects, not merely bank loan as previously discussed.

Literature on Indonesia has also been compiling evidences where firms with highly concentrated ownership structure face agency problems between the controlling shareholders and minority shareholders (see for examples Driffield, Mahambare, & Pal, 2007; Siregar & Utama, 2008; Carney & Hart, 2015; Utama, Utama, & Amarullah, 2017). This study therefore reveals the insights on how ownership concentration in Indonesia impacts the financing decisions and can perhaps be inferred to by her neighbouring countries for they are reported to share similar ownership concentration structure thus fills the gap in the literature.

DETERMINANTS OF CAPITAL STRUCTURE AND HYPOTHESES DEVELOPMENT

We incorporate firm and industry level determinants plus ownership structure in this study as to understand further the capital structure of firms in Indonesia.

Non Debt Tax Shield (NDTS)

NDTS according to Frank and Goyal (2009) should be negatively correlated with leverage as NDTS is the alternative to tax shields provided by debt financing. This is evidenced by Ameer (2010) on Indonesian firms. NDTS is represented by annual depreciation expenses to total asset (Frank & Goyal, 2009). We hypothesise that:

H_1: NDTS has a negative influence on capital structure.

Firm Size

Larger firms are seen to have better access to bigger debt consumption as they are less affected by information asymmetry problems and are more diversified thus lesser tendency to fail, indicating a positive relationship which supports the

TOT. This is evidenced in De Jong, Kabir and Nguyen (2008) and Ameer (2010). However, Haron (2016) depicts significant negative relationship between size and leverage due to the effects of Indonesian financial market deregulation activities where the control over initial offering prices and the daily movement of stock prices were lifted thus encouraged large firms to issue equity over debt. Firm size is represented by log of total asset (Deesomsak, Paudyal, & Pescetto, 2009; Haron, 2014). The hypothesis is that:

H_2: Firm size has a positive influence on capital structure.

Business Risk

Earnings volatility is commonly translated as business risk of firms. Higher earnings volatility may increase the risk of default on debt payments. Therefore debt financing should be avoided indicating a negative relationship with leverage as evidenced by Ameer (2010) and Haron (2016). Firms with high degree of risk may prefer equity issuance to debt for business expansion and competencies. Business risk is represented by yearly change in the firm EBIT (Deesomsak et al., 2009; Haron, 2016). Here, the hypothesis is:

H_3: Business risk has a negative influence on capital structure.

Tangibility

Lenders are more willing to lend to firms with high tangible assets as these assets are easier to repossess in bankruptcy, thus a positive relationship is anticipated between tangible assets and leverage as explained by TOT and supported by Bunkanwanicha et al. (2008) and Moosa and Li (2012). Degryse, Goeij and Kappert (2010) argues that the positive effect of tangibility on total debt comes entirely from long-term debt as these tangible assets are used to secure long-term debt. Tangible assets are also found to negatively relate to leverage where firms that employ lots of tangible assets seem to rely more on internal funds generated from these assets, which is predicted by the POT (Haron, 2016). Based on the discussion above, Degryse et al. (2010) and Qamar, Farooq, Afzal and Akhtar (2016) argue that short-term debt is negatively related with asset tangibility. Tangible asset is represented by net fixed asset over total asset (Rajan & Zingales, 1995; Haron, 2016). As for tangibility, the hypothesis is that:

H_4: Asset tangibility has a positive influence on capital structure.

Liquidity

When a firm is said to be liquid, the internal funds will be quite substantial thus the need for debt financing will be lessen. This is explained well by POT that firms with high liquidity needs less debt financing and opt to internal funding given the huge retained earnings of the firm. This reflects a negative relationship between liquidity and leverage. Firm liquidity is represented by current asset to current liabilities (Deesomsak et al., 2009; Moosa & Li, 2012). The hypothesis is that:

H_5: Firm liquidity has a negative influence on capital structure.

Profitability

Asymmetric information problem is a concern and can affect the financing choice of a firm. Managers of firms with high profit and cash flows might opt to internal resources first when deciding on investment financing as a mean to mitigate information asymmetry (Myers & Majluf, 1984) as these are the cheapest funds rather than using external financing, either debt or equity. Hence, profitability is expected to affect leverage negatively indicating the support of the POT (Bunkanwanicha et al. 2008; Haron, 2016). Firm's profitability is represented by EBIT over total asset (Rajan & Zingales, 1995; Haron, 2016). Thus, the hypothesis for this variable is:

H_6: Firm's profitability has a negative influence on capital structure.

Intangibility

Intangible assets like copyright, goodwill, patent, trade mark, and research and development costs do have significant impact on capital structure of firms (Rajan & Zingales, 1995). The TOT and the agency theory suggest a negative association between intangible assets and leverage, while the POT implies that firms with more intangible assets confront more asymmetric information problem and thus use more debt financing. Loumioti (2011) find that intangible assets do help firms in the US in confronting information asymmetry problems as intangible assets like goodwill is capable to increase borrower's access to debt in order to mitigate this problem. Intangibility is measured by the ratio of intangible assets to total assets (Chen & Strange, 2005). We hypothesise that:

H_7: Intangibility has a positive influence on capital structure.

Growth

Firms with good growth record require huge funds for expansion. The agency theory explains that growth firms will choose to issue equities to fund their operations and investments as a signal to the outsiders that they are not facing any underinvestment and asset substitution problems. Therefore, growth is expected to relate negatively with leverage. POT also sees a negative relationship between growth and leverage as being large firms they are expected to have substantial retained earnings. When retained earnings are much higher than investments and growth expenses, debt ratio will consequently decrease (Myers & Majluf, 1984; De Jong et al., 2008). Growth is represented by market value of equity over book value of equity (Rajan & Zingales, 1995). Following literature, we hypothesise:

H_8: Firm growth has a negative influence on capital structure.

Age

With regard to age, our hypothesis is that the older a firm is, the more it is able to accumulate funds and the less it will need to borrow either long-term or short-term. In other words, a new firm will not have time to retain funds and may be forced to borrow. Consequently age is likely to be negatively related to leverage (Chen & Strange, 2005). Older firms have longer track records and therefore a higher reputational value. Age of firm is measured from the year of listing on the stock exchange (Chen & Strange, 2005). As this study aims to examine the influence of age of a listed firm on its leverage, how long has it become a listed firm will better reflect the impact of age on the leverage of a listed firm comparative to from the year of its establishment. We hypothesise:

H_9: Age has a negative influence on capital structure.

Share Price Performance

Equity issuance will be preferred if a firm accumulates a strong share price performance with the present market values comparatively higher than the past market values. On the other hand, firm will repurchase equity if the situation is otherwise. This notion is based on the market timing theory, indicating a negative relationship between share price performance and leverage and is evidenced by Setyawan and Budi (2012) and Haron (2016). Share price performance is represented by yearly change in year-end share price (Deesomsak et al., 2009; Haron, 2016). The hypothesis for this variable is that:

H_{10}: Share price performance has a negative influence on capital structure.

Ownership Concentration

Large shareholders have the incentive and power to monitor and control the action of managers (Shleifer & Vishny, 1986). Debt acts as the controlling mechanism making it difficult for managers to adjust capital structure according to their own interests. Besides, shareholders may prefer debt than equity financing to avoid ownership dilution, and thus retain control on the firm. This suggests a positive relationship between ownership concentration and capital structure. Several studies also find positive relationship between concentrated ownership and leverage like Driffield et al. (2007), Li, Yue and Zhao (2009), Cespedes, Gonzalez and Molina (2010) and Alimehmeti and Paletta (2012).

In contrast, large shareholders with concentrated ownership can act as a controlling mechanism instead of debt to monitor management activities (Jensen & Meckling, 1976). Thus a negative relationship between ownership concentration and leverage is expected. Ownership concentration is measured based on the shareholdings greater than 5% (Siregar & Utama, 2008; Utama et al., 2017; Haron, 2018). The hypothesis for this variable is that:

H_{11}: Ownership concentration has a positive influence on capital structure.

Munificence

Munificence is the ability of the environment in the industry to ensure sustainability of a firm (Kayo & Kimura, 2011). This means, an industry with high munificence has plenty of resources but with low competition hence, increases profitability of the firm. In this type of industry environment, firms will consequently gain high level of profit. A munificence industry promotes higher profitability. Kayo and Kimura (2011) infer the relationship between munificence and profitability with profitability and leverage and record a negative relationship thus supporting the POT explanation. Munificence is measured by first, regressing time against sales of an industry over the five years of the period under analysis to generate the regression slope coefficient and second, taking the ratio of the regression slope coefficient to the mean value of sales over the same period (Kayo & Kimura, 2011). Following literature, we hypothesise that:

H_{12}: Munificence has significant effect on capital structure.

Industry Dynamism

Industry dynamism reflects the degree of instability or unpredictability of an industry. The concept of industry dynamism, according to Ferri and Jones (1979) to a certain extent can be interpreted as risk where firms operating in a dynamic less predictable environment would engage with lesser debt. The more dynamic the industry, the riskier it gets, the lower the leverage level of the firm (Ferri & Jones, 1979). Kayo and Kimura (2011) find a negative relationship between industry dynamism and leverage. Industry dynamism is measured by dividing the standard error of the munificence regression slope coefficient with the mean value of sales over the same period (Kayo & Kimura, 2011). The hypothesis is that:

H_{13}: Industry dynamism has a negative influence on capital structure.

Industry Concentration

The influence of industry concentration on firm leverage is measured using the Herfindahl–Hirshman Index (HHI). Highly concentrated industry (high HHI) consumes high level of debt (MacKay & Phillips, 2005). MacKay and Phillips also argue that profitability, size and risk are higher in a highly concentrated industry. Firms investing in high risks projects pursue high returns when debt is high. Thus a positive relationship is anticipated between HHI and leverage as explained by the TOT. However, Kayo and Kimura (2011) record a negative relationship between HHI and leverage indicating highly concentrated industry encourages firms to reduce the employment of debt due to the higher risk that may be translated with higher bankruptcy risks. HHI is measured based on the sum of the squares of market shares (sales) of firms within a given industry for the year (Kayo & Kimura, 2011). Based on literature, we hypothesise that:

H_{14}: Industry concentration (HHI) has significant effect on capital structure.

Table 1 summarises the variables, measurement, hypotheses and the expected signs of the relationships.

Table 1
Variables, measurement, hypothesis and expected signs

Variables	Measurement	Hypothesis	Expected sign
Independent variable			
Leverage	Total debt/Total asset		
	Long term debt/Total asset		
	Short term debt/Total asset		
Explanatory variables			
Firm variable			
Non-debt tax shield	Annual depreciation expenses/ Total asset	H_1	Negative
Firm size	Log total asset	H_2	Positive
Business risk	Yearly change in firm EBIT	H_3	Negative
Tangibility	Net fixed asset/Total asset	H_4	Positive
Liquidity	Current asset/Current liabilities	H_5	Negative
Profitability	EBIT/Total asset	H_6	Negative
Intangible asset	Intangible asset/Total asset	H_7	Positive
Growth	Market value equity/Book value equity	H_8	Negative
Age	Years since listing	H_9	Negative
Share price performance	Yearly change in year-end share price	H_{10}	Negative
Ownership concentration	Ownership with shareholdings greater than 5%	H_{11}	Positive
Industry variable			
Munificence	(1) regressing time against sales of an industry over the 5 years of the period under analysis and (2) taking the ratio of the regression slope coefficient to the mean value of sales over the same period	H_{12}	Positive/ Negative
Dynamism	Standard error of the munificence regression slope coefficient divided by the mean value of sales over the same period	H_{13}	Negative
Herfindahl–Hirshman Index (HHI)	Sum of the squares of market shares (sales) of firms within a given industry for the year	H_{14}	Positive/ Negative

DATA AND METHODOLOGY

Data

We analyse 402 non-financial listed Indonesian firms between 2000 and 2014 (4737 total observations) with firm data extracted from the Datastream. Financial firms (banks, insurance companies and investments trusts) are excluded from the sample, following the literature. The 402 sample firms consist of 75% out of 537 listed firms on the IDX (as at November, 2016) and this proportion could be regarded as the whole population of firms for generalisation purposes. The sample cover firms from various industries of listing including agriculture, consumer products, industrial, infrastructure and utilities, mining, properties, trade and services and miscellaneous industry. Table 2 describes the detail of the sample firms according to industries. Only firms with a minimum of three consecutive observations toward the end of the study period are included in the data set (Deesomsak et al., 2009; Haron, 2016), meaning the firms should at least be listed on the IDX from the year 2012. Unbalanced panel data is utilised due to the different listing dates of firms within the study period of 2000–2014.

Table 2
Number of firms and observations in each industry

Industry	Number of firms	Percentage	Number of observations
Agriculture	21	5.22	204
Consumer products	36	8.96	465
Industrial	62	15.42	814
Infrastructure and utilities	47	11.69	461
Mining	36	8.96	384
Properties	51	12.69	592
Trade and services	110	27.36	1279
Miscellaneous	39	9.70	538
Total sample	402	100	4737

Note: Industry classification is following the general industry listing of the Indonesia Stock Exchange.
Source: http://www.idx.co.id/

Methodology

Leverage in this study, is defined as the ratio of total debt to total asset $\left(\frac{\text{TD}}{\text{TA}}\right)$ (see, for examples, Bunkanwanicha et al., 2008; Seifert & Gonenc, 2016). To check for the consistency of the results on determinants of leverage $\left(\frac{\text{TD}}{\text{TA}}\right)$, we

also defined leverage as the ratio of long term debt to total asset $\left(\frac{\text{LTD}}{\text{TA}}\right)$ and short term debt to total asset $\left(\frac{\text{STD}}{\text{TA}}\right)$.

We employ a static panel data approach to estimate the parameters of interest and estimate the firm leverage with a set of firm level and industry level determinants. Under the static panel data approach, the observed leverage of firms is assumed to be the optimal leverage. To examine the determinants of leverage, the leverage function is specified as:

$$\begin{aligned} Lev_{it} &= \alpha + \beta_1 NDTS_{it} + \beta_2 SIZE_{it} + \beta_3 RISK_{it} + \beta_4 TANG_{it} \\ &+ \beta_5 LIQ_{it} + \beta_6 PROF_{it} + \beta_7 INTANG_{it} + \beta_8 GROW_{it} + \beta_9 AGE_{it} \\ &+ \beta_{10} SPP_{it} + \beta_{11} OWN_{it} + \beta_{12} MUN_t + \beta_{13} DYN_t + \beta_{14} HHI_t + \varepsilon_{it} \end{aligned} \quad (1)$$

where the dependent variable, Lev_{it}, represents the leverage level of firm i at time t, which is defined as $\frac{\text{TD}}{\text{TA}}$, $\frac{\text{LTD}}{\text{TA}}$ and $\frac{\text{STD}}{\text{TA}}$. Firm level determinants comprising of NDTS (non-debt tax shield), *SIZE* (firm size), *RISK* (business risk), *TANG* (asset tangibility), *LIQ* (liquidity), *PROF* (profitability), *INTANG* (intangibility), *GROW* (growth), *AGE* (firm age), *SPP* (share price performance), *OWN* (ownership concentration), and industry level determinants comprising of *MUN* (industry munificence), *DYN* (industry dynamism), *HHI* (industry concentration) and ε_{it} is the error term.

Based on Equation (1), if individual firm effects do not exist and all other assumptions are satisfied, ordinary least square (OLS) is sufficient as model estimation as it produces efficient and consistent parameters estimates. However, in the presence of individual firm effects, heterogeneity may influence OLS assumptions and the violation of assumptions renders OLS to be biased. Hence the OLS estimator is no longer best linear unbiased estimator (BLUE). Then panel data models such as fixed effects model (FEM) and random effects model (REM) provide better way to deal with these problems.

The FEM is estimated based on within effect estimation method and is expressed as follow.

$$Y_{it} = (\alpha + u_j + \lambda_t) + \beta_1 X_{1it} + \beta_2 X_{2it} + \ldots\ldots + \beta_k X_{kit} + \varepsilon_{it} \quad (2)$$

where u_j and λ_t denotes the individual and time effects respectively, together they represent that each firm is having different intercepts.

REM, unlike the FEM, the intercepts and slope of regresses are the same across individual firm. The REM can be written as follow.

$$Y_{it} = \alpha + \beta_1 X_{1it} + \beta_2 X_{2it} + \ldots\ldots + \beta_k X_{kit} + \varepsilon_{it} \quad (3)$$

where $\varepsilon_{it} = u_j + \lambda_t + v_{it}; u_j$ and λ_t denotes the individual and time effects respectively.

Through several model specification tests, the robust model that is the most appropriate for this study is identified among the three panel data models i.e. pooled OLS, FEM and REM. Accordingly, this study employed all the three tests, namely the Chow Test, Breusch and Pagan Lagrangian Multiplier Test (BP-LM) and Hausman Test in selecting the most appropriate model for this study.

We perform diagnosis check to ensure the basic OLS assumptions related to heteroscedasticity, autocorrelation and multicollinearity are not violated. If heteroscedasticity and autocorrelation problem arises, following Hoechle (2007), a robust standard error will be applied as a corrective measure to the problem. After performing the robust standard error, the standard error estimates in this study hence are robust to disturbances being heterocedastic and autocorrelated. As for multicollinearity, we performed the variance inflation factor (VIF) to check for possible multicollinearity between variables. Each variable should have a VIF of less than 10 to avoid multicollinearity problem.

In addition to the diagnostic tests mentioned above, we also perform endogeneity test on each of the independent variable (regressor) in the regression model (with leverage defined as TD/TA, LTD/TA, STD/TA). To test for endogeneity, following Samadeni, Withers and Certo (2014) and Seifert and Gonenc (2016), we first perform the FEM two-stage least square (2SLS) with instrumental variable with a regressor specified as endogenous in the regression. After performing the FEM 2SLS regression, we then perform the Durbin-Wu-Hausman test (DWH statistic) on the regressor that has been specified as endogenous and the same procedure is repeated on each regressor. Following the endogeneity test, if the specified endogenous variable is confirmed to be endogenous, we use instrumental variable to represent the endogenous variable(s) in the FEM regression (see for examples, Samadeni et al., 2014; Seifert & Gonenc, 2016). Instrumental variable is widely known as a solution to endogenous problem where the use of instrumental variable in multiple regressions helps to obtain consistent parameter estimates. We perform the Sargan-Hansen test (Hansen *J* statistic) to test the validity of the instrumental variable (null: the instrumental variable is valid).

ANALYSIS AND FINDINGS

Descriptive Statistics

Table 3 summarises the descriptive statistics of all variables in this study. Indonesian firms employ mean leverage of 0.3691, 0.1344 and 0.2673 of $\frac{TD}{TA}, \frac{LTD}{TA}$ and $\frac{STD}{TA}$ respectively in their capital structure. Short term debt is noticeably higher compared to long term debt employed by Indonesian firms during the period understudy. Ahsan, Man and Qureshi (2016) have also recorded a higher use of short term debt compared to long term debt among firms in emerging markets. Ownership concentration shows, on average 47.64% ownership exceeds 5% shareholding with the maximum and minimum of 100% and zero respectively. This statistic shows that the ownership structure of public Indonesian firms is highly concentrated. Utama et al. (2017) posit that it is quite prevalent for public firms in Indonesia to have only a few shareholders with substantially large holdings (i.e. at least 5%).

Table 3
Descriptive statistics (whole sample)

Variable	Mean	Maximum	Minimum	Median	Standard Deviation
TD/TA	0.3691	0.9020	0.0998	0.3355	0.1872
LTD/TA	0.1344	0.7931	0.0000	0.0644	0.1655
STD/TA	0.2673	0.8420	0.0998	0.2133	0.1642
NDTS	0.0310	0.6045	0.0000	0.0244	0.0384
Firm Size	11.5277	16.8969	4.1109	11.5955	1.7817
Risk	–0.0594	28.5000	–29.7739	–0.0275	3.0502
Tangibility	0.3922	0.9852	0.0000	0.3677	0.2504
Liquidity	2.1793	29.8679	0.1027	1.4378	2.6678
Profitability	0.0654	2.8310	–2.9565	0.0672	0.1791
Intangible	0.0164	0.9650	0.0000	0.0000	0.0621
Growth	8.3666	97.8479	0.6000	2.9101	14.2480
Age	15.4104	38.0000	3.0000	15.0000	7.6098
SPP	0.0058	2.7810	–4.8121	0.0010	0.2038
Ownership	0.4764	1.0000	0.0000	0.5700	0.3383
Munificence	0.1563	0.4041	0.0050	0.1534	0.0751
Dynamism	0.0544	0.1592	0.0081	0.0493	0.0310
HHI	0.1420	0.4841	0.0398	0.0961	0.1082

Notes: Number of all firms = 402; Number of observations = 4737 for each variable. SPP = Share Price Performance, HHI = Herfindahl–Hirshman Index.

Determinants of Leverage

After performing the three tests (Chow, BP-LM, Hausman) to determine the most appropriate model to be employed in explaining the relationship between leverages (total debt, long term debt and short term debt over total asset) and its determinants, it is found that FEM is the most appropriate model to explain the relationship. Hence, further discussions on the findings between leverage $\left(\frac{\text{TD}}{\text{TA}}\right)$ and its determinants are based on the FEM with instrumental variable to address the endogeneity issue. $\frac{\text{LTD}}{\text{TA}}$ and $\frac{\text{STD}}{\text{TA}}$ are used as a robustness check in order to examine the consistency of the results of determinants of leverage $\left(\frac{\text{TD}}{\text{TA}}\right)$.

Table 4
Determinants of leverage

Leverage	TD/TA	LTD/TA	STD/TA	
Explanatory variables	Fixed effects with instrumental variable	Fixed effects with instrumental variable	Fixed effects with instrumental variable	VIF
NDTS	–0.6832 [–1.00]	–0.7466 [–1.54]	0.0635 [0.20]	1.76
Size	–0.0631 [–1.37]	–0.0532* [–1.65]	–0.0099 [–0.53]	1.11
Risk	0.0000 [0.61]	–0.0001 [–1.64]	0.00018 [1.25]	1.01
Tangibility	–0.1683** [–2.20]	–0.0011 [–0.02]	–0.1672*** [–3.25]	1.27
Liquidity	–0.0004** [–1.97]	0.0002 [1.31]	–0.0005** [–2.35]	1.03
Profitability	–0.3900*** [–72.90]	–0.0036 [–0.97]	–0.3864*** [–116.51]	1.58
Intangible	–0.3480** [–2.53]	–0.0042 [–0.09]	–0.3438** [–2.65]	1.07
Growth	0.0001*** [3.98]	0.0001** [2.47]	0.0001*** [3.47]	1.09
Age	–0.0102*** [–3.06]	–0.0038 [–1.09]	–0.0067*** [–2.81]	1.09
SPP	–0.0154 [–1.23]	–0.0270* [–1.91]	0.0116 [0.70]	1.03
Ownership	0.0167** [2.01]	0.0158 [1.40]	–0.0063 [–0.49]	1.08

(*continue on next page*)

Table 4 (*continued*)

Leverage	TD/TA	LTD/TA	STD/TA	
Explanatory variables	Fixed effects with instrumental variable	Fixed effects with instrumental variable	Fixed effects with instrumental variable	VIF
Munificence	–0.2586*** [–3.40]	–0.1985*** [–3.47]	–0.0602 [–1.07]	1.12
Dynamism	–0.5873** [–2.31]	–0.3006* [–1.73]	–0.2865 [–1.31]	1.05
HHI	–0.0242 [–0.10]	–0.2323 [–1.45]	0.2080 [0.131]	1.06
R^2	0.9424	0.0556	0.9691	
F-stat	9100.30***	5.35***	19853.83***	
Hansen *J*-stat	5.947	4.216	4.39	
p-value	0.1142	0.2391	0.2223	
Observations	4737	4737	4737	

Notes: The *z*-statistics in parentheses are the *z*-values are robust standard errors adjusted for heteroscedasticity and autocorrelation; ***, **, * denotes significant at 0.01, 0.05 and 0.10 levels respectively. Sargan-Hansen test (Hansen *J*-statistic) in FE (with Instrumental Variable) refers to the null: Instrumental Variable is valid. Multicollinearity test in the dataset is performed and no multicollinearity problem is found in the data since the variance inflation factor (VIF) of variables are less than 10 for TD/TA as the dependent variable, reported above. Similarly, VIF are less than 10 on variables when regress with LTD/TA and STD/TA; SPP = Share Price Performance, HHI = Herfindahl–Hirshman Index.

Based on Table 4, nine determinants, which are the firm level determinants: tangibility, liquidity, profitability, intangible, growth, age and ownership of firm and industry level determinants: munificence and dynamism, are found to significantly influence the leverage $\left(\frac{\text{TD}}{\text{TA}}\right)$ of Indonesian firms throughout the period understudy.

This study depicts a negative relationship between tangibility and $\frac{\text{TD}}{\text{TA}}(p = 0.01)$. The negative relationship is also consistent with $\frac{\text{STD}}{\text{TA}}(p = 0.01)$. This finding however does not support H_4. Tangible assets are commonly used to secure long term debt (Qamar et al., 2016). Apparently from the descriptive analysis, long term debt is much lower than short term debt in Indonesia. This inversed relationship is particularly enhanced by the negative relationship of short term debt with tangibility found in this study as well, confirming what has been highlighted by Degryse et al. (2010). Another reason is perhaps firms in Indonesia which rely on high tangible assets generate relatively high internal funds thus tend to avoid debt financing as explained by POT. Liquidity is reported

to relate negatively with $\frac{\text{TD}}{\text{TA}}(p = 0.05)$, is consistent with $\frac{\text{STD}}{\text{TA}}(p = 0.05)$. H_5 is thus supported. When firms in Indonesia have high liquidity level, they seem to lower their debt consumption due to higher retained earnings. This scenario reflects the influence of POT in their capital structure decisions and is consistent with Deesomsak et al. (2009) and Moosa and Li (2012).

Profitability is found to relate negatively with $\frac{\text{TD}}{\text{TA}}(p = 0.01)$ and is consistent with $\frac{\text{STD}}{\text{TA}}(p = 0.01)$. H_6 is thus supported. Highly profitable firms in Indonesia choose to use their retained earnings to finance their investments thus reflecting the influence of POT in their capital structure decisions. Supporting Bunkanwanicha et al. (2008) and Moosa and Li (2012), the negative relationship reported may be the results of the financial reformations taken place in Indonesia which have opened up and encouraged firms to turn to their retained earnings instead of merely bank loans to finance their investments.

Intangible asset is reported to negatively related to $\frac{\text{TD}}{\text{TA}}(p = 0.05)$ and is consistent with $\frac{\text{STD}}{\text{TA}}(p = 0.05)$. This finding is however in contrast to H_7. The negative relationship depicted in this study nevertheless, does not support what has been recorded in the literature especially on the developed market. This may be because the Bank Indonesia (the central bank) does not acknowledge intangible assets as collateral to secure debt from lenders and does not impose a policy of intangible asset as a fiduciary security object because these assets lack in economic value and cannot be traded (Mulyani, Janni, & Khamimah, 2014). Apart from that, it is hard to measure the value of these assets and if intangible assets are used as collateral, it would be difficult to anticipate the risks of bank losses.

Growth is found to have a positive relationship with $\frac{\text{TD}}{\text{TA}}(p = 0.01)$, consistent with $\frac{\text{LTD}}{\text{TA}}(p = 0.05)$ and $\frac{\text{STD}}{\text{TA}}(p = 0.01)$. This finding is nevertheless in contrast to H_8. Fast growing firms in Indonesia seem to engage with more debt to address any underinvestment problems that might occur as explained by the agency theory. Myers (2003) argues that growth firms prefer short-term debt to minimise under-investment costs thus explains the positive relationship depicted in this study. Growth firms in Indonesia might also issue debt over equity should they need external financing as they could reap the advantage of tax shield from debt financing. This positive relationship is also reported by Booth, Aivazian, Demirguc-Kunt and Maksimovic (2001) in their study on emerging countries.

Age of firm is negatively related to $\frac{\text{TD}}{\text{TA}}(p = 0.01)$, H_9 is thus supported, consistent with $\frac{\text{STD}}{\text{TA}}(p = 0.01)$. Conforming to what has been argued previously in past studies, the older the firm, the more accumulated funds it will have and the lesser the need of debt financing, either short term or long term. Based on the sample firms of this study, about 53% of the firms have been listed for more than 15 years with the average of 15.41 years. Apparently, these aged firms have more impressive track record with substantial retained earnings thus do not require external financing like debt (Chen & Strange, 2005). The negative relationship between age and leverage reflects the influence of POT in the capital structure of aged firms in Indonesia.

Higher level of concentrated ownership has a positive influence on $\frac{\text{TD}}{\text{TA}}(p = 0.05)$, H_{11} is thus supported. This result however is not supported by other leverage definitions of $\frac{\text{LTD}}{\text{TA}}$ and $\frac{\text{STD}}{\text{TA}}$. This finding supports the findings by Driffield et al. (2007) and Alimehmeti and Paletta (2012). The positive relationship depicted in this study reflects the power and authority of the large controlling shareholder in a highly-concentrated ownership environment employing debt as controlling mechanism on the managers. The positive relationship may also be explained by the reluctance of large shareholders to engage with equity financing as to avoid ownership dilution thus can maintain the control of the firms.

In term of industry level determinants, munificence is found to have a negative relationship with $\frac{\text{TD}}{\text{TA}}(p = 0.01)$, consistent with $\frac{\text{LTD}}{\text{TA}}(p = 0.01)$. H_{12} is thus supported. Firms in Indonesia operating in an industry with high munificence level employ less debt in their capital structure. Since munificence industry promotes higher profitability, a firm in the industry is able to increase its retained earnings substantially thus needs less debt financing. Higher munificence level is translated into higher profitability and lower debt, thus supporting the POT. Kayo and Kimura (2011) also report a negative relationship between munificence and leverage.

Dynamism is negatively related to $\frac{\text{TD}}{\text{TA}}(p = 0.05)$, which is consistent with $\frac{\text{LTD}}{\text{TA}}(p = 0.10)$. This finding supports H_{13}. This finding reflects the concept of dynamism being interpreted as risk as suggested by Ferri and Jones (1979) therefore, firms in Indonesia operating in a highly dynamic environment employ less debt to avoid excessive risks that come with high debt level. This study supports Kayo and Kimura (2011) where they argue firms in a highly dynamic industry will employ less debt due to the high risks they might incur.

Nonetheless results of this study show that some of the determinants (NDTS, size, risk, share price performance, industry concentration) appeared to be insignificant on capital structure of Indonesian firms $\left(\frac{\text{TD}}{\text{TA}}\right)$ despite being reported as important factors in capital structure studies. The finding of this study is summarised in Table 5.

Table 5
Summary of finding

Explanatory variable	Hypotheses (expected sign)	Hypotheses (Supported/Not supported)	Theories supporting finding	Consistencies with LTD/TA and STD/TA
NDTS	H_1: negative	Not supported	-	-
Firm size	H_2: positive	Not Supported	-	-
Risk	H_3: negative	Not supported	-	-
Tangibility	H_4: positive	Not supported	POT	STD/TA
Liquidity	H_5: negative	Supported	POT	STD/TA
Profitability	H_6: negative	Supported	POT	STD/TA
Intangibility	H_7: positive	Not supported	TOT/Agency	STD/TA
Growth	H_8: negative	Not supported	TOT/Agency	LTD/TA; STD/TA
Age	H_9: negative	Supported	POT	STD/TA
SPP	H_{10}: negative	Not supported	-	-
Ownership	H_{11}: positive	Supported	Agency	-
Munificence	H_{12}: significant	Supported	POT	LTD/TA
Dynamism	H_{13}: negative	Supported	TOT	LTD/TA
HH Index	H_{14}: significant	Not supported	-	-

Notes: SPP = Share Price Performance, HHI = Herfindahl–Hirshman Index.

CONCLUSION

This study examines the impact of firm level as well as industry level determinants on capital structure of firms in Indonesia. This study uses the FEM with instrumental variable to examine the relationship between the determinants and leverage and the results are robust to heterogeneity, autocorrelation, multicollinearity and endogeneity concern. This study depicts high short term debt employment compared to long term debt among firms in Indonesia, similar to other emerging markets. As what has been stated in the body of knowledge, the use of short term debt is more pronounced in the emerging and this study confirms that.

Certain firm level determinants like firm tangibility, liquidity, profitability, intangibility, growth, age and concentrated ownership do have significant influence on the capital structure of the firms understudy. However, certain hypotheses cannot be supported like tangibility, intangibility and growth.

Industry level determinants incorporated in this study also appear to have significant impact on the capital structure of these firms. It seems that a firm operating in a high munificence level and in a very dynamic environment employs less debt due to higher retained earnings and higher risk level respectively. Growing firms in Indonesia employ high level of debt due to low asymmetric information problems and get better access to bank loans as a result of competitive field among the banks after the financial liberalisation. These firms seem to take advantage of the tax shield offered by engaging with long term and short term debt and are willing to take higher risks for higher returns. All these reflect the influence of TOT on the financing decisions of the firms.

Nevertheless, aged and highly profitable firms with high tangible and intangible assets and highly liquid operating in a high munificence environment tend to practice the hierarchical financing (POT) and reduce their debt engagement. With regards to firms operating in a highly dynamic atmosphere, less debt is employed. This is perhaps due to the risks that come with debt financing and firms seem to avoid incurring high risk with high level of debt. The concentrated ownership phenomenon does have a significant impact on leverage in Indonesia. The positive relationship recorded in this study may be explained by the reluctance of large shareholders to engage with equity financing as to avoid ownership dilution thus can maintain the control of the firm.

The findings from this study have important policy implication. This study reveals the significant influence of tangible and intangible assets on capital structure of firms. The central bank should perhaps consider intangible assets as collateral as well to support firm's growth, especially Research and Development (R&D) intensive firms such as the young public high-tech firms for they are subject to high asymmetric information, high volatility of earnings and low collateral value. Thus by recognising intangible assets as collateral might encourage these firms to consider debt as external financing.

The findings from this study contribute significantly to the literature. Both developed and emerging markets can also learn from this study of Indonesia especially on the impact of intangible assets to leverage and the potential of these assets as collateral to secure debts. Other emerging markets with high ownership concentration level in their corporate governance can also learn from Indonesia as depicted in this study. Debt can be an effective controlling mechanism to

discourage managers to manage cash flows and investments at their own self-interest. Debt can also act as a safeguarding mechanism as to avoid ownership dilution thus the large shareholder can maintain their controlling power of the firm.

This study however has limitation. Despite relatively utilising recent data and bigger sample firms comparatively, the results of this study, however, need to be cautiously interpreted. This study does not perform each industry regression individually. All the industries are pooled together since the main focus of this study is to examine the factors affecting leverage of firms in general without giving particular attention to individual industry. Perhaps for future research study can be done on individual industry as firms in different industry react differently responding to certain characteristic of each individual industry. To understand further the issue of concentrated ownership and its impact on capital structure, it is recommended that future research incorporate ownership identity and political connection on debt financing of Indonesian firms. Therefore, a more comprehensive and detail scenario can be captured for future improvement of firms in Indonesia in particular and firms in the rest of emerging markets as a whole.

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THE MEDIATING ROLE OF ENVIRONMENTAL PERFORMANCE ON THE RELATIONSHIP BETWEEN CORPORATE GOVERNANCE MECHANISMS AND ENVIRONMENTAL DISCLOSURE

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ABSTRACT

Despite the growing number of environmental rules and regulations, there are relatively few studies that consider the whole association between environmental performance, corporate governance and environmental reporting. Therefore, the objectives of the study are to investigate the association between corporate governance and environmental disclosures quality and the mediating role of environmental performance in this relationship. Sample of study consists of 344 companies listed on Bursa Malaysia for the year of 2013. Environmental performance (EP) data were collected from the Malaysia Department of the Environment (DOE). Corporate Governance (CG) data were collected from the annual report of sample companies using corporate governance index based on Malaysian Code on Corporate Governance (MCCG). The results of study show that corporate governance is positively associated with environmental performance and its disclosure. The results also show that environmental performance partially mediates the relationship between corporate governance and environmental disclosure quality. This study serves as a valuable input to top management regarding the importance of corporate governance mechanisms towards the establishment of environmental related policies and strategies that help to improve environmental performance. The findings also provide an impetus for companies to develop specific abilities and resources in prioritised areas that are of a concern to relevant stakeholders.

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INTRODUCTION

Adverse environmental effect has become matter of great public concern throughout the world over recent decades. There have been concerns about the rate at which companies are extracting natural resources for production purpose. The fear is that if existing rate of resources depletion continues, the existence of the present and future generations will be compromised. Malaysia, as one of the fastest growing economies in the South-East Asia with rich natural resources, faces conflict between economic growth and protection of the environment. In Malaysia, environmental issues include the over-logging of primary forest resulting in the loss of wildlife habitats, soil erosion and the displacement of indigenous communities, air and water pollution from industry and urban transportation and the dumping of hazardous waste (Perry, Singh, & Unies, 2001). Al-Amin, Siwar, Jaafar and Mazumder (2007) suggest that toxic emission from industries and manufacturing sectors will increase significantly by the year 2020. Therefore, there is an increasing expectation of society toward businesses to be more responsible for their activities that harm the environment.

The stakeholders' concern about the quality of environment has motivated companies to employ more environmental friendly activities and operations. Thus, the environmental reports become an important means for corporations to communicate appropriate environmental concerns to different stakeholders and to demonstrate their CSR activities (O'Donovan, 2002). Subsequently, there is an increasing number of companies providing this information in their annual reports to inform stakeholders of companies activities that protect the environment (Uwuigbe & Uadiale, 2011). However, the corporate environment disclosure (CED) as reported in annual reports does not necessarily depict the actual corporate environmental performance (CEP) (Romlah, 2005). In many countries, CED is a voluntary disclosure and past studies have cited reasons for companies to disclose this information such as to legitimise their existence, reduce agency problem and provide signal to potential investors. On the other hand, CEP is defined as the outcomes of companies' operation toward the environment, whether company complied or violated the laws and regulations related to the environment (Walls, Berrone, & Phan, 2012). The environmental disclosure practices of companies that comply with relevant laws and regulations are expected to be different compared to the disclosure practices of companies that violate the laws. Based on the stakeholder theory, this study proposes that companies that implement sound environmental policies or strategies will display good environmental performance

and have higher quality environmental disclosure by reporting detailed and easily verifiable information (Li, Richardson, & Thornton, 1997).

In Malaysia, as in many other countries, the disclosure of the corporate environmental information is still voluntary (Romlah & Sharifah, 2004). This explains the low level of disclosure and inconsistency among the reported information in the country (Ahmad & Sulaiman, 2004). Past literature show that the existence of effective corporate governance mechanism improves the quality of environmental disclosure (Buniamin, Alrazi, Johari, & Rahman, 2011; Oba & Fodio, 2012; Iatridis, 2013) and provides more transparent and reliable environmental information (Dunstan, 2008; Cormier, Ledoux, Magnan, & Aerts, 2010; Iatridis, 2013). Better disclosure also reduces agency problem and information asymmetry between manager and stakeholders (Iatridis, 2013). Furthermore, board of directors as the main component of corporate governance mechanism, decides and monitors the implementation of companies' strategies and policies including the environmental matters, to ensure that companies comply with environmental laws and regulations (Kesner, Victor, & Lamont, 1986; Lorsch & Young, 1990; Bai & Sarkis, 2010; Paloviita & Luoma-aho, 2010). So, it is expected that companies with effective corporate governance mechanism will exhibit better environmental performance (CEP) and this will lead companies to disclose environmental disclosure of higher quality. In other words, effective corporate governance mechanism improves CEP and this will inspire management of companies to provide better environmental disclosure. However, despite of the importance of CEP in influencing better disclosure, to the researchers' knowledge, there are no past studies that investigated the role of environmental performance as a mediating variable in the relationship between corporate governance and environmental disclosure quality (EDQ).

Accordingly, the main objective of the current research is to empirically investigate the mediating role of environmental performance in the relationship between corporate governance and the quality of corporate environmental disclosures in Malaysia. Specifically, the current research objectives are as follows:

1. To examine the relationship between corporate governance mechanisms and corporate EDQ among Malaysian listed companies.
2. To examine the relationship between corporate governance and environmental performance among Malaysian listed companies.
3. To examine the relationship between environmental performance and corporate environmental reporting of Malaysian companies.

4. To investigate the mediating role of environmental performance in the relationship between corporate governance mechanisms and corporate environmental disclosure quality.

The finding of study shows that good corporate governance leads to higher EDQ and environmental performance, and environmental performance is positively associated with EDQ. In other words, companies with effective corporate governance, which implemented environmental-friendly strategies in companies' operations, lead to better CEP, and disclose more informative and transparent environmental information.

This study provides further understanding of the importance of corporate governance mechanism in improving environmental performance and eventually environmental disclosure of higher quality. Corporate governance as an important corporate monitoring mechanism assists companies in implementing strategic environmental policies and decision making that reduces environmentally related penalties and noncompliance. Consequently, companies provide more detailed, transparent and informative disclosures regarding companies' environmental strategies that enhance the quality of environmental disclosure; hence, satisfying some of the most powerful stakeholders' needs.

LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES

The concern for better corporate governance and social responsibility of companies in Malaysia is apparent when the government established the Malaysian Code on Corporate Governance and continuously improves the principles and terms of the Code. Additionally, the Malaysian CSR Framework established in 2006 is another instance in which CSR practices need to be communicated to various stakeholders (Sharifah, Bakhtiar, Nor, & Noor, 2008). However, regardless of the development and improvement in the corporate business environment, the effectiveness of better corporate governance toward social (environmental) performance and its disclosure is still questionable. Therefore, the fulfilment of various stakeholders' needs is still doubtful (Cormier, Ledoux, & Magnan, 2011). The next section discusses past empirical studies and the development of hypotheses of this study.

Corporate Governance (CG) and Environmental Disclosure Quality

Corporate voluntary disclosure can reduce agency problem and information asymmetry, therefore preventing managers' opportunistic behaviour. In a way, disclosure is considered as one of the monitoring mechanisms to ensure

shareholder's wealth is maximised (Healy & Palepu, 2001; Cormier, Magnan, & Berthelot, 2003). Other corporate governance mechanisms, such as the existence of non-executive or independent directors, audit committee, and internal control, would also help to monitor managers' actions and decisions (Mitton, 2004). Thus, if effective monitoring mechanism is in place, managers would be more cautious about their actions and decisions, and this leads to the betterment of shareholders' wealth (Eisenhardt, 1989).

Past studies hypothesised that good corporate governance mechanism strengthens the environmental disclosure quality (Buniamin et al., 2011; Oba & Fodio, 2012; Iatridis, 2013) and provides more transparent and reliable environmental disclosure (Dunstan, 2008; Cormier et al., 2010, Iatridis, 2013). Good corporate governance also deters managers' opportunistic behaviour and manipulation of quality of environmental disclosure. However, past literature related to the impact of corporate governance on environmental disclosure quality in developed countries and developing countries (Buniamin et al., 2011; Jo & Harjoto, 2012; Kathy Rao, Tilt, & Lester, 2012; Michelon & Parbonetti, 2012; Oba & Fodio, 2012; Iatridis, 2013; Trireksani & Djajadikerta, 2016) lacks consistent pattern since these findings are influenced by different methodologies (Orlitzky, Schmidt, & Rynes, 2003). Most studies in this area measured corporate governance mechanism based on only a few components of CG that cannot effectively provide a complete measure of corporate governance effectiveness of a company (Cong & Freedman, 2011). This study fills in the gap in the literature by employing a complete and comprehensive measure of CG and condensing various corporate governance elements into a single governance index. Therefore, the first objective of this study is to re-examine the association between corporate governance and environmental disclosure quality by using a more comprehensive corporate governance index. Based on agency theory argument, it is predicted that good corporate governance mechanism will enhance environmental disclosure quality. Thus, the hypothesis is stated as follows:

H_1: There is a positive association between level of corporate governance and the quality of environmental reporting.

Corporate Governance and Environmental Performance

The changing nature of business environment and stakeholders' expectations have created a demand for companies to consider overall balanced strategy that takes into account various stakeholders' need, and at the same time to be competitive in sustaining the business. The increase in the stakeholders' concern on the quality of the environment has shifted companies' priorities, decisions

and strategies towards better environmental performance and the reporting of the performance. The existing body of literature clearly suggests that stakeholders play a significant role in a firm's sustainability efforts (Baden, Harwood, & Woodward, 2009; Delmas & Montiel, 2009; Paloviita & Luoma-aho, 2010) and critical to corporate performance and survival (Boesso & Kumar, 2007; Orij, 2010).

Stakeholder engagement influences the adoption of environmental and social practices and how much resources are allocated toward efforts that satisfy stakeholders (Bai & Sarkis, 2010; Paloviita & Luoma-aho, 2010). Thus, effective corporate governance mechanisms may fulfill some of the most stakeholders' needs. In this regard, the stakeholders' concern by quality of environment, has motivated companies to perform and employ more environmental friendly activities and operation.

Past literature argued that good corporate governance reduces the adverse impact of environmental related activities and eventually lessen the violation of environmental laws and regulations. Effective board members are influential in making critical decisions about environmental compliance and strategies; and therefore improve environmental performance. Board members, a part of corporate governance mechanisms, develop corporate strategy and policies and make decision to minimize environmental problem (Weir & Laing, 2001; Kassinis & Vafeas, 2002). Moreover, boards have the ability to ask experts and seek legal advice as an extra measure for ensuring sound environmental performance (Kassinis & Vafeas, 2002). Therefore, the likelihood that a company becomes the target in a lawsuit for its environmental performance may be due to its ineffective CG. Despite the growing number of environmental rules and regulations, there are relatively few studies that consider how corporate governance mechanisms influence environmental performance. Hence, based on above the arguments, the following is hypothesised:

H_2: There is a positive relationship between level of corporate governance and environmental performance.

Environmental Performance and Environmental Disclosure Quality

Research on the agency relationship between management and shareholders shows that managers who have better access to a company's information can reduce agency costs by making more disclosures and this will increase company value (Eisenhardt, 1989; Craswell & Taylor, 1992). Thus, based on agency

theory, disclosure can help to lessen several principle agent conflicts between management and shareholders by reducing information asymmetry.

Empirically, companies are motivated to disclose good news, and reluctant to report bad news. It follows that companies that have good environmental performance and implement sound environmental policies or strategies would likely prepare environmental disclosure in more detail in order to report to investors of their great environmental strategies (Li et al., 1997). These companies would disclose 'hard', which is verifiable and difficult to mimic environmental information (Al-Tuwaijri, Christensen, & Hughes, 2004). In contrast, poor environmental performers disclose minimum information required by regulation (Hughes, Anderson, & Golden, 2001) and tend to disclose 'soft' information, which is general in nature and not easy to verify environmental information (Clarkson, Overell, & Chapple, 2011). Thus, the disclosure of information may not be a reflective of the companies' strategies and policies regarding the environment. Therefore, good environmental performers would favourably influence stakeholders' perception and reduce doubt and uncertainty by reporting details of their environmental information. Thus, the third hypothesis is as follow:

H_3: There is a positive association between environmental performance and environmental disclosure quality.

The Role of Environmental Performance in the Relationship between Corporate Governance Mechanisms and Environmental Disclosure Quality

Past studies have established that companies with effective corporate governance have better environmental disclosure in their annual reports (Gul & Leung, 2004; Dunstan, 2008; Cormier et al., 2010; Buniamin et al., 2011; Oba & Fodio, 2012; Iatridis, 2013). Past studies also confirmed that corporate governance is positively associated with better environmental performance (Greeno, 1993; Weir & Laing, 2001). Findings of these studies suggested that effective corporate governance improves the quality of environmental disclosure, specifically for companies with better environmental performance.

Based on agency theory, corporate environmental disclosures help to lessen principal-agent conflicts and reduce information asymmetry. Effective corporate governance companies are responsive towards the needs of shareholders, therefore would disclose more environmental information (Gul & Leung, 2004; Dunstan, 2008; Cormier et al., 2010; Buniamin et al., 2011; Oba & Fodio, 2012; Iatridis, 2013).These companies would also comply with the appropriate state and federal laws which include environmental laws and regulations and implement

environmental friendly strategies in the companies' operations. Eventually, these companies will show better environmental performance.

Better environmental performance companies would likely to disclose environmental information to inform investors and other stakeholders of their achievement (Verrecchia, 1983). Companies will disclose detailed 'hard', quantifiable, verifiable and difficult to mimic environmental information (Al-Tuwaijri et al., 2004). On the other hand, poor corporate governance companies would have less concern about social and environmental matters, and will likely violate some environmental laws. Therefore, companies will show poor environmental performance. These companies will disclose limited 'soft' information of general environmental policies and strategies such as waste reduction policy (Hughes et al., 2001).

In conclusion, effective corporate governance companies enhance the quality of environmental disclosure by providing more verifiable and quantifiable information. However, the level of disclosure depends on their environmental performance. This study proposes, companies that implement effective corporate governance mechanism will have policies to monitor and gauge environmental compliance and performance. In other words, effective corporate governance leads to better environmental performance and companies will disclose more information to stakeholders. However, poor corporate governance companies will show poor environmental performance and disclose less of this information in annual report. This means, the quality of environmental disclosure depends very much on the level of environmental performance (Fung, 2014).

Therefore, based on above arguments the following hypothesis is proposed:

H_4: Environmental performance mediates the association of corporate governance mechanisms and environmental disclosure quality.

RESEARCH METHODOLOGY

This study conducts a cross-sectional research design for the year of 2013. The population of this study is made up of all public companies listed on the Main board of Bursa Malaysia for the year of 2013. Sample of this study was selected based on purposive sampling method since the initial list of companies was chosen from data provided by Department of Environment Malaysia (DOE) which comprised of non-compliant group of companies. Non-compliant companies

are those companies that received written warnings and/or charged in court (and found guilty) due to some violations of Malaysia Environmental Quality Act 1974 (Act 127) and Subsidiary Legislations. There are two main sources of noncompliant list of companies. The first source is from the DOE websites (www.doe.gov.my). In this case, the study gathers a list of listed and non-listed companies that were charged court and found guilty based on different type of offences under the Act from 1 January until 31 December 2013. Table 1 presents this information. The most repeated offence among the companies (n = 135) was related to noncompliance with the *Environmental Quality (Industrial Effluent) Regulations 2009*. The second most noncompliance cases were connected to the discharge of black smoke greater than the specified standard (n = 94). From the 338 companies listed in Table 1, only 46 of these companies are listed companies. These noncompliant companies were picked up to form the initial sample of this study.

The second source of noncompliant list of sample companies was collected by hand directly from the head office of the DOE in Putrajaya. These companies received written warnings/notices of various environmental offences during 2013. In total, 366 notices/warnings were served to listed companies. Some companies have more than one court cases and/or received more than one notices/warnings and this study considers the total number of these warnings as well as court cases. Therefore, based on these two sources of data, this study has identified 172 noncompliant listed companies in Malaysia for the year of 2013. These 172 companies formed the initial sample for the study. A matched pairs research design, based on industry classification and size of assets, was used to select the final sample of this study that comprises both compliant and non-compliant group of companies. The final sample comprises of 344 companies.

Table 1
Descriptive statistic for all environmental violations

Offences	Type of offences	Section	Number of companies
Licensing	Prescribed premises which does not comply with terms of license	Sect. 16 (1)	58
	Prescribed premises operating without license	Sect. 18 (1)	3
	Prescribed conveyance operating without license	Sect. 18 (1) (a)	0
Air pollution	Open burning	Sect. 29 (A)	4
	Black smoke emission greater than specified standard	Sect. 22 (1)	94
Water pollution	Discharge effluent greater than specified standard	Sect. 25 (1)	8
Noise pollution	Emission of noise greater than specified conditions	Sect. 23 (1)	1
Scheduled waste	Scheduled waste	Sect. 34 (B)	2
Environmental impact assessment	Environmental impact assessment	Sect. 34 (A)	11
Other offences	Pollution of the soil	Sect. 24 (1)	0
	Failure of owner or occupier to install, operate, repair, etc.	Sect. 31 (1)	16
	Offences not provided with penalty	Sect. 41	0
	Discharge of oil into Malaysian water	Sect. 27 (1)	0
	Environmental quality (Clean Air Regulation) 1978	_	2
	Environmental quality (Prescribed Premises) (Scheduled Wastes Treatment & Disposal Facilities) Regulation 1989	_	0
	Environmental quality (Industrial Effluent) Regulations 2009	_	135
	Environmental quality (Sewage) Regulations 2009	_	4
	Failure of owner or occupier to furnish information	Sect. 37	0
Total			338

Definition and Measurement of Variables

The dependent variable of this study, corporate environmental disclosure quality (EDQ), was gathered using content analysis of annual reports of sample companies. Specifically, this study analysed keywords related to the environment, such as 'environmental management', 'environmental performance', 'environmental initiatives', and other related keywords throughout the annual reports. This study has designed a content analysis index in order to provide a scoring system to measure the quality of environmental disclosure. The environmental disclosure index is based on the GRI guidelines as adopted by Clarkson, Li, Richardson, and Vasvari (2008) and Clarkson et al., (2011). The index consists of 70 equally weighted items and includes the following seven (7) classifications:

1. Governance structure and managerial systems (maximum score is 6).
2. Credibility (maximum score is 9).
3. Environmental performance indicators (maximum score is 36).
4. Environmental spending (maximum score is 3).
5. Vision and strategy claims (maximum score is 6).
6. Environmental profile (maximum score is 4).
7. Environmental initiatives (maximum score is 6).

A score of 1 is given if the disclosure is present, or 0 otherwise for each one of the items in categories (1), (2), (4), (5), (6) and (7). For category (3), there are six (6) checklist questions and the scoring scale per question ranges from 0 to 6. Category (3) relates to specific environmental performance disclosure indicators and carries more weight compared to other categories (Clarkson et al., 2011). The six check list questions are as follows:

1. Presentation of performance data.
2. Performance data are presented relative to peers, rivals or industry.
3. Performance data are presented relative to previous periods.
4. Performance data are presented relative to targets.
5. Performance data are presented both in absolute and normalised form.
6. Performance data are disaggregated (i.e.by plant or business unit).

For each indicator, a company can score a maximum of 6 points depending upon the nature of disclosure including the provision of various benchmarks.

Thus, the scoring of category (3) differs from the other categories whereby the provision of each item only achieves a score of 1.

The index consists of hard and soft disclosure items. Categories (1), (2), (3) and (4) contain hard disclosure items while soft disclosure items include categories of (5), (6) and (7). The scores calculated for each sample company are summed up and then divided by the maximum points available to assess a percentage score for each company. The score for all companies ranges between 0% and 100%.

Corporate governance (CG) variable is measured based on the corporate governance index introduced by Wahab, How and Verhoeven (2007). It was hand-collected from annual reports available on Bursa Malaysia website (http://www.bursamalaysia.com). This index provides a wide category of corporate governance features and we condensed them into one single measure. The index comprises of 30 provisions based on the MCCG 2012 principles and recommendations. The list of all 30 items is in Appendix. It is classified into two groups; the first (MCCG-PT2) relates to compliance with Part 2 of the MCCG, best practices[1] and 16 governance provisions; the second (MCCG-PT4) relates to the disclosure of governance practices recommended in Part 4 of MCCG, explanatory notes[2]. In a way, the index measures the overall corporate governance best practices of listed companies as recommended by the MCCG 2012. The index is based on just these two parts since Part (1) is compulsory for all listed companies and Part (3) is not addressed to public listed companies but mainly to institutional investors and auditors. The approach of scoring is additive, giving a measure of CG for firm *i* based on an equal weighting scheme used for the two parts (Wahab et al., 2007):

$$CG_i = \frac{MCCG\_PT2_i + MCCG\_PT4_i}{2} \times 100$$

Where $MCCG\_PT2 = \frac{1}{6}\sum_{j=1}^{16} X_j$ and $MCCG\_PT4 = \frac{1}{14}\sum_{j=1}^{14} Y_j$. Here, X_j and Y_j are equal to 1 if the *j*th governance provision is adhered to and 0 if it is not, so that $0 \leq CG_i \leq 100$.

The environmental performance (EP) data were collected from the website of Department of Environment (DOE) Malaysia (www.doe.gov.my) as well as some direct information from the DOE Malaysia.

The environmental performance (EP) score is constructed based on modified Romlah (2005) which takes into account the severity of environmental problems caused by a company and its subsidiaries. The details of the score calculation are as follows:

Score 0: When a company does not have any non-compliance issue with regard to the Environmental Quality Act 1974 (Act 127) & Subsidiary Legislations. Therefore, this company is considered as a good environmental performance company.
Score (1): When a company received a written warning/notice from the DOE for non-compliance with regard to the Act in certain aspects of its operation. The company is also given a certain time frame to correct their environmental performance.
Score (2): When a company is charged and found guilty by the court for a more severe environmental issue. The higher score is given here because this type of noncompliance issue (court cases) is considered more serious (Romlah, 2005).

Specifically, the total score is calculated based on the severity of environmental problems caused by a company as follow:

$$EP_i = -(W_i + 2CC_i)$$

Where, EP = Environmental performance, W = warning and CC = court cases.

As an illustration to calculate the EP score, let us assume that a company is given two warnings for some noncompliance problems and its subsidiary is charged in court for another noncompliance issue. Therefore, the EP score for this company is (–4) calculated as follows: EP = –(2 (warnings) + 2(court case)) = –4. Based on this formula, if a company gets a high negative score, it means that the environmental performance of the company is poor. On the other hand, if a company gets a zero EP score, it means that the company's environmental performance is good, because it does not have any record of noncompliance with environmental laws.

This study also incorporates a few control variables that have been documented in the past to influence environmental disclosure as well as environmental performance of companies. The control variables consist of company's size (total assets), profitability (return on assets), leverage (ratio of debt to total assets); industry (1 = environmentally sensitive industries, 0 otherwise), capital spending (ratio of capital expenditure to total revenue); audit quality (1 = company is audited by Big4 audit firm, 0 otherwise). The financial information of these control variables was obtained from the Osiris data base and annual reports.

Model Specification

This study uses regression analysis to test research models. Specifically, the following four research models are developed:

$$EDQ_{it} = \alpha_0 + \alpha_1 CG_{it} + \alpha_2 AUDITQ_{it} + \alpha_3 CAPIN_{it} + \alpha_4 INDUSTRY_{it} + \alpha_5 LEV_{it} + \alpha_6 ROA_{it} + \alpha_7 LnSIZE_{it} + \varepsilon_{it} \quad (1)$$

$$EP_{it} = \alpha_0 + \alpha_1 CG_{it} + \alpha_2 AUDITQ_{it} + \alpha_3 CAPIN_{it} + \alpha_4 INDUSTRY_{it} + \alpha_5 LEV_{it} + \alpha_6 ROA_{it} + \alpha_7 LnSIZE_{it} + \varepsilon_{it} \quad (2)$$

$$EDQ_{it} = \alpha_0 + \alpha_1 EP_{it} + \alpha_2 AUDITQ_{it} + \alpha_3 CAPIN_{it} + \alpha_4 INDUSTRY_{it} + \alpha_5 LEV_{it} + \alpha_6 ROA_{it} + \alpha_7 LnSIZE_{it} + \varepsilon_{it} \quad (3)$$

$$EDQ_{it} = \alpha_0 + \alpha_1 CG_{it} + \alpha_2 EP_{it} + \alpha_3 AUDITQ_{it} + \alpha_4 CAPIN_{it} + \alpha_5 INDUSTRY_{it} + \alpha_6 LEV_{it} + \alpha_7 ROA_{it} + \alpha_8 LnSIZE_{it} + \varepsilon_{it} \quad (4)$$

Where:

EDQ	=	Environmental Disclosure Quality;
CG	=	Corporate Governance;
EP	=	Environmental Performance;
CAPIN	=	Capital Spending/total revenue
LEV	=	Ratio of debt to total assets;
ROA	=	Return on Assets;
Ln SIZE	=	Ln Total Assets;
INDUSTRY	=	dummy variable; 1 for environmentally sensitive industries[3], 0 otherwise
AUDITQ	=	dummy variable; 1 if company is audited by Big4 audit firm, 0 otherwise
ε	=	Error term (Residual).

FINDINGS

Table 2 presents the descriptive statistics for environmental disclosure quality variable based on *hard* and *soft* disclosure items. In general, companies tend to disclose more *soft* disclosure items compared to *hard* disclosure items, because soft disclosure items are always general in nature and easy to mimic. Based on Table 2, 96.51% of sample companies disclosed about ″vision and strategy claim″ related to the environment. This is a very general statement as many companies can have vision and mission statements related to the environment. On the other hand,

the hard disclosure items are based on some objectives, as well as quantifiable and verifiable corporate environmental information. This information cannot easily be reproduced by other companies.

Table 2
Descriptive statistics of environmental disclosure quality (EDQ) (n = 344)

Type of disclosure	Categories		Number of companies	Percentage of companies	Score		
					Mean	Minimum	Maximum
Hard items	A1	Governance structure and managerial systems	135	39.24	0.594	0	6
	A2	Credibility	106	30.81	0.621	0	8
	A3	Environmental performance indicators	38	11.04	0.651	0	18
	A4	Environmental spending	59	17.15	0.215	0	3
Soft items	A5	Vision and strategy claims	332	96.51	3.490	1	6
	A6	Environmental profile	287	83.43	1.093	0	4
	A7	Environmental initiatives	321	93.31	3.212	0	6

Figure 1 depicts the information presented in Table 2 by using graph. As shown in the Figure 1, the percentage of sample companies that disclose soft disclosure categories (A5–A7) is higher than hard disclosure categories (A1–A4). In other words, Malaysian companies disclose more basic, general and not easy to verify environmental information.

This study also gathers additional noncompliance data from DOE with regard to written warning/notices for other environmental offences. In total, there are 366 notices and 46 court cases served to listed companies. Some companies have more than one court cases and/or received more than one notices/warnings. Table 3 presents summary of this information. This table indicates that the majority of court cases and warnings/notices are of companies from industrial product sector (32.62% and 23.91%) and the lowest are from the property sector. There are 34 companies that have both court cases and notices/warnings.

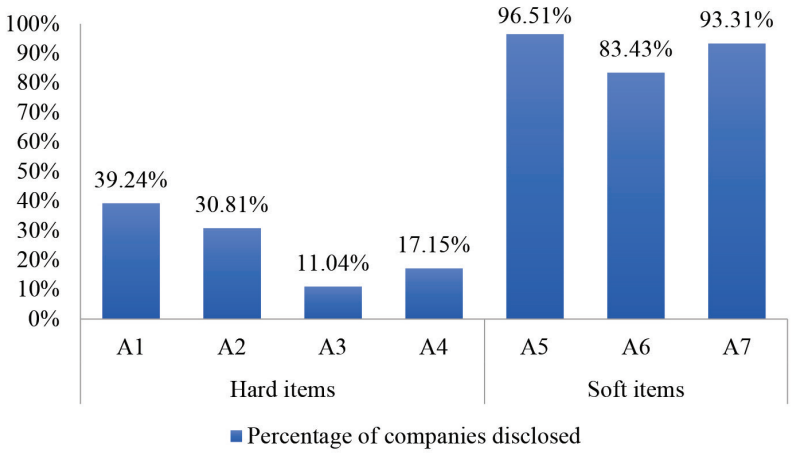

Figure 1. Environmental disclosure quality (hard and soft disclosure)

Table 3
Environmental performance components based on industry

Industry sector	Court cases		Notices/warnings	
	Number of cases (%)	Number of companies (%)	Number of cases (%)	Number of companies (%)
Industrial product	15 (33)	10 (29)	117 (32)	66 (40)
Plantation	11 (24)	7 (21)	97 (27)	20 (12)
Trading-services	11 (24)	9 (26)	97 (27)	44 (27)
Consumer products	8 (17)	7 (21)	43 (11)	29 (18)
Construction	1 (2)	1 (3)	7 (2)	2 (1)
Property	0 (0)	0 (0)	5 (1)	4 (2)
Total	46 (100)	34 (100)	366 (100)	165 (100)

Table 4 presents summary of descriptive statistics of all research variables used in this study. The average percentage of environmental disclosure quality (EDQ) is 18.07 out of 100, with a maximum score of 55.71. This indicates that the level of voluntary environmental disclosure in Malaysia is low. Table 4 also displays the level of corporate governance score, including its two components. The highest CG score is 90.18 while the lowest is 3.13 and the mean of CG score is 64.72. The mean of first sub component score of CG, MCCG-PT2, is 30.02 and the second subcomponent, MCCG-PT4, is 27.35.

Table 4
Descriptive statistics for the research variables

Continuous Variables	Minimum	Maximum	Mean	Standard Deviation
EDQ (%)	1.43	55.71	18.07	14.02
Corporate Governance				
CG (%)	3.13	90.18	64.72	12.14
MCCG-PT2 (%)	6.25	93.75	30.02	7.74
MCCG-PT4 (%)	0.00	92.86	27.35	7.90
Environmental Performance				
EP score	–17.00	0.00	–1.29	2.34
Court Cases score	–4.00	0.00	–2.16	0.55
Warnings score	–15.00	0.00	–2.09	2.31
Firm Characteristics				
ROA (%)	–35.40	34.60	4.69	7.57
LEV	0.00	0.96	0.38	0.20
CAPIN	0.00	0.89	0.12	0.20
Ln SIZE	10.22	18.42	13.31	1.70
Dichotomous Variables	0(%)	1(%)		
INDUSTRY	12.40	87.60		
AUDITQ	47.90	52.10		

Notes: EDQ score= Environmental Disclosure Quality; CG = Corporate Governance; MCCG-P2 = First component measure of CG; MCCG-P4 = Second component measure of CG; EP = Environmental Performance; Court Cases Score= The number of Court Cases multiply by (–2); Warnings Score = The number of notices multiply by (–1); ROA = Return on Assets; LEV = Ratio of debt to assets; CAPIN = Capital Spending/Total Revenue at the end of fiscal year; Ln SIZE = Ln Total Assets; INDUSTRY = Industry as dummy variable given the value of 1 if the company belongs to high environmentally sensitive industries and 0 otherwise; AUDITQ = Audit Quality as dummy variable given the value of 1 if the company is audited by Big4 audit firm and 0 otherwise.

The environmental performance (EP) score and its components, court cases and warnings scores, are also displayed in Table 4. The minimum score of court cases and warnings are –4 and –15 respectively. These scores indicate that there is a company that has been charged twice in court and/or received 15 notices/ warnings from DOE for noncompliance of environmental regulations. In addition, the vast majority of the sample companies (87.60%) are from environmentally sensitive industries and almost half of companies (52.10%) are audited by Big4 audit firms.

Table 5 presents Pearson correlation matrixes of dependent variables and independents variables. According to Table 5, there are positive correlations

between all dependent and independent variables. These preliminary findings indicate that there is a possibility that H_1–H_3 is supported. Table 5 also shows that the highest correlation coefficient is between SIZE and EDQ (0.261). Such a positive and strong correlation between these two variables is expected since large companies can provide additional costs of delivering environmental disclosure, incline to adopt highly-skilled abilities and expertise and have complex reporting systems to offer comprehensive disclosures (da Silva Monteiro & Aibar-Guzmán, 2010). In addition, Table 5 illustrates that there is no collinearity issues among independent variables since the pairwise correlation between variables does not exceed 0.8 (Gujarati, 2003). Therefore, based on the Pearson correlation result, the observed correlation between variables is not considered as a problem in the interpretation of the results of multivariate analysis.

Table 5
Correlation matrix

	EDQ	CG	EP	ROA	LEV	CAPIN	INDUSTRY	AUDITQ	Ln SIZE
EDQ	1								
CG	0.203**	1							
	0.000								
EP	0.161**	0.135*	1						
ROA	0.214**	0.049	0.007	1					
LEV	0.077	0.041	–0.021	–0.177	1				
CAPIN	0.255**	–0.008	0.175**	0.048	–0.056	1			
INDUSTRY	–0.207	–0.048	–0.113	0.018	–0.082	–0.186	1		
AUDITQ	0.132*	0.082	0.152**	0.147**	0.051	0.180**	–0.105	1	
Ln SIZE	0.261**	–0.008	0.035	0.077	0.231**	0.122*	–0.111	0.177**	1

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed)

Results of Regression Analysis

The results of the regression analysis to test all four hypotheses are presented in Table 6. The first hypothesis (H_1), to investigate the association between corporate governance (CG) and environmental disclosure quality (EDQ) (Model 1), shows that CG is significantly and positively associated with EDQ ($\beta = 0.216$, $t = 2.614$). The results indicate an adjusted R^2 of 20.40%, F = 13.667, and $p < 0.000$.

These findings suggest that companies that have effective corporate governance mechanism are likely to have higher quality environmental disclosure. Effective corporate governance mechanism provides monitoring for more transparent and informative disclosure in order to lessen the possible conflicts of interests and opportunistic behaviour between managers and stakeholders. In other words, high quality environmental disclosure would close the information gap between managers and stakeholders. The outcomes support prior empirical studies (Ajinkya, Bhojraj, & Sengupta, 2005; Dunstan, 2008; Cormier et al., 2010) that CG is positively and significantly associated with EDQ. The finding is also in line with agency theory proposal that sound corporate governance mechanism can assist to mitigate various principal-agent conflicts through transparent and high quality environmental disclosure.

Table 6 also shows the regression results for second hypothesis (H_2), which is to investigate the association between corporate governance and environmental performance (EP) (Model 2). The results show that corporate governance is significantly and positively associated with environmental performance EDQ ($\beta = 0.0.24$, $p < 0.01$). The adjusted R^2 is 4.80%, F = 3.483, and $p < 0.000$.

The findings indicate that companies with effective corporate governance would prevent adverse environmental effect from corporate business activities. Effective corporate governance helps to develop environmental-friendly strategies, which aligned with stakeholders' needs, in order to meet environmental regulatory standards.

Environmental-friendly decisions and strategies assist companies' operations toward good environmental performance. Explicitly, companies establish procedures, such as utilising and reviewing appropriate internal control systems, monitoring compliance with legal requirements and adopting widely accepted practices regarding material environmental issues (e.g. disposal of waste) to ensure compliance with environmental regulations and avoid litigation risks, fines or penalties or damage to their reputation. Therefore, the likelihood that a company becomes the target in a lawsuit for its non-compliance with environmental regulations is decreased. As a result, effective corporate governance that acts in a more responsive manner leads to less violation of environmental regulations that positively influences environmental performance. The findings substantiate few prior studies (Haniffa & Cooke, 2002; Iatridis, 2013) that the existence of good corporate governance would lead companies to adopt socially acceptable policies and to better serve stakeholders' interests, including environmental protection.

Table 6 also shows results of regression analysis to test the third hypothesis (H_3), which investigates the association between environmental performance and

environmental disclosure quality (Model 3). Consistent with our expectation (H_3), there is a significant and positive association between environmental performance and environmental disclosure quality EDQ (ß = 0.646, $p < 0.05$). The adjusted R^2 is 17.97%, F = 11.857, and $p < 0.000$.

These findings indicate that companies that have adopted environmental-friendly strategies and have good environmental performance tend to provide environmental disclosure in more details to inform investors of their great environmental strategies. In this respect, companies would prefer to disclose more quantifiable data like energy/water consumption or carbon emission. In other words, companies would present themselves through disclosing "hard" items. Thus, providing clearer and informative disclosure regarding companies' environmental strategies, which would reduce the information gap between managers and stakeholders. Disclosure can help to lessen several principal agent conflicts through reduced information asymmetry. The outcomes support prior studies such as (Al-Tuwaijri et al., 2004; Clarkson et al., 2011) that companies with superior environmental performance would prefer to differentiate themselves through their environmental reporting. In other words, good environmental performers would prefer to disclose "hard", which is verifiable and difficult to mimic information (Al-Tuwaijri et al., 2004).

The fourth hypothesis investigates whether environmental performance variable mediates the association between corporate governance and environmental disclosure quality. This hypothesis is examined following three steps (Baron & Kenny, 1986).

In the first step, the independent variable needs to be significantly associated with dependent variable (Total effect ≠ 0). The results presented in Table 6 fulfill this requirement when the finding shows that the independent variable, corporate governance, is significantly associated with the dependent variable, environmental disclosure quality EDQ ($\beta = 0.216$, $p < 0.01$).

The second step is to test if independent variable is significantly associated with mediator variable (Indirect effect (a) ≠ 0). The results shown in Table 6 show that the independent variable, corporate governance, is associated with mediator variable, environmental performance EDQ ($\beta = 0.024$, $p < 0.01$). Therefore, the requirement for second step is fulfilled.

Table 6
Results of regression analysis for all specified models (n = 344)

Variables	EDQ	EP	EDQ	EDQ
	Model 1	Model 2	Model 3	Model 4
Constant	–18.520**	–2.700*	–3.191	–17.143**
	(–2.349)	(–1.884)	(–0.473)	(–2.109)
AUDITQ	–0.070	0.539**	–0.040	–0.345
	(–0.054)	(1.992)	(–0.030)	(–0.265)
CAPIN	14.734***	1.539***	13.510***	13.949***
	(3.348)	(5.492)	(2.933)	(3.121)
INDUSTRY	–5.408**	–0.534**	–5.396**	–5.136**
	(–2.149)	(–2.315)	(–2.063)	(–2.025)
LEV	4.495	–0.493	5.438	4.747
	(1.244)	(–0.971)	(1.499)	(1.325)
ROA	0.364***	–0.009	0.387***	0.369***
	(3.691)	(–0.447)	(4.003)	(3.815)
Ln SIZE	1.681***	0.004	1.618***	1.678***
	(3.909)	(0.045)	(3.559)	(3.846)
CG	0.216***	0.024***		0.204**
	(2.614)	(2.590)		(2.457)
EP			0.646**	0.510*
			(2.205)	(1.746)
R-squared	0.220	0.067	0.196	0.226
Adjusted R-squared	0.204	0.048	0.179	0.208
F-statistic	13.667	3.483	11.857	12.402
Prob (F-statistics)	0.000	0.000	0.000	0.000

Notes: Standardised coefficients are reported, with t values in parentheses.*$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

In the third step, the mediating variable needs to be significantly associated with dependent variable after controlling the independent variable (Indirect effect (b) $\neq 0$). The results shown in Table 6 indicate that the mediator variable, environmental performance has significant and positive association with dependent variable, environmental disclosure quality, after controlling for the effect of independent variable, corporate governance EDQ ($\beta = 0.510$, $p < 0.10$).

Thus, this study fulfills all the three steps required for mediating test based on 'casual steps' approach developed by Baron and Kenny (1986). As a result, the results are consistent with fourth hypothesis (H_4) that environmental performance mediates the association of corporate governance and environmental

disclosure quality. Table 7 shows the summary of the estimated results for these three steps in Malaysia.

Table 7
Summaries of statistical steps for mediation analysis

Steps	Dependent variables	Independent variables	Coefficient	Coefficient value
First step	EDQ	CG	Total effect (c)	0.216***
Second step	EP	CG	Indirect effect (α)	0.024***
Third step	EDQ	EP & CG	Indirect effect (b)	0.510*
			Direct effect (ć)	0.204**

The summary shown in Table 7 provides several descriptions. First, there is a positive and significant indirect effect of (α) and (b), between corporate governance and environmental disclosure quality in Malaysia. Second, the direct effect (ć) between corporate governance and environmental disclosure quality remains significant after controlling for environmental performance. Third, the absolute value of direct effect (ć) is smaller than total effect (c) in Malaysia (0.204 < 0.216), suggesting that environmental performance partially mediates the association between corporate governance and environmental disclosure quality. Overall, the results and estimated coefficients support the fourth hypothesis (H_4); hence, indicating that environmental performance partially mediates the association between corporate governance and environmental disclosure quality. The findings indicate that companies that implement effective corporate governance mechanism would most likely monitor the environmental issues to ensure compliance with laws and regulations related to the environmental protection. This will cause companies to have better environmental performance. Subsequently, good environmental performance companies disclose this information in a more quantitative manner that leads to better quality disclosure since this disclosure is more objective and can be verified. This form of 'hard' disclosure is difficult to be imitated and can only be made possible if companies are in good term with the environment.

Table 6 shows that most control variables show significant relationship with dependent variables. Capital intensity (CAPIN) is positively and significantly associated with EDQ (as shown in Model (1), (3) and (4)). This finding is consistent with past studies such as Clarkson et al. (2008; 2011) that companies with higher capital spending are expected to have newer and more environmental friendly equipment to employ cleaner and less polluting technologies. This will

result in companies to have better environmental performance and disclose this information in their annual reports.

Table 6 also indicates that Return on Assets (ROA) is positively and significantly associated with EDQ (as shown in Model (1), (3) and (4)). The finding is consistent with past studies that profitable companies tend to provide high quality disclosures because they have more resources to do so (Al-Tuwaijri et al., 2004; Haniffa & Cooke, 2005; Villiers & Staden, 2010). However, the result indicates that there is no significant relationship between ROA and EP.

Table 6 also reveals that companies' Size (SIZE) has positive and significant association with EDQ (as shown in Model (1), (3) and (4)). The finding is also consistent with prior studies (Deegan & Gordon, 1996; Adams, Hill, & Roberts, 1998; Gray, Javad, Power, & Sinclair, 2001; Ho & Wong, 2001; Patten, 2002; Eng & Mak, 2003; Gul & Leung, 2004; Cormier, Magnan, & Velthoven, 2005; Lakhal, 2005; Magness, 2006; Brammer, Millington, & Rayton, 2007; Donnelly & Mulcahy, 2008; Cormier et al., 2011; Rupley, Brown, & Marshall, 2012) that large companies tend to be more concern about their corporate environmental image and reputation; since they are more visible to external stakeholders. However, the result shows that there is no significant relationship between companies' SIZE and EP.

Moreover, consistent with prior studies (Frost & Wilmshurst, 2000; Qian & Schaltegger, 2013), type of industry (INDUSTRY) is negatively associated with the quality of environmental disclosure (as shown in Model (1), (3) and (4)). Companies in environmentally sensitive industries face more environmental issues and under higher stakeholders' pressure and therefore disclose less information. Table 6 also indicates that type of industry (INDUSRTY) is negatively and significantly associated with environmental performance (as shown in Model (2)). Companies that deal with serious environmental issues, have more environmental violations of environmental regulation which can lead to poorer environmental performance. This finding is consistent with past studies such as (Deegan & Gordon, 1996; Qian & Schaltegger, 2013).

Moreover, audit quality (AUDITQ) has a positive and significant association with environmental performance (as shown in Model (2)). Past studies also argued that companies that are audited by Big4 audit firms have better audit quality that may help clients to prepare annual reports with more financial and non-financial information, including better environmental information (Qiu & Srikant, 2004; Gupta & Nayar, 2007).

CONCLUSION

This study examines the association between corporate governance, environmental performance and environmental disclosure quality of sample companies listed on the Main board of Bursa Malaysia for the year of 2013. Environmental disclosure variable is measured based on modified GRI-based disclosure index developed by Clarkson et al. (2008). Meanwhile, the corporate governance variable is measured based on corporate governance index which incorporates a wide category of corporate governance features and they are condensed into one single measure (Wahab et al., 2007).

The findings of this study add to the literature that high quality environmental disclosure is a result of an effective corporate governance mechanism's strategies and policies. This study highlights the important role of corporate governance as a monitoring mechanism and in reducing the information asymmetry as well as implicating the environmental decisions and strategies within companies. Thus, environmental disclosure can be reflected as a means toward undertaking sound corporate governance that incorporates accountability and responsibility in companies' environmental strategies and policies. This study is beneficial for policy makers by recognising the important role of environmental performance and how it can affect the quality of environmental disclosure. Environmental performance can be related to the variances of environmental strategies and environmental damages undertaken by companies, which influence the quality of environmental disclosure. Moreover, considering the significant role of outcome of environmental friendly policies in enhancing the quality of environmental reporting, they would assist regulators in formulating more efficient environmental standards.

While the results of this study contribute to better understanding of the role of corporate governance towards the betterment of environmental performance and disclosure quality, one main limitation of the research is acknowledged. This study focuses on a single year study. A more comprehensive and reliable results will be possible if the study was carried out in a long-term period.

This study also provides a rich avenue for future research in this area. First, a different method to gather data for the study, for example interviewing the members of board director, would provide further insight into the board members' opinion about environmental sustainability issue and its reporting. Second, a comparative study between countries would also provide additional information whether cultural difference has an influence in the relationship between variables in this study.

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NOTES

1. Part (2) best practices provide a set of guidelines or practices relating to the board of directors and accountability and audit to assist companies in designing their approach to corporate governance.
2. Part (4) explanatory notes provide further explanation of three parts of MCCG.
3. Companies are considered to be in environmentally sensitive industries if they are in the following operations: chemicals, mining, oil and gas, transportation, utilities, wood and timber, construction and properties, agriculture and manufacturing. On the other hand, less environmentally sensitive industries are in the areas of trade/services, hotels and real estate (Frost & Wilmshurst, 2000; Sharifah et al., 2008).

APPENDIX

Corporate Governance Index

Item	MCCG_PT2
1	Does the company split the Chairman and CEO/Managing Director posts?
2	Does the company comply with MCCG recommendation on the proportion of independent directors on the board?
3	Is the frequency of board of directors' meetings disclosed?
4	Does the company have a nomination committee?
5	Are the majority of directors on the nomination committee independent?
6	Does the CEO sit on the nomination committee?
7	Does the company disclose recommendations made by the nomination committee?
8	Does the company disclose methods of board appointments?
9	Does the company have a remuneration committee?
10	Is the list of remuneration committee members disclosed?
11	Does the CEO not sit on the remuneration committee?
12	Are the majority of directors on the remuneration committee independent?
13	Does the company disclose recommendations made by the remuneration committee?
14	Are the majority of directors on the audit committee independent?
15	Does the company disclose activities carried out by the audit committee?
16	Does the company disclose a statement on internal control?
Items	**MCCG_PT4**
1	Does the company disclose relationships that directors have with the company or other board members?
2	Does the company disclose delegation and separation of duties among directors?
3	Does the company disclose current appointments of directors?
4	Does the company disclose directors' experience and education background?
5	Is the list of the nomination committee members disclosed?
6	Is the frequency of nomination committee meetings disclosed?
7	Does the company disclose directors' remuneration?
8	Does the company disclose components of the remuneration scheme of directors?
9	Does the company disclose details of individual remuneration scheme of directors?
10	Does the company disclose affiliations with major shareholders?
11	Does the company disclose material contracts with major shareholders?
12	Does the company disclose board appointments?
13	Does the company disclose investor relations?
14	Does the company disclose individual members' attendance at audit committee meetings?

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MANAGEMENT CONTROL FOR MICROFINANCE: AN EXAMINATION OF THE BELIEF SYSTEM OF A MALAYSIAN MICROFINANCE PROVIDER

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ABSTRACT

This paper examines how the belief system of a bank that provides microfinance services influences formal and informal control mechanisms and consequently shapes decisions and the strategic direction of microfinancing in Malaysia. Using institutional logics perspective as our theoretical lens, we conducted a case study in a Malaysian developmental financial institution (DFI) responsible for providing microfinancing. The results suggest that it is difficult to achieve a balance between economic and social considerations when the banking belief system is strongly rooted in the overall banking practices. This paper highlights the dominance of the banking logic over the social logic as reflected in the DFI's management control system. Specifically, it demonstrates how its belief system underpins its microfinance activities due to a focus on risk-return considerations, which aim to minimise non-performing loans and maximise commercial profits. This consequently affects clients who have obtained microfinance products and services. This paper also demonstrates how the hiring carriers of social logic do not appear to infuse the organisation with social logic, due to the vague and compartmentalised structure of the microfinance segment and a lack of long-term social goals in both external and internal monitoring systems.

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INTRODUCTION

Microfinance institutions (MFIs) and other microfinance providers that provide financial services to financially excluded groups of people face tensions between their social and economic objectives and must motivate their employees to achieve excellence in both (Battilana & Dorado, 2010; Epstein & Yuthas, 2011). Balancing these dual objectives is problematic, as achieving social objectives can impact commercial objectives or vice versa. Lending to the poor is labour intensive, risky and incurs higher transaction costs (Battilana & Dorado, 2010). To compensate for this risk, microfinance loans require a higher return, which might lead to the prioritisation of economic over social considerations (Siti-Nabiha, Azhar, Mohd Isa, & Siti-Nazariah, 2018). Thus, many researchers doubt the long-run feasibility of achieving this double bottom line and suggest a potential trade-off between social and financial objectives (Dehejia, Montgomery, & Morduch, 2012; Hermes, Lensink, & Meesters, 2011).

The tension between financial and social objectives is exacerbated by the difficulty of quantifying social measures, which may result in a reliance on financial measures to monitor performance and manage resources (Durden, 2008; Norris & O'Dwyer, 2004). Such action could lead to focusing on financial performance instead of social performance, which might break the link between the objectives of microfinancing and the way the process is managed internally. To resolve this tension, several authors have argued that MFIs should use management control practices that could assist MFIs to balance the demands of their social and financial goals, while at the same time ensuring a coherent translation of the organisation's strategy and the achievement of both its economic and social goals (Epstein & Yuthas, 2010; 2011).

However, the issue that surrounds management control for MFIs, concerning balancing the needs of social and financial performance, might be problematic for microfinance providers, especially those with a strong commercial orientation, given that their belief system might influence microfinance-related decisions. In other words, if a microfinance provider's value is deeply rooted in banking or commercial orientation, then this would be reflected in its belief system, i.e., the control system that directs or restricts strategic decision-making activities, and it would also influence other organisational control mechanisms. Consequently, this would hinder the balance between social and commercial objectives that underpins microfinancing, and the social objectives of microfinance

might not be achieved. However, empirical research on control systems in the context of microfinancing is limited with regard to the issue of the role of belief systems as a lever of control. As such, the purpose of this paper is to examine how the belief system of an organisation that provides microfinancing influences formal and informal control mechanisms and consequently shapes decisions related to key microfinance activities in the organisation, e.g., loans approval, collection, disbursement and risk management.

To address the research questions, we conducted a case study with a Malaysian developmental financial institution (DFI), a specialised financial institution with a specific mandate to promote key sectors of strategic importance, and which has also been entrusted with the additional responsibility of providing microfinance products and services. Microfinance in Malaysia is generally a government-mandated programme, and the first established microfinance provider was a government-backed NGO. Subsequently, in pursuit of an agenda of financial inclusion, DFIs were given the responsibility of offering microfinancing services. The microfinance segments of DFIs differ from those of other commercial institutions because their objectives include not only economic aspects but also social aspects.

LITERATURE REVIEW

Management control consists of an array of control mechanisms that are employed to pursue organisational objectives (Widener, 2007; Simons, 1995; Merchant & Van der Stede, 2012). In contrast to formal systems, which seek to control behaviour through written procedures and policies or codes of conduct, informal control systems comprise shared values and corporate culture, and are not based on measureable objectives or explicit measures (Evans & Tucker, 2015; Norris & O'Dwyer, 2004; Riccaboni & Leone, 2010). Informal control systems are regarded as a form of social control because they consist of less well-defined practices and embody the connections and communications between organisational members (Tucker, 2011). Simons' (1995) levers of control (LOC) framework views management control as the combination of four control systems; it has been argued to be relevant to balancing the trade-offs faced by organisations such as between short-term and long-term goals, the needs of the different constituents and the different objectives/pressures faced by organisations. It is therefore appropriate for this research, which focuses on microfinance providers. These four control systems comprise: (i) belief system (transmitting organisational core values); (ii) boundary system (setting limits on organisational behaviour); (iii) diagnostic system (monitoring critical performance variables); and

(iv) interactive control system (encouraging debates and dialogues in the process of monitoring uncertainties) (Simons, 1995). Despite the critical and significant role of the belief system as a control lever in managing and maintaining organisational members' identification with the organisational core values, compared to other control levers it has been overlooked and it is not widely used in the empirical literature, especially with regard to its role in shaping other elements of a control system (Collier, 2005; Chenhall, Hall, & Smith, 2010; Evans & Tucker, 2015).

The Belief System as a Lever of Control

The belief system is defined as the "explicit set of organizational definitions that senior managers communicate formally and reinforce systematically to provide basic values, purpose and direction for the organization" (Simons, 1995, p. 34). The belief system informs managers what the organisation stands for and guides them in what they can or cannot do. Moreover, belief controls promote performance while simultaneously (through the established values) acting as a boundary system by ensuring organisational compliance (Tessier & Otley, 2012). As such, the informal control system is inherently embedded in the belief system (Collier, 2005; Ferreira & Otley, 2009), as implied by Simons' suggestion that the belief system influences the boundary system and that both systems are aligned and compatible with the organisational culture, which constrains as well as enables actions. The belief system can be communicated through formal methods (established mission and vision statements, statements of purpose and credos) and informal ways (such as through the socialisation process). For this reason, the belief system is also viewed as a form of social control and it influences the other three forms of control (Tessier & Otley, 2012; Widener, 2007).

Empirical research has provided insights into the importance of belief systems for communicating core values of organisations (Collier, 2005; Chenhall et al., 2010) and for facilitating organisational change (Marginson, 2002). Consequently, they affect and are influenced by other control mechanisms. Collier (2005) found that in the absence of formal system-based control in an entrepreneurial firm, the belief system is used as a lever of control and it influences and is reflected in the social control of the firm. Evans and Tucker (2015) found that among the four LOC systems, the belief system has a greater influence on facilitating the organisational response to change, as corporate values guide the change agenda. Similarly, Marginson's (2002) research on the role of management control system (MCS) in the development of ideas found that the belief control system facilitates the generation and filtering of ideas and thus guides the change process in an organisation. The insights from Chenhall et al.'s (2010) study on MCSs in non-governmental organisations (NGOs) highlight the importance of

the belief system for adding value to an organisation, as it shapes and influences employees' behaviours and manages the tension between the employees' values and the values of the organisation. Moreover, the belief system was used to communicate the organisation's core values to current and potential employees. Chenhall et al.'s (2010) study also demonstrated that the dominant belief system mitigated the need for a boundary system in the NGO. The employees' bonding, or the strong relationships between employees, were further supported and developed by the organisational belief system. The belief system could also be reinforced through the use of performance measures (Tuomela, 2005). Hence, the findings from previous empirical research show the influence of the belief system on other control mechanisms and how it provides internal coherence and consistency in the array of control mechanisms used, especially social control. Thus, informal control systems can stipulate responsibility or accountability on behalf of formal control systems (Simons, 2005).

However, there is a lack of empirical literature on the use of MCSs in microfinance settings, specifically on how the belief system influences key organisational activities and other controls. Hence, examining the belief system as a control lever is important for commercial microfinance providers such as DFIs, given that engagement with microfinance is significantly different from that with other financial services, in part due to the social values underpinning the microfinancing programmes. Thus, the issues are how the belief system of a commercially oriented DFI shapes the microfinance activities and other control mechanisms in the organisation, and how the belief system influences the use of social control in the organisation, specifically personnel control (Merchant & Van der Stede, 2012). Personnel control is practised through selection and placement, training, the provision of resources, including informal and formal information transfers, such as transfer of knowledge and experiences, and best practices among organisational members (Merchant & Van der Stede, 2012; pp. 88–90).

In this study, we also address the criticism that the Simons control framework focuses mainly on the use of control by top management (Berry, Coad, Harris, Otley, & Stringer, 2009; Merchant & Otley, 2007) as the belief system is viewed as the dominant values and beliefs of senior management, while employees are considered passive actors (Tessier & Otley, 2012). However, research has shown that the creativity of middle managers also impacts organisational survival (Marginson, 2002). Moreover, the significance of the belief system to the organisation can be evaluated based on how it guides the organisational reaction to change (Evans & Tucker, 2015). Thus, our focus is not limited to senior management but encompasses the reactions and actions of other employees, i.e., the microfinance officers at the branches, to determine how

the belief system shapes the actions of operational employees in microfinance practices and activities.

THEORETICAL FRAMEWORK

Many factors shape organisational practices, including organisational objectives and demands by certain groups of stakeholders to address specific issues. These factors provide a basis for discussing how such practices unfold within organisations and their relation to internal and external pressures. Indeed, such practices have recently been discussed quite extensively in the literature in light of the institutional logics approach (Lounsbury, 2007). This approach concerns how institutions, defined by Friedland and Alford (1991, pp. 242–243) as "supra organizational patterns of human activity by which individuals and organizations produce and reproduce their material subsistence and organize time and space", influence organisational practices (and/or belief systems), which unfold as direct and/or indirect effects of institutional pressures (Lounsbury & Boxenbaum, 2013). As Lounsbury (2008) argues, organisations inevitably have certain prevailing logics that underpin and/or shape organisational practices.

In this paper, we will demonstrate how the broad institutional features of microfinance (i.e., social orientation and poverty alleviation) relate to the specific nature of the DFI (whose main business concern is performing banking activities commercially) and the development of particular logics that influence the use of the MCS.

Dominance of the Banking Logic

Most organisations function within environments in which multiple institutional logics are present, and these diverse logics are reflected in the organisation's structures and practices (Greenwood, Raynard, Kodeih, Micelotta, & Lounsbury, 2011; Kraatz & Block, 2008). In some cases, "one logic can be so dominant that it eclipses other logics, rendering them immaterial to organizational functioning" (Besharov & Smith, 2014, p. 366). The (re)construction of a dominant logic is broadly presented as a means of identification, according to the content of the identity being constructed in terms of an identity label and its main attributes (Creed, Scully, & Austin, 2002; Suddaby & Greenwood, 2005). The dominant logic strategically contests other logics to achieve particular objectives (Pache & Santos, 2013).

Some institutional logics studies, such as those of Thornton and Ocasio (1999) and Lounsbury (2007), which focus on dominant logics, indicate that

institutional actors are prone to change their behaviour accordingly. They argue that each institutional logic is attached to a particular subject, which subsequently creates some forms of imbalance and/or tension (see also Battilana & Dorado, 2010). For example, in the context of the banking industry, banking logic may be a dominant logic given that banks are concerned about their legitimacy and sustainability in offering banking products and services (Almandoz, 2012). Indeed, they adapt easily to their environment's banking requirements, which require them to be strongly rooted in banking regulations with an optimistic commercial perspective. This perspective, however, may be contested in the event where the banks (start to) infuse community-oriented programmes into their existing business model as they have to pursue some potentially competing institutional logics to meet conflicting demands (Marquis & Lounsbury, 2007), in which dominant logic(s) may outshine less dominant logic(s).

We argue that this is prevalent in the case of microfinancing offered by certain financial institutions as they address specific social needs that are driven by social logic. Social logic is structured around the predominant goal of providing services to address specific social needs. Economic resources are the means by which these organisations achieve commercial goals. Profit is viewed as a means to achieve the organisation's end goal and is thus reinvested in the organisation's social mission. The social logic prescribes control as the appropriate means of monitoring strategy and operations, with a great concern for people and their social needs. Battilana and Dorado (2010), who studied a microfinance institution, found that while some loan officers' work practices were influenced by the banking logic, others were influenced by the development (or social) logic. They also reported that the banking logic, which has a commercial nature, appeared to dominate banking operations and administrative procedures.

Thus, it is justifiable to examine whether dominant institutional logics are used within particular environments to accomplish certain institutional demands. Nevertheless, we need to acknowledge that organisational practices are constrained by the availability of resources and organisational capabilities and competencies (Battilana & Dorado, 2010; Pache & Santos, 2013; Chiwamit, Modell, & Yang, 2014). These factors can provide a basis for discussing how MCS is embedded and/or driven by institutional logics.

RESEARCH METHOD

A qualitative case study approach was used for this research. Data were collected over a period of seven months from March to September 2016. To understand the context of microfinancing and the role of DFIs, the first phase of this research

constituted three hours of focus-group interviews with key senior managers of three DFIs responsible for the provision of microfinance services in Malaysia. The officers from the three DFIs had vast experience in microfinancing and were responsible for their DFIs' microfinance programmes. The senior executive from the headquarters' (HQ) microfinance department of Banco (disguised identity*)*, the case site, was among those interviewed during the session.

Of the three DFIs involved in microfinancing, Banco was selected as the case site because of its microfinance segment's growth and profitability. At Banco, interviews were conducted at HQ's microfinance department, i.e., the department responsible for microfinancing. In the department, the Assistant Vice President of Microfinance (AVPM) and the senior executive of the microfinance department were interviewed because both had worked at Banco since the establishment of the microfinance department. As we seek to understand how the control system shapes the decisions made at the operational level, interviews were conducted with the branch managers and microfinance officers at the two branches with the highest disbursement record of microfinancing loans. The West Branch microfinance officer had occupied the job for only one year, thus we also interviewed the former microfinance officer of that branch to obtain a better understanding of the issues involved and to triangulate the findings. As shown in Table 1, we interviewed key officers who manage Banco's microfinance programme at different hierarchical levels. The Assistant Vice President of Accounting and Reporting at HQ was also interviewed to determine both the internal and external reporting and the monitoring of microfinance at Banco. Follow-up clarifications were obtained from these key officers, especially the senior manager of the microfinance department, through online communications.

Central Bank officers were also interviewed, as this bank plays a major role in DFI microfinancing, especially in the monitoring of the microfinance performance of DFIs. Similar interviews were also conducted with key officers from an NGO-based MFI in the country, in order to obtain insights into the background and development of the microfinance industry, and the role of DFIs in microfinancing, as well as assessing the performance of DFIs. The case study also draws data from a documentary review including organisational data and other public documents such as economic and Central Bank reports.

The data were analysed in several stages. The first stage involved intensive analysis of the economic and Central Bank reports to understand the characteristics of microfinance and to provide insight into the microfinance performance reporting requirements and the DFIs' microfinancing responsibilities. This is followed by the analysis of the internal documentary data such as Banco's

organisational reports and information about their microfinance products and services, so as to gain an understanding of the background of the organisations, its key microfinance products and services and its strategies. Banco's annual reports since the introduction of its microfinance programmes were extensively reviewed to identify specific strategies, missions or visions pertaining to microfinancing, the client charter and microfinance performance.

Table 1
The list of interviewees

Focus group interviews with DFIs	
Organisation	**Position**
DFI A	Vice/President/Manager
Banco	Senior Executive (Microfinance Department)
DFI B	Head of Microfinance Section
Banco	
HQ	Assistant VP Microfinance (also Head of Microfinance Department), Assistant VP Reporting, Senior Executive at Microfinance Department
East Branch	Branch Manager, Microfinance Officer
West Branch	Branch Manager, 3 Microfinance Officer
Other Parties	
Central Bank	Head of Corporate Division
NGO-based microfinance provider	Head of Research & Development Unit

The second stage involved reviewing and analysing the interview transcripts several times to identify general themes arising from the data. The conceptualisation of the MCS guided us in determining the belief system of the organisation and how the belief system transverses organisational activities, specifically the DFIs' microfinance activities. In so doing, we specifically examined the similarities and differences in the data between the various data sources, i.e. between the microfinance officers at HQ and the bank and other officers. The data were categorised according to the key activities of the microfinancing service provision in terms of the financing approval process, the factors influencing the decisions, the internal practices such as the training for officers, etc. Then we mapped out the how the control system influences the loan collection process, the monitoring mechanisms and performance measures for the branch, HQ and microfinance department.

The third stage of the analysis involved comparing the evidence from the findings of the interview data and the documentary data to determine the contradictions between the formal documents and actual practice. At this stage, we reviewed the annual reports and organisational website again to determine Banco's stated core values and how the provision of microfinancing and the client charter are explained in the documents. We then compared this information with our interview data from the various sources. Hence, the interviews were triangulated with the documentary data to assess the gaps between official claims and systems and the practices implemented within the organisation. Thus, the credibility of our findings was enhanced by triangulating the data from the various sources across different organisational levels. In the final stage, we linked the categories of data together to explain how the belief system influences microfinance activities as well as other forms of control. Finally, the institutional logic perspective was used to explain our findings. Thus, the analytical concepts discussed in the framework were useful for providing explanations and answers to the research question (Siti-Nabiha, 2009). As such, the theory and our research questions provide a guide and framework for explaining the research findings.

FINDINGS

Banco was initially established in the 1950s to improve the socio-economic status of rural communities in Malaysia and to provide opportunities for their self-improvement. Apart from meeting the needs of large corporations, Banco also focuses on small and medium-sized enterprises (SMEs), including micro enterprises and rural industry players. Banco is one of the DFIs that are required by the Central Bank of Malaysia to provide microfinance services as stipulated in the 2009 Microfinance Institutional Framework. The framework provides that the selected DFIs must provide easy microfinancing for *business purposes* of up to RM50,000 (with no collateral), the fast disbursement of loans and convenient and widely accessible microfinance products. Previously, only NGO-based MFIs were involved in microfinancing, with a desire to alleviate poverty (Che-Zakiah, 2004). Banco offers microfinance services and continues to be strategically involved in ensuring the growth of this microfinance sector. Banco's decision to accept the national mandate to offer microfinance services follows one of its strategic thrusts, i.e. to ensure that there is an alignment between its strategic direction and the agendas of the government and other regulatory bodies, as stated in Banco's annual reports. Although its microfinancing portfolio is largely financed by the internal funds, the Central Bank has a "power" over the ways the microfinance programme is delivered in Banco.

The coercive power imposed by the Central Bank (being a supervisory and regulatory body for DFIs) has been regarded as a push factor for the growth of this sector. Such power is exercised by requiring Banco to submit reports and to undergo face-to-face meetings related to microfinance performance. This exercise has greatly influenced the management of the microfinance programme at Banco, as noted by the AVPM:

> Now the Central Bank monitors … So, we know [our performance] … If we don't achieve, they ask why. This is part of the financial inclusion agenda which we are subjected to.

In addition to the focus on the financial inclusion agenda, Banco faces pressures over profitability and sustainability. The reduction of development aid and a lack of governmental guarantees of funds raised have pressurised Banco to move towards commercialisation and profit orientation. At the same time, Banco needs to contribute to achieving the social economic agenda of the government. Such dual competing demands from the government have created tension, especially over running and managing the microfinance programme.

With limited experience in microfinance services, Banco started to develop its microfinance structures by hiring those with experience in microfinance and setting up a microfinance department at HQ. Banco continued to mimic the practices of some established MFIs by sending staff from different hierarchical levels, i.e., officers, branch managers and top management, for training and visits at those MFIs, in order to learn good practices that could be replicated in Banco. Consequently, Banco's microfinance model was massively adapted from their good practices. The defining characteristic of microfinancing, i.e., group, non-collateral lending with a regular repayment schedule, is practised at Banco. All microfinancing loans are offered for business purposes as per the MFI framework. However, in the last two years, due to issues in group-based lending, particularly group formation, Banco has also offered a new microfinance product: individual-based lending charged at a higher rate. Banco provides microfinance services through its existing branch network using the same tiers used for other financial services.

The above descriptions suggest that Banco has pushed really hard for the commercialisation and sustainability of the microfinance programme. Interestingly, this appears to have further promoted the dominant banking logic which underpins its belief system and permeated the ways MCS is used to manage the microfinance programme.

Belief System Underpinned by the Banking Logic

The belief system in Banco is rooted strongly in the banking logic and it shapes the actions of members of the organisation and acts as a boundary system by providing guidelines for acceptable behaviour by organisation members. Although Banco's microfinance service differs from other banking services due to its non-traditional approach to lending, the belief system seems to have exerted a great deal of influence over the microfinancing that is being offered. Banco's belief system is clearly elucidated in its risk-return considerations and the minimisation of non-performing loans (NPLs). It shapes its decisions relating to: (i) rates/fees charged, (ii) loan recipients, (iii) loan assessment criteria, and (iv) loan collection processes.

The belief system is used to communicate the organisational core values through the guidelines for processing and loan approval, which also set the boundaries for microfinance activities, particularly those pertaining to loan activities and collections. This banking logic is shown in the targeting of microfinance clients with the main emphasis on loan quality, profitability and risk minimisation. This is clearly reflected in the statement by the former West Branch microfinance officer:

> [the branch manager] said it is not useful to have a lot of loans, but of low quality… if there [is] a lot of loans, but all do not pay, the bank will suffer losses.

Risk minimisation has shaped the loans approval process as loan are given to those that offer lower risks, i.e., mainly to those with business track records such as two years of operating experience. As AVPM commented:

> We focus on the not so poor [client]... he must be in business already for two years. He must have experience. The bank does not want to take the risk.

Consequently, Banco focuses on the breadth not the depth of outreach as it targets poor, not hard-core poor, clients.

The belief system, underpinned by the banking logic, shapes Banco's decisions regarding the value of loans and the approval process. This is shown in the decision to maintain loan quality and to ensure that branch NPL does not exceed the stated limit. The desire to maintain loan quality and minimise NPL resulted in action to ensure client's ability to pay by checking applicants' credit reports and reference systems, and conducting site visits to assess the condition

and potential of the application business, especially if the client does not have formal records. To minimise risk and NPL, a lower value loan may be given to those clients who have one or two outstanding payments. The provision of loans is tightened when branch NPL exceeds the target limit, which means that even those with just a single outstanding payment will not be awarded microfinance loans. As a result, loans are provided to clients who have shown their ability to pay based on a good payment record of six months, together with a good business cash flow.

The focus on minimising NPL has a significant influence on the amount of credit approved by Banco. Banco usually gives only a smaller amount for the first loan. Only after the client has shown an ability to pay it back will the bank increase the loan amount. Even for subsequent loans, Banco will not give a large or lump-sum loan amount as clients do not have the ability to repay larger amounts, as indicated by the West Branch manager:

> We will not give a lump sum as we notice this is the root cause [of failure to repay]. Initially his payment is good. When we give for a second time and we give too much, he can't pay.

Clearly, Banco has placed much emphasis on the risk-return considerations in its microfinance programme. Apparently, such considerations have been reflected in the rates (or fees) charged for the loans disbursed. For loans derived from funding from government sources, Banco charges minimally or interest-free. Meanwhile, loans disbursed using Banco's internal funds are charged at higher rates to cover the operational costs and to absorb the default risk resulting from borrowers' inability to repay the loans, which have neither collaterals nor guarantors.

In view of the above, it can be argued that Banco's belief system is underpinned by the banking logic that appears to be dominant in managing the microfinance programme and which acts as a control level in guiding employees' actions and decisions. Succinctly, such a programme is managed through the use of similar MCS mechanisms that are not uncommon in commercial banking practices in Banco. This belief system acts as a control lever that is also shaped and reinforced by the other control mechanisms, specifically the performance measures used internally to monitor Banco's microfinance performance.

Performance Measures and Reporting

The belief system, which emphasised the core value of risk-return consideration, was further reinforced by the external measures used to monitor Banco's

microfinance programme and this consequently shaped the internal performance measurement and monitoring system. The Central Bank monitors the microfinancing performance of the bank and industry as a whole, based on commercial indicators. These indicators, which have to be reported by banking microfinance providers, consist of (i) outstanding balance; (ii) approval rate/ cumulative approvals; and (iii) disbursed amount and impaired financing ratio (NPL). These measures are cascaded down to HQ's microfinance department and to the branch as the measures related to microfinancing, i.e., loan disbursement, NPL, collection rate, loan growth, group formation and customer complaints, are commercial in nature and similar to those reported externally.

Moreover, the belief system based on banking logic is perpetuated through the measurement system used to evaluate branch performance, which consequently leads to a lack of emphasis on microfinancing at the branch. As the microfinancing portfolio is small, it has an immaterial impact on the branch's KPIs; hence, it is not surprising that microfinancing is viewed by a branch manager as a corporate social responsibility (CSR) activity rather than as an integral part of Banco's arms-length business transactions.

The social logic underpinning microfinance did not flourish in Banco due to the separation of microfinance from other banking activities. The way the microfinance is structured in Banco also reflects the belief system and ensures the domination of the banking logic. This is done through the "separation" of microfinancing from the overall banking activities, as reflected in the responsibility structure of the microfinance programme and the performance evaluation of those involved. Even though the performance of microfinancing is the responsibility of the HQ microfinance department, the department has limited flexibility for managing performance as the microfinance activities mainly occur at the operational level – in the branch under the responsibility of the microfinance officers, who report to their respective branch managers. Microfinance performance, to a certain extent, is positioned outside of the department's control, despite the fact that the department manager's rewards and appraisal are linked to this performance. Similarly, at the branch level, microfinance is also "separated" from other banking activities as microfinancing performance measures are the responsibility of microfinance officers, who are responsible for the entire financing process, from processing loans to the control of problematic accounts and loans recovery. This represents a departure from other banking products at the branch, where different units are responsible for each type of activity.

As such, the microfinance performance only affects the microfinance officer's individual performance, not the branch's performance. The performance

of the microfinance officer is also geared towards minimising NPL with the collection effort, in particular, being an important evaluation criterion, as the West Branch manager explained:

> The main thing that I look [for in the performance of microfinance officers] is the collection.... At least 80% of the total collection, [the microfinance officers] must get.

Moreover, the non-achievement of performance targets by the microfinance officer would not have a significant impact on his performance if the officer also assisted in other activities at the branch. The branch manager conducts reviews with the microfinance officer related to externally measured and monitored microfinance indicators, as well as activities that support microfinance, and actions to address the NPL. The belief system is underpinned by the core values of risk-return consideration and minimising NPL, and this is also reflected in the emphasis on the monitoring of microfinance NPL, as it will impact the overall branch NPL.

The insignificance of the microfinance portfolio is also reflected in the reporting formats, as microfinancing is classified alongside "education and personal financing" and its profit is reported under "other income". The detailed reports on microfinance performance are prepared by the microfinance department and comprise information on the approval rate, collection rate, disbursement and NPL. The microfinance department also sends monthly performance reports to the branches to provide a performance overview of the branch and its peers. The department also issues reports on key areas of the microfinance programme to the Senior Vice President for Services and Products, which include information on the approval rate, collection rate, disbursement and NPL. Thus, the use of commercial indicators for evaluation and monitoring are cascaded throughout the organisational levels, which leads to further sedimentation of the dominant banking logic, which is reflected in the belief control system and which also shapes and influences other formal controls, i.e. the performance measurement and reporting system.

Social Control

Microfinancing clientele and activities are different from normal banking as microfinance clients, compared to clients of other products, are mainly disadvantaged groups with lower educational backgrounds and in most cases, they do not have proper financial records. As such, social control, specifically through the selection and placement of informal and formal information transfers, was utilised to ensure the sustainability of the programme. However, while the

social control system is used to ensure that microfinance operations are smooth, it is also shaped by the Banco belief system, thus further perpetuating the belief system.

In addition to formal communication, managers communicate the dominant belief system informally through the socialisation process, internal networking, informal meetings and discussions over achieving its banking objectives. Hence**,** the belief system in Banco influences the way that microfinance activities are structured and managed. Initially, when Banco started its microfinance programme, DFI recruited a well-trained microfinance officer from an NGO-based MFI to head the department that is responsible for managing the microfinance programme and overseeing branch activity in delivering microfinance products. Both the head of the department and the deputy had long-served the NGO-based MFI and they appear to possess wide experience and skills in microfinancing. Subsequently, it can be seen that the microfinance department does have some influence on the selection of microfinance officers. This selection is based on certain characteristics, such as the ability to communicate with the 'elderly and disadvantaged groups'. The same characteristics are also required by the branch managers, who expect their microfinance officers to be well-known in the community and to practise close client engagement through frequent visits with the customer, usually consisting of weekly visits for collection or twice-weekly visits for problematic accounts. Nevertheless, the social control is shaped by the belief system of ensuring loan quality and minimisation of NPL, as closer customer interactions with microfinance clients are crucial for maximising collection and minimising NPL. Thus, the emphasis of the selection requirements is to obtain microfinance officers who are able to engage with the client in order to achieve the key objectives of ensuring collection and minimising NPL, in alignment with the belief system in Banco.

Formal and Informal Information Transfer

The sustainability of the microfinance programme is also leveraged through formal and informal control systems in Banco, which are also shaped by the Banco belief system. The external and internal networking and information transfer are central in its decision-making processes related to loan approval and collection processes. Apart from using some procedures to guide loan evaluation, the subjectivity of decision making and closer interactions with clients also require tacit knowledge. Together with an objective assessment based on Banco's guidelines, loan approval requires subjective assessments because financial records alone are seen as inaccurate predictors of a good payment record.

This transfer of information, especially of tacit knowledge, is achieved in various ways. One way is for the officers to visit other branches that offer microfinancing in order to become familiar with microfinancing by observing and learning how the work is done. Formal training by the microfinance department is another means of accomplishing the socialising process and transfer of knowledge. Information transfer is accomplished by formal training at the microfinance department at HQ, which usually covers subjective evaluation, as well as sharing the experiences of the branches, including several days of field visits to well-performing branches to learn from them. The performance-reporting process also leads to information sharing on best practices in microfinance by Banco. The HQ microfinance department sends the monthly microfinance performance report to the branches. The microfinance officers usually seek to align their activities with those of other branches, and this has indirectly created competition among the microfinance officers over best practices and performance, which are ultimately based on commercial indicators, thus further perpetuating and reinforcing the belief system at Banco.

DISCUSSION AND CONCLUSION

This paper has explained the role of the belief system in influencing formal and informal control mechanisms and in shaping the microfinancing decisions in Banco. It can be argued that the power of a control system lies in how it is used to balance the competing demands faced by an organisation (Heinicke, Guenther, & Widener, 2016; Simons, 1995). In microfinancing, the tension or competing demands faced by microfinance providers are between economic and social considerations (Siti-Nabiha et al., 2018). In the case of Banco, there has been a push for this DFI to support the government's call to accommodate the needs of the poor, and to operate its microfinance business profitably. Its aims appear to be ensuring the programme's sustainability and the DFI's economic survival.

Generally, DFIs in Malaysia have moved towards commercialisation due to the government's pressure to be self-sustaining and to not be too dependent on the state's financial assistance. However, DFIs have to fulfil specific social roles, a fact that is reflected in the coercive pressure on the organisations to offer microfinancing. The social objectives of financial inclusion and poverty alleviation underpin microfinance programmes. The labour-intensive nature and higher transaction costs of microfinancing may have impinged DFIs' profitability and/or may have given rise to opportunity costs, which results in losing more profitable banking products as time and resources are utilised for microfinancing. It would be more profitable for banks to engage in normal financing; as one DFI

officer said, "microfinancing in volume is high, but in financial terms, it's low". Due to the coercive pressure to provide microfinancing, these organisations must address the tension between their social objective of providing greater access to financially excluded individuals and/or groups and their commercial objective of being profitable banking institutions. It has been argued that MCSs can be used to balance this tension. However, our findings show that it is difficult to achieve a balance between economic and social considerations, given that the former are often prioritised over the latter due to the dominance of the banking logic, which represents its belief system.

The findings also show that the inherent value or dominant logic in an organisation influences its MCS (Heinicke et al., 2016; Chenhall et al., 2010). Profit orientation, which is sedimented and internalised in the organisation over the years, is reflected in the banking logic and shapes both the formal and informal control systems used. Consequently, the organisation's practices correspond to the coercive pressure to provide microfinancing, which is in accordance with its dominant logic. The use of such control systems preserves this dominant core so that microfinancing decisions are aligned with the banking culture; i.e., profitability and the minimisation of business risk.

Similar to insights from previous research such as Collier (2005) and Chenhall et al. (2010), the findings of this study also highlight the key roles of the belief system and social control in perpetuating the banking logic. The belief system and social control are inherently consistent and complement each other to achieve the objective of the microfinancing programme at the bank. Although not explicitly and formally stated, we have observed that the underlying objective driving the case organisation's microfinancing is to ensure a sustainable microfinance programme which operates with self-sufficiency and is able to generate sufficient profits for future growth. The control systems used, i.e., the belief system and social control, aim to achieve this objective.

In contrast to previous research showing the impact of the belief system and informal control system in channelling change in an organisation (Evans & Tucker, 2015; Marginson, 2002), our findings have analysed the roles of the belief system and social control in ensuring stability and in perpetuating the banking logic. Microfinance practices underpinned by social logic do not lead to changes or the infusion of social logic into the organisation. Moreover, the lack of an interactive control system and the lack of emphasis on a diagnostic control system reveal a loose control system in terms of achieving microfinancing targets and objectives in the organisation. Similar to Tuomela (2005), our findings have showed the way the belief system was reinforced through internal measures used

to assess performance. More crucially, those measures are based on those being monitored by the regulatory bodies and/or stakeholders, who place a great deal of emphasis on commercial performance. Meanwhile, social performance is merely measured by the growth of the microfinancing segment. An increased focus on external monitoring and assessing the social development of the programme might increase the infusion of the social logics into the organisation. Such an assessment might lead to real tension between social and economic performance and, consequently, the leveraging of the control system to address the two competing objectives at Banco.

The structure of microfinance also reflects the perpetuation of the banking logic in the organisation. Although microfinance is treated like any other banking product from a commercial viewpoint, its activities are separate from other banking activities in the organisation. The microfinance officer is involved in all aspects of microfinancing activities, in contrast to other products, which utilise specific functions and officers for specific activities. As a clear illustration of the compartmentalisation of microfinancing, the responsibility for its growth mainly rests with the microfinance department at HQ. There is a lack of emphasis on microfinancing at the branches because microfinance targets represent a small percentage of branch targets. Indeed, one of the branch managers noted that microfinancing is viewed as a CSR activity and not a core activity of the bank. This position is in contrast to the view of the microfinance department at HQ, which is that microfinancing is part of the core activities of the bank, or as commented by the head of the microfinance department at HQ: "…being a DFI, we cannot neglect microfinance as it is a part of our existence and core business". However, this view has not been well embraced by Banco's branches. Thus, it is not surprising that the performance of microfinance officers at the branch level is loosely tied to microfinancing targets as part of Banco's belief system. Furthermore, the officers at the branch are bound by the belief system of minimising business risk and considering profit, due to pressure to meet the respective branches' banking targets.

Clearly, the belief system in Banco is strongly rooted in the dominant banking logic. Interestingly, hiring carriers of the social logic with broad experience in microfinancing (Battilana & Dorado, 2010) has not altered the belief system of the organisation or led to significant changes in the organisation. The established dominant belief system, underpinned by the banking logic and the compartmentalisation of microfinancing in the organisation, has hindered the emergence of a sub-culture; responsibility and accountability mainly rest at the microfinance department at HQ. The carriers of social logic used informal social control in the organisation, but with a focus on ensuring profitable microfinance

growth. Knowledge transfer and information sharing on skills in dealing with clients, assessing client potential, hiring and the socialisation process, ultimately allowed sustainable growth and released the bank from dependence on government funds for its microfinance activities. Indeed, the socialisation process, which is performed to ensure that the commercial objective is achieved, clearly resembles the banking logic. This banking logic exhibits a short-term focus on results rather than on long-term goals of social development (Akanga, 2017).

In conclusion, there appears to be a significant development in the roles of belief control and social control in the organisation; both forms of control seek to ensure stability and to perpetuate the banking culture in the organisation. Both control systems are used to ensure that the organisational goals are achieved. Even hiring carriers of social logic has failed to alter the goals and control system used due to (i) the vague structure of microfinance; (ii) the compartmentalisation of microfinancing; and (iii) a lack of long-term social development goals in the internal and external monitoring of the microfinance programme. The social logic is evident in the mimicry of ceremonial microfinancing practices of other established financial institutions. Regardless of this mimicry, the banking logic appears to be dominant in Banco as the belief system is more closely aligned with banking practices that emphasise profitability and efficient handling of business transactions. In addition, the microfinance client charter resembles those of existing commercially oriented banking products. Thus, it can be argued that the Banco belief system reinforces the commercial orientation and banking culture, as reflected in risk-return considerations and interest rates and/or charges with little consideration of the social objective and/or logic.

Social control is implemented to ensure better client engagement and the transfer of tacit knowledge to achieve profitable growth. Although the provision of microfinance by Banco appears to build on social logic, we have observed little dominance of this logic in the organisation. We found that while the social logic is used for its primary mission of complementing the government's mandate, banking logic is used for the success criteria for this mission. Moreover, the provision of services was externally imposed on the bank and did not develop internally. The social logic is only implicated in services such as advisory activities for clients, but even then, the objective is to ensure business success as measured by loan repayments and profit targets. Thus, this DFI is said to have dealt with both the social logic that reinforces the governmental agenda to help the poor, and the banking logic that conforms to commercial banking practices, so as to generate sufficient profits to enable it to meet its financial objectives.

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