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Does economic freedom fosters banks' performance? Panel evidence from Malaysia

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ABSTRACT

The present paper provides new empirical evidence on the impact of economic freedom on banks' performance. The empirical analysis is confined to the Malaysian banking sector during the period of 1999–2007. We find that overall economic freedom and business freedom exerts positive impacts, implying that higher (lower) freedom on the activities that banks can undertake and entrepreneurs to start businesses increases (reduces) banks' profitability. The empirical findings seem to suggest that corruption has a corrosive impact on Malaysian banks' profitability. Interestingly, the impact of monetary freedom is negative, demonstrating the importance of government intervention in determining the profitability of banks operating in the Malaysian banking sector.

1. Introduction

The banking sector is probably the most important financial intermediary in an economy because of the role it plays as a provider of liquidity in monitoring services and as producers of information (Diamond and Dybvig, 1983). In most countries, banks provide essential financial services that facilitate economic growth. They lend money to start businesses, purchase homes, secure credit for the purchase of durable consumer goods, and furnish a safe place in which societies can store their wealth. For developing countries, improvements in the banking sector could have significant impact on the allocation of financial resources since the sector remains, still, the most important source of financing private investment of firms, given the underdevelopment of the financial markets.

Because of the vital role banks play in the economy, the banking sector has been singled out for special protection and it is clear why such great emphasis is placed on regulation and supervision of the banking sector (Barth et al., 2006). The regulation and supervision serves two main purposes. First is to safeguard the safety and soundness of the financial system. And second to ensure that financial services firms meet its basic fiduciary responsibilities. Ultimately, both tasks fall under a government's judiciary to enforce contracts and to protect its citizens against fraud by requiring financial institutions to publish their financial statements verified by an independent audit, so that borrowers, depositors, and other financial actors can make informed choices. In this regard, the earlier studies by among others Houston et al. (2010), Mayer and Sussman (2001), Acemoglu et al. (2001, 2002), La Porta et al. (1998, 1999) finds a positive relationship between investor protection

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and capital market and economic development, while Lin et al. (2010) find positive impact of information disclosure on bank efficiency levels. In general, these studies demonstrate important connections between legal systems, investor protections, and the development of capital markets.

However, when government coercion rises beyond the minimal level, it becomes corrosive to freedom and the first freedom affected is economic freedom. Greater direct control by government is a threat to the functions that the banking system plays because excessive government interference can introduce inefficiencies and outright corruption (Beach and Kane, 2008). Heavy bank regulation reduces opportunities and restricts economic freedom. Beach and Kane (2008) suggest that the marketplace should be the primary source of protection by performing the role as independent auditors and information services in a free banking environment. Such oversight is distinguished from burdensome or intrusive government regulation or government ownership of banks, both of which interfere with market provision of financial services to consumers. In this vein, La Porta et al. (1997) among others argue that the government owned banks are typically vehicles for political patronage, fail to provide a useful intermediation role, and consequently worsen the prospects for competitive market development. The earlier studies by among others Acemoglu (2008), Giavazzi and Tabellini (2005), Beck et al. (2003), La Porta et al. (1999), etc., also suggest that the rate of success of an economy critically depends on a good government. Therefore, it is such government intervention in the market, not the market itself that limits economic freedom.

These important insights have spurred further exploration into the various channels in which economic freedom influences economic growth (e.g. Heckelman and Knack, 2009; Altman, 2008; Powell, 2003; Adkins et al., 2002; DeHaan and Sturm, 2000; Heckelman and Stroup, 2000; Heckelman, 2000; DeHaan and Siermann, 1998). Most of these studies conclude that there exists a positive impact of various measures of economic freedom on economic growth. Noticeably absent in the literature is an examination of the links between economic freedom and bank performance. The limited research in this area is somewhat surprising given the importance of bank lending in promoting economic development (e.g. Chinn and Ito, 2007; Beck et al., 2000; Levine, 2005; Beck and Levine, 2004; Cetorelli and Gambera, 2001; Rajan and Zingales, 1998; Levine, 1998; Levine and Zervos, 1998) and the impact that economic freedom is likely to have on the banking sector.

The purpose of the present paper is to extend the earlier works on the performance of the banking sector in a developing economy and establish for the first time empirical evidence on the impact of economic freedom. The paper also investigates to what extent the performance of banks is influenced by internal factors (i.e. bank specific characteristics) and to what extent by external factors (i.e. macroeconomic and financial market conditions). Although empirical evidence which examines the performance of banking sectors are abundant in the literature, to the best of our knowledge, virtually nothing has been published to address the impact of economic freedom on the banking sector's performance. In light of the knowledge gap, this study provides for the first time empirical evidence of the impact of economic freedom on banking sector's performance.

The present study should interest not only the managers of the banks, but numerous stakeholders such as the central banks, bankers associations, governments, and other financial authorities. As in virtually all-emerging markets, banks are the dominant financial institutions in Malaysia. Banks control most of the financial flows and possess more than 70% of the financial system's total assets. Given the close relationship between the well being of the banking sector and the growth of the economy, the health of the banking sector is therefore crucial. Furthermore, explicit knowledge of the factors that influences the banking sector's performance would be useful for policymaking and research purposes.

This paper is structured as follows. The next section reviews the related studies in the literature, followed by a section that outlines the econometric framework. Section 4 reports the empirical findings. Finally, Section 5 concludes and offers avenues for future research.

2. Related studies

The empirical studies on the performance of banking sectors has focused on both the returns on assets, returns on equity, and net interest margins. It has traditionally explored the impact of bank specific factors such as risk, market power, size, and capitalization on bank performance. More recently, research has focused on the impact of macroeconomic factors on bank performance.

To date, empirical research have focused mainly on a specific country mainly the US banking system (Hirtle and Stiroh, 2007; Stiroh and Rumble, 2006; DeYoung and Rice, 2004; Angbazo, 1997, etc.) and the banking systems in the western and developed countries such as Greece (Pasiouras and Kosmidou, 2007; Kosmidou et al., 2007; Athanasoglou et al., 2008; Kosmidou and Zopounidis, 2008), UK (Kosmidou et al., 2008), Australia (Williams, 2003), New Zealand (Ho and Tripe, 2002), etc.

On the other hand, fewer studies have looked at bank performance in developing economies. Chantapong (2005) investigates the performance of domestic and foreign banks in Thailand during the period 1995–2000. All banks were found to have reduced their credit exposure during the crisis years and have gradually improved their profitability during the post-crisis years. The results indicate that the foreign banks' profitability is higher than the average profitability of the domestic banks although importantly, in the post-crisis period, the gap between the foreign and domestic banks' profitability has closed, suggesting that the financial restructuring program has yielded some positive results.

Heffernan and Fu (2008) examine the performance of different types of Chinese banks during the period 1999 and 2006. The results suggest economic value added and the net interest margin (NIM) do better than the more conventional measures of profitability, namely return on average assets ROAE and return on average equity ROAA. Some macroeconomic variables

and financial ratios are significant with the expected signs. Though the type of bank is influential, bank size is not. Neither the percentage of foreign ownership nor bank listings has a discernable effect.

Ben Naceur and Goaied (2008) examine the impact of bank characteristics, financial structure, and macroeconomic conditions on Tunisian banks' net-interest margin and profitability during the period of 1980–2000. They suggest that banks which hold a relatively high amount of capital and higher overhead expenses tend to exhibit higher net-interest margin and profitability levels, while size is negatively related to bank profitability. During the period under study, they find that stock market development has positive impact on banks' profitability. The empirical findings suggest that private banks are relatively more profitable than their state owned counterparts. The results suggest that macroeconomic conditions have no significant impact on Tunisian banks' profitability.

More recently, Sufian and Habibullah (2009) examines the determinants of the profitability of the Chinese banking sector during the post-reform period of 2000–2005. The empirical findings suggest that all the determinant variables have statistically significant impact on China banks' profitability. However, the impacts are not uniform across bank types. They find that liquidity, credit risk, and capitalization have positive impacts on the state owned commercial banks (SOCBs) profitability, while the impact of cost is negative. Similar to their SOCB counterparts, they find that joint stock commercial banks (JSCB) with higher credit risk tend to be more profitable, while higher cost result in a lower JSCB profitability levels. During the period under study, the empirical findings suggest that size and cost results in a lower city commercial banks (CITY) profitability, while the more diversified and relatively better capitalized CITY tend to exhibit higher profitability levels. The impact of economic growth is positive, while growth in money supply is negatively related to the SOCB and CITY profitability levels.

3. Data and methodology

We collected our bank specific variables from the financial statements of the domestic and foreign commercial banks operating in the Malaysian banking sector during the period 1999–2007 available in the Bankscope database of Bureau van Dijk's company. The macroeconomic variables are retrieved from IMF Financial Statistics (IFS) database. We retrieve the economic freedom index from the 2008 Index of Economic Freedom report maintained by the Heritage Foundation (www.heritage.org/index). Due to the consolidation and exit of banks during the past decade, the final estimation consists of 213 bank year observations. The sample represents the whole gamut of the industry's total assets. Table 1 lists the variables used to proxy profitability and its determinants. We also include the notation and the expected effect of the determinants according to the literature.

3.1. Performance measure

In the literature, bank profitability is typically measured by the return on assets (ROA) and/or the return on equity (ROE) and usually expressed as a function of internal and external determinants. Internal determinants are factors that are mainly influenced by a bank's management decisions and policy objectives. Such profitability determinants are the level of liquidity, provisioning policy, capital adequacy, expenses management, and bank size. On the other hand, the external determinants, both industry and macroeconomic related, are variables that reflect the economic and legal environments where the financial institution operates.

Following Ben Naceur and Goaied (2008), Kosmidou (2008), and Sufian and Habibullah (2009) among others, the dependent variable used in this study is ROA. ROA shows the profit earned per dollar of assets and most importantly reflects the management ability to utilize the bank's financial and real investment resources to generate profits (Hassan and Bashir, 2003). For any bank, ROA depends on the bank's policy decisions as well as uncontrollable factors relating to the economy and government regulations. Rivard and Thomas (1997) suggest that bank profitability is best measured by ROA given that ROA is not distorted by high equity multipliers and ROA represents a better measure of the ability of the firm to generate returns on its portfolio of assets. ROE on the other hand, reflects the effectiveness of bank managements in utilizing its shareholders funds. Since ROA tend to be lower for financial intermediaries, most banks utilize financial leverage heavily to increase ROE to competitive levels (Hassan and Bashir, 2003).

3.2. Internal determinants

The bank specific variables included in the regressions are LOANS/TA (total loans divided by total assets), LNTA (log of total assets), LLP/TL (loans loss provisions divided by total loans), NII/TA (non-interest income divided by total assets), NIE/TA (total overhead expenses divided by total assets), and EQASS (book value of shareholders' equity as a fraction of total assets).

Liquidity risk, arising from the possible inability of banks to accommodate decreases in liabilities or to fund increases on the assets' side of the balance sheet is considered an important determinant of bank profitability. The loans market, especially credit to households and firms is risky and has a greater expected return than other bank assets, such as government securities. Thus, one would expect a positive relationship between liquidity (LOANS/TA) and profitability (Bourke, 1989). It could be the case, however, that the fewer the funds tied up in liquid investments the higher we might expect profitability to be (Eichengreen and Gibson, 2001).

Table 1
Descriptive of the variables used in the regression models.

Variable	Description	Hypothesized relationship with profitability	Sources/database
Dependent			
ROA	The return on assets of the bank in year *t*	NA	Bank Scope Database
ROE	The return on shareholders equity of the bank in year *t*	NA	Bank Scope Database
Independent			
Internal factors			
LOANS/TA	A measure of liquidity, calculated as total loans/ total assets. The ratio indicates what percentage of the assets of the bank is tied up in loans in year *t*	+/−	Bank Scope Database
LNTA	The natural logarithm of the accounting value of the total assets of the bank in year *t*	+/−	Bank Scope Database
LLP/TL	Loan loss provisions/ total loans. An indicator of credit risk, which shows how much a bank is provisioning in year *t* relative to its total loans	−	Bank Scope Database
NII/TA	A measure of diversification and business mix, calculated as non-interest income/total assets	+	Bank Scope Database
NIE/TA	Calculated as non-interest expense/ total assets and provides information on the efficiency of the management regarding expenses relative to the assets in year *t*. Higher ratios imply a less efficient management	−	Bank Scope Database
EQASS	A measure of bank's capital strength in year *t*, calculated as equity/ total assets. High capital asset ratio is assumed to be indicator of low leverage and therefore lower risk	+	Bank Scope Database
External factors			
LNGDP	Natural logarithm of gross domestic products	+	IMF International Financial Statistics (IFS) Database
INFL	The rate of inflation	+	IMF International Financial Statistics (IFS) Database
Economic freedom			
OVER_FREE	Overall economic freedom is defined by multiple rights and liberties can be quantified as an index of less abstract components. The index uses 10 specific freedoms, some as composites of even further detailed and quantifiable components	+/−	Heritage Foundation (2008)
BUSI_FREE	Business freedom measures how free entrepreneurs are to start businesses, how easy it is to obtain licenses, and the ease of closing a business. Impediments to any of these three activities are deterrents to business and therefore to job creation	+	Heritage Foundation (2008)
MONE_FREE	Monetary freedom combines a measure of price stability with an assessment of price controls. Both inflation and price controls distort market activity. Price stability without microeconomic intervention is the ideal state for the free market	+	Heritage Foundation (2008)
FINA_FREE	Financial freedom is a measure of banking security as well as independence from government control. State ownership of banks and other financial institutions such as insurer and capital markets is an inefficient burden, and political favoritism has no place in a free capital market	+	Heritage Foundation (2008)
CORR_FREE	Freedom from corruption is based on quantitative data that assess the perception of corruption in the business environment, including levels of governmental legal, judicial, and administrative corruption	+/−	Heritage Foundation (2008)

The LNTA variable is included in the regression models as a proxy of size to capture the possible cost advantages associated with size (economies of scale). This variable controls for cost differences and product and risk diversification according to the size of the bank. The first factor could lead to a positive relationship between size and bank profitability if there are significant economies of scale (Akhavein et al., 1997; Bourke, 1989; Molyneux and Thornton, 1992; Bikker and Hu, 2002; Goddard et al., 2004), while the second to a negative one, if increased diversification leads to lower credit risk and thus lower returns. Other researchers however conclude that marginal cost savings can be achieved by increasing the size of the banking firm, especially as markets develop (Berger et al., 1987; Boyd and Runkle, 1993; Miller and Noulas, 1997; Athanasoglou et al., 2008). In essence, LNTA may lead to positive effects on bank profitability if there are significant economies of scale. On the other hand, if increased diversification leads to higher risks, the variable may exhibit negative effects.

The ratio of loan loss provisions to total loans (LLP/TL) is incorporated as an independent variable in the regression analysis as a proxy of credit risk. The coefficient of LLP/TL is expected to be negative because bad loans are expected to reduce profitability. In this direction, Miller and Noulas (1997) suggest that the greater the exposure of the financial institutions to high risk loans, the higher would be the accumulation of unpaid loans and profitability would be lower. Miller and Noulas (1997) suggest that decline in loan loss provisions are in many instances the primary catalyst for increases in profit margins. Furthermore, Thakor (1987) also suggests that the level of loan loss provisions is an indication of the bank's asset quality and signals changes in the future performance.

To recognize that financial institutions in recent years have increasingly been generating income from "off-balance sheet" business and fee income generally, the ratio of non-interest income over total assets (NII/TA) is entered in the regression models as a proxy of non-traditional activities. Non-interest income consists of commission, service charges, and fees, guarantee fees, net profit from sale of investment securities, and foreign exchange profit. The variable is expected to exhibit positive relationship with bank profitability.

The ratio of non-interest expenses to total assets (NIE/TA) is used to provide information on the variations of bank operating costs. The variable represents total amount of wages and salaries, as well as the costs of running branch office facilities. For the most part, the literature argues that reduced expenses improve the efficiency and hence raise the profitability of a financial institution, implying a negative relationship between operating expenses ratio and profitability (Bourke, 1989). However, Molyneux and Thornton (1992) observed a positive relationship, suggesting that high profits earned by banks may be appropriated in the form of higher payroll expenditures paid to more productive human capital. In any case, it should be appealing to identify the dominant effect, in a developing banking environment like Malaysia.

EQASS is included in the regressions to examine the relationship between profitability and bank capitalization. Even though leverage (capitalization) has been demonstrated to be important in explaining the performance of financial institutions, its impact on bank profitability is ambiguous. As lower capital ratios suggest a relatively risky position, one might expect a negative coefficient on this variable (Berger, 1995). However, it could be the case that higher levels of equity would decrease the cost of capital, leading to a positive impact on bank profitability (Molyneux, 1993). Moreover, an increase in capital may raise expected earnings by reducing the expected costs of financial distress, including bankruptcy (Berger, 1995).

3.3. External determinants

Bank profitability is sensitive to macroeconomic conditions despite the trend in the industry towards greater geographic diversification and larger use of financial engineering techniques to manage risk associated with business cycle forecasting. Generally, higher economic growth encourages bank to lend more and permits them to charge higher margins, as well as improving the quality of their assets. As GDP growth slows down and in particular during recessions, credit quality tends to deteriorate and default rate increase, thus reducing bank profitability. We use the log of gross domestic product (GDP) to control for cyclical output effects, which we expect to have a positive influence on bank profitability. Neely and Wheelock (1997) use per capita income and suggest that this variable exerts a strong positive effect on bank earnings. Demirguc-Kunt and Huizinga (2001) and Bikker and Hu (2002) identifies possible cyclical movements in bank profitability i.e. the extent to which bank profits are correlated with the business cycle. Their findings suggest that such correlation exists, although the variables used were not direct measures of the business cycle.

We also account for macroeconomic risk by controlling the rate of inflation (INFL). The extent to which inflation affects bank profitability depends on whether future movements in inflation are fully anticipated, which in turn depends on the ability of banks to accurately forecast its future movements. An inflation rate that is fully anticipated raises profits as banks can appropriately adjust interest rates in order to increase revenues, while an unanticipated change could raise costs due to imperfect interest rate adjustment (Perry, 1992). Earlier studies by among others Bourke (1989), Molyneux and Thornton (1992), Demirguc-Kunt and Huizinga (1999) have found a positive relationship between inflation and bank performance.

OVER_FREE is introduced in regression model 2 to examine the impact of overall economic freedom on the performance of the Malaysian banking sector. OVER_FREE is the overall economic freedom index and is defined by multiple rights and liberties. The index uses 10 specific freedoms, namely *Business freedom*, *Trade freedom*, *Fiscal freedom*, *Government size*, *Monetary freedom*, *Investment freedom*, *Financial freedom*, *Property rights*, *Labor freedom*, and *Freedom from corruption*.

Besides the overall economic freedom index, we have selected three other indices which are closely related to the financial sector. These include BUSI_FREE, MONE_FREE, and FINA_FREE indices. BUSI_FREE is the business freedom index. The index measures how free entrepreneurs are to start businesses, how easy it is to obtain licenses, and the ease of closing a business. Impediments to any of these three activities are deterrents to business and therefore to job creation. MONE_FREE is the monetary freedom index. The score for the monetary freedom factor is based on two factors namely the weighted average inflation rate for the most recent three years and price controls (for detailed discussions, see www.heritage.org/index). The index is a measure of the independence of monetary policy, since both inflation and price controls distort market activities. Citizens need a stable and reliable monetary system (currency) to serve as both a reliable medium of exchange and store of value (wealth).[2] FINA_FREE is the financial freedom index. The index is a measure of banking security as well as independence from government control. State ownership of banks and other financial institutions such as insurer and capital markets is an inefficient burden, and political favoritism has no place in a free capital market.[3] All the indices have 0–100 scales, where 100 represents maximum freedom. A score of 100 signifies an economic environment, or set of policies that is most conducive to economic freedom.

Finally, CORR_FREE is introduced in regression model 6 to assess the impact corruption on the profitability of Malaysian banks. CORR_FREE is the freedom from corruption index. The index is based on quantitative data that assess the perception

[2] The monetary freedom index illustrates a stable monetary policy and system of market determined pricing. In a free economy, individuals set the prices of goods and services that they sell as well as the wages they pay to workers they employ. Some governments mandate price controls, thus restricting economic activity and curtail economic freedom. Thus, the more a government intervenes and controls prices and wages, the lower is the economic freedom.

[3] Because some of the indices are highly correlated with each other, we have to include the indices separately to avoid perfect multicollinearity.

of corruption in the business environment, including levels of governmental, legal, judicial, and administrative corruption. Similar to the BUSI_FREE, MONE_FREE, and FINA_FREE indices, the CORR_FREE index also takes a value of between 0 and 100, where 100 represent the maximum freedom.

Table 2 presents the summary statistics of the dependent and the explanatory variables.

3.4. Econometric specification

To test the relationship between bank profitability and the bank specific and macroeconomic determinants described earlier, we estimate a linear regression model in the following form:

$$\begin{aligned}\ln(\mathrm{ROA})_{it} = {} & \alpha + \beta_1 \ln(\mathrm{LOANS/TA})_i t + \beta_2 \ln(\mathrm{TA})_{it} + \beta_3 \ln(\mathrm{LLP/TL})_{it} \\ & + \beta_4 \ln(\mathrm{NII/TA})_{it} + \beta_5 \ln(\mathrm{NIE/TA})_{it} + \beta_6 \ln(\mathrm{EQASS})_i t \\ & + \zeta_1 \ln(\mathrm{GDP}) + \zeta_2 \ln(\mathrm{INFL}) + \delta_1 \mathrm{OVER\_FREE}_t \\ & + \delta_2 \mathrm{BUSI\_FREE}_t + \delta_3 \mathrm{MONE\_FREE}_t \\ & + \delta_4 \mathrm{FINA\_FREE}_t + \delta_5 \mathrm{CORR\_FREE}_t + \varepsilon_{it} \\ \varepsilon_{it} = {} & v_{it} + u_{it}\end{aligned} \tag{1}$$

where '*i*' denotes the bank, '*t*' the examined time period, and ε is the disturbance term, with v_{it} capturing the unobserved bank specific effect and u_{it} is the robust standard error (RSE). Following DeBandt and Davis (2000) and Staikouras et al. (2008) among others, the log linear form is chosen as it typically improves the regression's goodness of fit and may reduce simultaneity bias. We apply the least square method of fixed effects model (FEM). The opportunity to use a fixed effects rather than a random effects model has been tested with the Hausman test. Eq. (1) is estimated by using White (1980) transformation to control for cross section heteroscedasticity of the variables.

Table 3 provides information on the degree of correlation between the explanatory variables used in the multivariate regression analysis. The matrix shows that in general the correlation between the bank specific variables is not strong suggesting that multicollinearity problems are not severe. Kennedy (2008) points out that multicollinearity is a problem when the correlation is above 0.80, which is not the case here. However, it is worth noting that the correlation between the LNGDP and CORR_FREE variables are relatively high. To address this concern, we have re-estimated regression model 6 by removing the LNGDP variable. The empirical findings do not qualitatively change our results. To conserve space, we choose not to report the regression results in the paper, but are available upon request.

4. Empirical findings

The regression results focusing on the relationship between bank profitability and the explanatory variables are presented in Table 4. Concerning the liquidity results, LOANS/TA has a positive sign and is statistically significant at the 5% level when we control for overall economic freedom, business freedom, and monetary freedom. Hauner (2005) offers two potential explanations for which size could have a positive impact on bank performance. First, if it relates to market power, large banks should pay less for their inputs. Second, there may be increasing returns to scale through the allocation of fixed costs (e.g. research or risk management) over a higher volume of services or from efficiency gains from a specialized workforce.

As expected, the impact of credit risk (LLP/TL) has negative relationship with bank profitability and is statistically significant at the 1% level in all regression models, suggesting that banks with higher credit risk exhibits lower profitability levels. The results imply that Malaysian banks should focus more on credit risk management, which has been proven to be problematic in the recent past. Serious banking problems have arisen from the failure of financial institutions to recognize impaired assets and create reserves for writing off these assets. An immense help towards smoothing these anomalies would be provided by improving the transparency of the banking sector, which in turn will assist banks to evaluate credit risk more effectively and avoid problems associated with hazardous exposure.

The coefficient of NII/TA is positive and statistically significant at the 1% level in all regression models. The results imply that banks which derived a higher proportion of its income from non-interest sources such as fee based services tend to report a higher level of profitability. The empirical findings provide support to earlier study by among others Canals (1993). To recap, Canals (1993) suggests that revenues generated from new business units have significantly contributed to improve bank performance. Interestingly, the result seems to suggest that expense preference behaviour measured by NIE/TA has positive relationship with Malaysian bank profitability. A plausible explanation could be that the more highly qualified and professional management may require higher remuneration packages, thus a positive relationship with profitability measure is natural (Sathye, 2001).

Referring to the impact of capitalization, it is observed from Table 4 that EQASS exhibits positive relationship with bank profitability and is statistically significant when we control for overall economic freedom, business freedom, monetary freedom, and freedom from corruption. The result is consistent with previous studies (Isik and Hassan, 2003; Staikouras and Wood, 2003; Goddard et al., 2004; Pasiouras and Kosmidou, 2007; Kosmidou, 2008) providing support to the argument that well capitalized banks face lower costs of going bankrupt, thus lowers their funding cost, or that they have lower needs for external funding resulting in higher profitability. Nevertheless, strong capital structure is essential for banks in emerging

Table 2
Summary statistic of dependent and explanatory variables.

	ROA	ROE	LOANS/TA	LNTA	LLP/TL	NII/TA	NIE/TA	EQASS	LNGDP	INFL	OVER_FREE	BUSI_FREE	MONE_FREE	FINA_FREE	CORR_FREE
Mean	1.612	4.393	−0.784	16.359	0.872	−4.635	−4.386	−2.343	11.612	0.569	62.837	72.912	80.480	37.778	60.778
Min	−1.165	−2.042	−4.283	13.126	−0.101	−6.286	−11.543	−6.206	10.835	−0.357	59.932	67.610	76.570	30.000	41.000
Max	2.439	5.091	−0.107	19.242	0.123	−2.962	−3.339	−0.504	13.133	1.281	68.941	85.000	82.787	50.000	78.700
Std. Dev.	0.255	0.463	0.670	1.509	0.020	0.561	0.638	0.623	0.994	0.569	2.917	6.520	2.002	9.178	14.611

Note: The table presents the summary statistics of the variables used in the regression analysis.

Table 3
Correlation matrix for the explanatory variables.

	LOANS/TA	LNTA	LLP/TL	NII/TA	NIE/TA	EQASS	LNGDP	INFL	OVER_FREE	BUSI_FREE	MONE_FREE	FINA_FREE	CORR_FREE
LOANS/TA	1.000												
LNTA	0.465**	1.000											
LLP/TL	0.329**	0.200**	1.000										
NII/TA	−0.288**	−0.083	0.000	1.000									
NIE/TA	0.143*	0.121	0.364**	0.161*	1.000								
EQASS	−0.362**	−0.643**	−0.198**	0.123	−0.141*	1.000							
LNGDP	−0.205**	0.171*	−0.127	−0.024	−0.060	−0.017	1.000						
INFL	−0.093	0.067	−0.091	−0.089	−0.022	−0.075	0.532**	1.000					
OVER_FREE	0.080	−0.063	0.125	−0.094	0.097	−0.134	−0.028	0.534**	1.000				
BUSI_FREE	0.164*	−0.140*	0.160*	−0.065	0.150*	−0.095	−0.504**	0.250**	0.795**	1.000			
MONE_FREE	−0.137*	0.115	−0.238**	0.044	−0.214**	0.078	0.524**	0.290**	−0.482**	−0.696**	1.000		
FINA_FREE	0.118	−0.077	0.083	0.050	−0.140*	−0.082	−0.367**	0.181**	0.694**	0.693**	−0.463**	1.000	
CORR_FREE	−0.124	0.104	−0.068	−0.080	−0.011	−0.076	0.815	0.800**	0.488**	−0.054	0.359**	−0.007	1.000

The notation used in the table below is defined as follows: LOANS/TA is used as a proxy measure of loans intensity, calculated as total loans divided by total assets; LNTA is a proxy measure of size, calculated as a natural logarithm of total bank assets; LLP/TL is a measure of bank risk calculated as the ratio of total loan loss provisions divided by total loans; NII/TA is a measure of bank diversification towards non interest income, calculated as total non-interest income divided by total assets; NIE/TA is a proxy measure for costs, calculated as non-interest expenses divided by total assets; EQASS is a measure of capitalization, calculated as book value of shareholders equity as a fraction of total assets; LNGDP is natural log of gross domestic products; INFL is the rate of inflation; OVER_FREE is the overall economic freedom index; BUSI_FREE is the business freedom index; MONE_FREE is the monetary freedom index; FINA_FREE is the financial freedom index; CORR_FREE is the freedom from corruption index.
Note: The table presents the results from Pearson correlation coefficients.
* Indicates significance at 5% level.
** Indicates significance at 1% level.

Table 4
panel fixed effects model (FEM) regression results.

	(1)	(2)	(3)	(4)	(5)	(6)
CONSTANT	3.042***	0.711	0.123	4.245***	2.698***	2.796***
	(3.21)	(0.98)	(0.13)	(4.59)	(2.85)	(2.65)
Bank characteristics						
LOANS/TA	0.001	−0.024	−0.026	−0.010	−0.003	−0.020
	(0.02)	(−0.36)	(−0.38)	(−0.14)	(−0.05)	(−0.31)
LNTA	0.041	0.118**	0.149**	0.090**	0.050	0.099
	(0.92)	(2.15)	(2.47)	(2.46)	(1.03)	(1.46)
LLP/TL	−4.843***	−5.475***	−5.401***	−5.244***	−5.033***	−5.245***
	(−3.09)	(−3.69)	(−3.83)	(−3.60)	(−3.31)	(−3.52)
NII/TA	0.249***	0.268***	0.274***	0.269***	0.241***	0.263***
	(3.48)	(3.89)	(4.01)	(3.85)	(3.35)	(3.75)
NIE/TA	0.080**	0.085***	0.076**	0.071**	0.093***	0.086***
	(2.24)	(2.72)	(2.58)	(2.05)	(2.92)	(2.76)
EQASS	0.114	0.167**	0.181**	0.166*	0.125	0.134*
	(1.40)	(1.99)	(2.15)	(1.89)	(1.52)	(1.63)
Economic conditions						
LNGDP	−0.029	−0.031**	0.013	−0.022**	−0.016	−0.113***
	(−1.31)	(−2.29)	(0.77)	(−1.71)	(−1.35)	(−5.16)
INFL	0.082**	0.011	−0.015	0.092**	0.061**	0.002
	(2.29)	(0.56)	(−0.62)	(2.14)	(2.19)	(0.08)
Freedom						
OVER_FREE		0.022***				
		(5.13)				
BUSI_FREE			0.013***			
			(3.73)			
MONE_FREE				−0.024***		
				(−3.06)		
FINA_FREE					0.003	
					(1.44)	
CORR_FREE						0.007***
						(4.27)
R^2	0.477	0.505	0.507	0.496	0.483	0.496
Adjusted R^2	0.356	0.387	0.389	0.375	0.359	0.375
Durbin–Watson stat	2.109	2.123	2.097	2.125	2.139	2.126
F-statistic	3.924***	4.259***	4.295***	4.104***	3.898***	4.100***
No. of observations	213	213	213	213	213	213

$$\begin{aligned}\mathrm{ROA}_{jt} = {} & \beta_0 + \beta_1 \mathrm{LOANS/TA}_{jt} + \beta_2 \mathrm{LNTA}_{jt} + \beta_3 \mathrm{LLP/TL}_{jt} \\ & + \beta_4 \mathrm{NII/TA}_{jt} + \beta_5 \mathrm{NIE/TA}_{jt} + \beta_6 \mathrm{EQASS}_{jt} \\ & + \beta_7 \mathrm{LNGDP}_t + \beta_8 \mathrm{INFL}_t \\ & + \beta_9 \mathrm{OVER\_FREE}_t + \beta_{10} \mathrm{BUSI\_FREE}_t + \beta_{11} \mathrm{MONE\_FREE}_t \\ & + \beta_{12} \mathrm{FINA\_FREE}_t + \beta_{13} \mathrm{CORR\_FREE}_t \\ & + \varepsilon_{jt}\end{aligned}$$

The notation used in the table below is defined as follows: LOANS/TA is used as a proxy measure of loans intensity, calculated as total loans divided by total assets; LNTA is a proxy measure of size, calculated as a natural logarithm of total bank assets; LLP/TL is a measure of bank risk calculated as the ratio of total loan loss provisions divided by total loans; NII/TA is a measure of bank diversification towards non interest income, calculated as total non-interest income divided by total assets; NIE/TA is a proxy measure for costs, calculated as non-interest expenses divided by total assets; EQASS is a measure of capitalization, calculated as book value of shareholders equity as a fraction of total assets; LNGDP is natural log of gross domestic products; INFL is the inflation rate; OVER_FREE is the overall economic freedom index; BUSI_FREE is the business freedom index; MONE_FREE is the monetary freedom index; FINA_FREE is the financial freedom index; CORR_FREE is the freedom from corruption index.
Values in parentheses are *t*-statistics.
* Indicates significance at 10% level.
** Indicates significance at 5% level.
*** Indicates significance at 1% level.

economies since it provides additional strength to withstand financial crises and increased safety for depositors during unstable macroeconomic conditions.

The results about the impact of macroeconomic conditions of Malaysian banks' profitability are mixed. The empirical findings suggest that LNGDP has statistically significant negative relationship with bank profitability when we control for overall economic freedom, monetary freedom, and freedom from corruption. On the other hand, INFL exhibits positive sign and is statistically significant at the 5% level in the baseline regression model and when we control for monetary and financial freedom. It is interesting to note that when we control for corruption, the coefficient of LNGDP is statistically significant

and negative, while inflation loses its explanatory power suggesting that the impact of economic conditions on the level of corruption is counter cyclical.

4.1. Does greater economic freedom fosters bank performance?

To address the issue whether economic freedom matters for bank performance, we re-estimate Eq. (1) to include the economic freedom indices variables discussed in Section 3. The results are presented in columns 2–6 of Table 4. As observed, the empirical findings presented in column 2 of Table 4 seem to suggest that overall economic freedom has positive and statistically significant impact on the profitability of Malaysian banks. The empirical findings comes as no surprise since economic freedom is key to the creation of an environment that allows a virtuous cycle of entrepreneurship, innovation, and sustained economic growth and development to flourish. Furthermore, economies with higher levels of economic freedom are likely to enjoy higher living standards (Holmes et al., 2008). Holmes et al. (2008) pointed out that a higher level of economic freedom is associated with a higher level of per capita GDP. They also suggest that countries which increase their levels of freedom tend to experience faster growth rates and the freest economies also have lower rates of unemployment and inflation.

Concerning the impact of business freedom on the profitability of Malaysian banks, the empirical findings presented in column 3 of Table 4 suggest that the coefficient of BUSI_FREE is positive and statistically significant at the 1% level. The results imply that the greater ability to start, operate, and close businesses fosters bank performance in a developing economy like Malaysia. In this vein, it takes an average of 24 days to start new business in Malaysia, compared to the world average of 43 days. On the other hand, it takes more than the world average of 19 procedures and 234 days to obtain business licenses. Clearly, a greater ability to set up new businesses in Malaysia is a prerequisite for the improved performance of the Malaysian banking sector.

Referring to the impact of monetary freedom (MONE_FREE), it is interesting to note that the coefficient of the variable is negative and is statistically significant at the 1% level. The empirical findings clearly indicate that higher (lower) government intervention in the market increases (reduces) Malaysian banks' profitability. A stable and reliable monetary policy is crucial to business environment, as it may help firms and societies to make investment, savings, and other long-term plans. High inflation rates not only confiscate wealth, but also distort pricing, misallocate resources, and raise the cost of doing business. Furthermore, the value of a country's currency largely depends on the monetary policy of its government. A monetary policy that endeavors price stability and puts inflation at bay, enables firms to rely on the market prices for their future investments plans.

Within the context of the Malaysian economy, although in general prices are determined by the market, the government controls the prices of petroleum and other consumer staple products such as sugar, milk, flour, etc. Although price stability without intervention is the ideal state for the free market, the government could prevent excessive price hikes by market leaders by price control. If anything could be delved, the negative coefficient of the MONE_FREE variable supports for the government's intervention in the market and bring forth the importance of price and exchange rate controls on the performance of the Malaysian banking sector.

As expected, the coefficient of the FINA_FREE variable entered the regression model with a positive sign, suggesting that banking security as well as independence from government control has positive impact on Malaysian banks' profitability. The more banks are controlled by the government, the less free they are to engage in essential financial activities that facilitate private sector–led economic growth. However, it is worth noting that the coefficient of the variable is not statistically significant at any conventional levels (p value = 0.1515).

Finally, it is observed from column 6 of Table 4 that the coefficient of the CORR_FREE has a positive sign and is statistically significant at the 1% level. The empirical findings from this study clearly suggest that corruption (e.g. corruption in the business environment, including levels of governmental, legal, judicial, and administrative) has significant negative impact on the profitability of the Malaysian banking sector. Within the context of the Malaysian banking sector, although bribery is a criminal act, widespread corruption and "crony capitalism" persists (Holmes et al., 2008) i.e. banks are known to lend to inter related parties, politically connected firms and individuals, etc.

4.2. Robustness checks: controlling for potential endogeneity

To check for the robustness of the results, we perform several other additional tests. Firstly, bank profitability tends to persist over time reflecting impediments to market competition, informational opacity, and sensitivity to macroeconomic shocks (Berger et al., 2000). Furthermore, Garcia-Herrero et al. (2009) points out that potential endogeneity could be a problem when assessing bank profitability determinants. For instance, the more profitable banks may have sufficient resources to provision for their non-performing loans. The more profitable banks may also find it easier to increase their customer base through a successful advertising campaign and could hire the most skilled personnel thereby enhance profitability (Garcia-Herrero et al., 2009).

To address this concern, we go beyond the methodology widely employed in the empirical literature on bank performance (i.e. fixed or random effects) and introduce a lagged dependent variable in the regression models by employing the generalized methods of moments (GMM). The system GMM approach (see Blundell and Bond, 1998) allows us to control for persistence and endogeneity issues and therefore yields consistent estimates.

Table 5
Panel generalized methods of moments (GMM) regression results.

	(1)	(2)	(3)	(4)	(5)	(6)
CONSTANT	2.046***	1.333**	1.424**	3.442***	1.888***	2.797**
	(4.52)	(2.43)	(2.45)	(6.22)	(3.64)	(2.46)
Bank characteristics						
ROA_{t-1}	0.093	0.087	0.134	−0.017	0.107	0.145**
	(1.34)	(1.34)	(1.20)	(−0.23)	(1.48)	(2.37)
LOANS/TA	0.041	0.048	0.045	0.057**	0.044	0.042
	(1.03)	(1.44)	(0.97)	(2.46)	(1.25)	(1.55)
LNTA	0.030	0.029	0.015	0.028	0.032	0.049
	(1.13)	(0.80)	(0.36)	(1.30)	(0.95)	(0.97)
LLP/TL	−4.037	−4.551	−3.748	−5.996**	−4.285	−5.612
	(−1.13)	(−1.14)	(−0.80)	(−2.00)	(−1.13)	(−1.02)
NII/TA	0.154***	0.134***	0.127**	0.126***	0.146***	0.124*
	(2.98)	(3.57)	(2.03)	(5.08)	(3.31)	(1.73)
NIE/TA	0.020	0.018	0.018	0.015	0.025	0.022
	(1.34)	(1.24)	(1.16)	(1.01)	(1.37)	(1.43)
EQASS	0.137**	0.135*	0.099	0.133**	0.139**	0.157**
	(2.43)	(1.89)	(1.16)	(2.49)	(2.13)	(2.25)
Economic conditions						
LNGDP	0.007	−0.003	0.022	0.004	0.012	−0.155
	(0.45)	(−0.21)	(1.42)	(0.36)	(0.92)	(−1.59)
INFL	0.026	0.013	−0.001	0.041**	0.015	−0.020
	(0.73)	(0.57)	(−0.07)	(2.49)	(0.54)	(−0.86)
Freedom						
OVER_FREE		0.012***				
		(3.02)				
BUSI_FREE			0.006***			
			(2.85)			
MONE_FREE				−0.016***		
				(−4.34)		
FINA_FREE					0.001	
					(1.44)	
CORR_FREE						0.012*
						(1.66)
Wald χ^2	39.31***	61.48***	72.67***	67.47***	60.74***	98.26***
AR(1) *p*-value	0.314	0.309	0.306	0.350	0.309	0.309
AR(2) *p*-value	0.456	0.520	0.505	0.504	0.440	0.572
Sargan *p*-value	0.438	0.367	0.360	0.365	0.419	0.391
No. of observations$_{t-1}$	178	178	178	178	178	178

$$\begin{aligned} ROA_{jt} = {} & \beta_0 + \beta_1 LOANS/TA_{jt} + \beta_2 LNTA_{jt} + \beta_3 LLP/TL_{jt} \\ & + \beta_4 NII/TA_{jt} + \beta_5 NIE/TA_{jt} + \beta_6 EQASS_{jt} \\ & + \beta_7 LNGDP_t + \beta_8 INFL_t \\ & + \beta_9 OVER\_FREE_t + \beta_{10} BUSI\_FREE_t + \beta_{11} MONE\_FREE_t \\ & + \beta_{12} FINA\_FREE_t + \beta_{13} CORR\_FREE_t \\ & + \varepsilon_{jt} \end{aligned}$$

The notation used in the table below is defined as follows: LOANS/TA is used as a proxy measure of loans intensity, calculated as total loans divided by total assets; LNTA is a proxy measure of size, calculated as a natural logarithm of total bank assets; LLP/TL is a measure of bank risk calculated as the ratio of total loan loss provisions divided by total loans; NII/TA is a measure of bank diversification towards non interest income, calculated as total non-interest income divided by total assets; NIE/TA is a proxy measure for costs, calculated as non-interest expenses divided by total assets; EQASS is a measure of capitalization, calculated as book value of shareholders equity as a fraction of total assets; LNGDP is natural log of gross domestic products; INFL is the inflation rate; OVER_FREE is the overall economic freedom index; BUSI_FREE is the business freedom index; MONE_FREE is the monetary freedom index; FINA_FREE is the financial freedom index; CORR_FREE is the freedom from corruption index.
Values in parentheses are *z*-statistics.
* Indicates significance at 10% level.
** Indicates significance at 5% level.
*** Indicates significance at 1% level.

The reliability of our econometric methodology depends critically on the validity of the instruments, which can be evaluated with Sargan's test of overidentifying restrictions, asymptotically distributed as χ^2 in the number of restrictions. A rejection of the null hypothesis that instruments are orthogonal to the errors would indicate that the estimates are not consistent (Baum et al., 2010).[4] We also present test statistics for the first and second order serial correlations in the error process.

[4] Following Garcia-Herrero et al. (2009) among others, we instrument for all regressors. The macroeconomic characteristics are treated as exogenous (see among others Baum et al. (2010)).

Table 6
Panel fixed effects and generalized method of moments regression results – ROE.

	FEM						GMM					
	(1)	(2)	(3)	(4)	(5)	(6)	(1)	(2)	(3)	(4)	(5)	(6)
CONSTANT	5.449***	2.732***	1.910*	6.627***	4.895***	5.139***	4.579***	3.757***	2.794**	4.974***	4.209***	5.789***
	(3.77)	(3.29)	(1.61)	(4.18)	(3.95)	(3.31)	(4.88)	(6.59)	(2.23)	(5.65)	(5.94)	(4.91)
Bank Characteristics												
ROE_{t-1}							0.059	0.002	0.032	0.001	0.042	0.093
							(0.59)	(0.02)	(0.44)	(0.01)	(0.56)	(1.05)
LOANS/TA	−0.016	−0.046	−0.049	−0.027	−0.024	−0.043	0.061	0.045	0.004	0.033	0.052	0.052
	(−0.24)	(−0.62)	(−0.65)	(−0.37)	(−0.34)	(−0.61)	(1.47)	(0.78)	(0.10)	(0.72)	(0.89)	(1.12)
LNTA	0.072	0.161*	0.202**	0.119*	0.086	0.144	0.034	0.056	0.088	0.067	0.053	0.066
	(0.98)	(1.91)	(2.11)	(1.69)	(1.26)	(1.35)	(0.53)	(1.29)	(1.25)	(0.96)	(1.17)	(0.94)
LLP/TL	−6.826***	−7.562***	−7.502***	−7.218***	−7.131***	−7.331***	−6.137*	−6.594	−6.569**	−6.151	−6.720	−7.581
	(−3.04)	(−3.48)	(−3.56)	(−3.34)	(−3.21)	(−3.41)	(−1.61)	(−1.43)	(−2.02)	(−1.17)	(−1.13)	(−1.18)
NII/TA	0.287**	0.309**	0.317**	0.307**	0.274**	0.305**	0.158*	0.131	0.085***	0.132*	0.139*	0.126***
	(2.18)	(2.35)	(2.38)	(2.27)	(2.12)	(2.33)	(1.84)	(1.43)	(2.71)	(1.73)	(1.67)	(2.60)
NIE/TA	0.072	0.077*	0.067*	0.062	0.093**	0.079*	0.025	0.015	0.004	0.007	0.031*	0.025
	(1.53)	(1.82)	(1.64)	(1.29)	(2.24)	(1.91)	(0.70)	(0.72)	(0.13)	(0.29)	(1.61)	(1.06)
EQASS	0.101	0.162	0.182	0.152	0.119	0.126	0.045	0.088	0.103	0.087	0.081	0.101
	(0.44)	(0.65)	(0.72)	(0.62)	(0.51)	(0.52)	(0.57)	(0.64)	(0.73)	(0.65)	(0.65)	(0.66)
Economic conditions												
LNGDP	−0.032	−0.035**	0.019	−0.025	−0.011	−0.137***	−0.001	−0.015	0.016	−0.001	0.006	−0.258
	(−1.27)	(−2.11)	(0.62)	(−1.57)	(−0.78)	(−2.67)	(−0.04)	(−0.69)	(0.99)	(−0.05)	(0.33)	(−1.35)
INFL	0.127*	0.043	0.009	0.137	0.092	0.026	0.061	0.036	−0.011	0.055	0.038	−0.039
	(1.63)	(0.80)	(0.16)	(1.48)	(1.48)	(0.38)	(1.05)	(0.64)	(−0.61)	(1.01)	(0.75)	(−1.31)
Freedom												
OVER_FREE		0.025***						0.013*				
		(2.69)						(1.86)				
BUSI_FREE			0.016**						0.007*			
			(2.60)						(1.69)			
MONE_FREE				−0.023*						−0.010		
				(−1.73)						(−1.39)		
FINA_FREE					0.005						0.002	
					(1.65)						(1.36)	
CORR_FREE						0.0092**						0.019
						(2.06)						(1.44)
R^2	0.253	0.264	0.266	0.258	0.257	0.262						
Adjusted R^2	0.079	0.088	0.090	0.080	0.079	0.084						
Durbin–Watson stat	2.599	2.599	2.578	2.601	2.611	2.602						
F-statistic	1.453*	1.498**	1.512***	1.451*	1.445*	1.477**						
Wald χ^2							43.93***	42.22***	188.67***	54.68***	29.42***	17.91***
AR(1) *p*-value							0.314	0.343	0.332	0.354	0.323	0.284
AR(2) *p*-value							0.612	0.964	0.835	0.964	0.639	0.474
Sargan *p*-value							0.859	0.832	0.833	0.838	0.846	0.851
No. of observations	213	213	213	213	213	213	178	178	178	178	178	178

$$\begin{aligned} ROE_{jt} = {} & \beta_0 + \beta_1 LOANS/TA_{jt} + \beta_2 LNTA_{jt} + \beta_3 LLP/TL_{jt} \\ & + \beta_4 NII/TA_{jt} + \beta_5 NIE/TA_{jt} + \beta_6 EQASS_{jt} \\ & + \beta_7 LNGDP_t + \beta_8 INFL_t \\ & + \beta_9 OVER\_FREE_t + \beta_{10} BUSI\_FREE_t + \beta_{11} MONE\_FREE_t \\ & + \beta_{12} FINA\_FREE_t + \beta_{13} CORR\_FREE_t \\ & + \varepsilon_{jt} \end{aligned}$$

The notation used in the table below is defined as follows: LOANS/TA is used as a proxy measure of loans intensity, calculated as total loans divided by total assets; LNTA is a proxy measure of size, calculated as a natural logarithm of total bank assets; LLP/TL is a measure of bank risk calculated as the ratio of total loan loss provisions divided by total loans; NII/TA is a measure of bank diversification towards non interest income, calculated as total non-interest income divided by total assets; NIE/TA is a proxy measure for costs, calculated as non-interest expenses divided by total assets; EQASS is a measure of capitalization, calculated as book value of shareholders equity as a fraction of total assets; LNGDP is natural log of gross domestic products; INFL is the inflation rate; OVER_FREE is the overall economic freedom index; BUSI_FREE is the business freedom index; MONE_FREE is the monetary freedom index; FINA_FREE is the financial freedom index; CORR_FREE is the freedom from corruption index.
Values in parentheses are *z*-statistics.
* Indicates significance at 10% level.
** Indicates significance at 5% level.
*** Indicates significance at 1% level.

In a dynamic panel data context, second order serial correlation should not be present if the instruments are appropriately uncorrelated with the errors (Baum et al., 2010).

It can be observed from Table 5 that for all models estimated, the Sargan statistics for overidentifying restrictions and the Arrelano–Bond *AR*(2) tests shows that at the 5% significance level our instruments are appropriately orthogonal to the error and no second order serial correlation is detected respectively. All in all, the results from the system GMM estimator presented in Table 5 remains robust in terms of directions and significance levels: they keep the same sign, the same order of magnitude, they remain significant as they were so in the baseline regressions (albeit sometimes at different levels), and with few exceptions, do not become significant compared to the baseline regression models.

4.3. Robustness checks: alternative profitability indicator

To further check for the robustness of the results, we replace the ratio of return on assets (ROA) with return of shareholders equity (ROE) as the dependent variable. The results from the FEM and the GMM regressions are presented in columns 1–6 and 7–12 of Table 6 respectively. All in all, it can be observed from Table 6 that the regression models performs reasonably well with the baseline variables coefficients staying mostly the same: they keep the same sign, the same order of magnitude, they remain significant as they were so in the baseline regressions (albeit sometimes at different levels), and with few exceptions, do not become significant compared to the baseline regression models.

4.4. Other robustness checks

We also restrict our sample to banks with more than three years of observations. All in all, the results remain qualitatively similar in terms of directions and significance levels. Finally, we address the effects of outliers in the sample by winsoring the data and exclude the top and bottom 1% of the sample. The results remain robust in terms of directions and significance levels. For brevity purposes, we do not report the findings in the paper, but are available upon request.

5. Concluding remarks

By using an unbalanced bank level panel data, the present study attempts to examine the impact of economic freedom on the performance of the Malaysian banking sector during the period 1999–2007. We find that the larger, more diversified, and better capitalized banks are relatively more profitable. The empirical findings seem to support the expense preference theory, which could be explained by the more highly qualified and professional management that requires higher remuneration packages. On the other hand, we find that higher credit risk has negative impact on bank profitability. During the period under study, the results suggest economic conditions has negative impact on Malaysian banking sector's performance when we control for overall economic freedom, monetary freedom, and freedom from corruption. On the other hand, INFL has positive impact when we control for monetary and financial freedom.

The findings from this study seem to suggest that overall economic freedom and business freedom exerts positive impacts on the profitability of the Malaysian banking sector. The positive sign of the coefficient indicates that higher (lower) freedom on the activities that banks can undertake increases (reduces) banks' profitability, which is consistent with the view that less regulatory control allows banks to engage in various activities enabling banks to exploit economies of scale and scope and generate income from non-traditional sources. Furthermore, higher freedom on entrepreneurs to start businesses is conducive to job creation and consequently increases banks' profitability. We also find that freedom from corruption has a significant positive impact on Malaysian banks' profitability.

Interestingly, the impact of monetary freedom is negative implying that higher (lower) monetary policy independence reduces (increases) banks profitability, providing support to the benefits of government interventions contention. The earlier study by Umezaki (2006) among others contends that the central bank of Malaysia, Bank Negara Malaysia (BNM) plays an active role to stabilize the interest and exchange rates via the conduct of monetary policy i.e. changing interest rates through the overnight policy rates (OPR) and direct intervention in the foreign exchange market. Umezaki (2006) also suggest that BNM has been active in sterilization intervention by selling and buying public debt securities, such as treasury bills (TB) and Malaysian government securities (MGS) to the banking sector to maintain price stability. In essence, although price stability without intervention is the ideal state for the free market, the empirical findings from this study clearly lends support to government interventions in the markets.

The findings of this study have considerable policy relevance. In view of the increasing competition attributed to the more liberalized banking sector, bank managements as well as the policymakers will be more incline to find ways to obtain the optimal utilization of capacities as well as making the best use of their resources, so that these resources are not wasted during the production of banking products and services. Thus, from the regulatory perspective, the performance of the banking sector will be based on their operating performance. Therefore, policy direction is expected to point towards enhancing the resilience and performance of the banking institutions with the aim of intensifying the robustness and stability of the banking sector.

Future research could include more variables such as taxation and regulation indicators, exchange rates as well as indicators of the quality of the offered services. Another possible extension could be the examination of differences in the determinants of profitability between small and large or high and low profitability banks. In terms of methodology, a statistical cost accounting and/or the frontier techniques could also be used. Among the advantages of the frontier techniques are the

methods permit researchers to benchmark the efficiency and productivity of firms in the industry. Based on the findings, policy implications and recommendations can be proposed. DeYoung (1997) suggest that the frontier techniques are more amicable than the traditional, univariate measures of performance. The frontier techniques also provide an objective, quantifiable measure of efficiency and productivity, and ranking of firms in the industry (Berger and Humphrey, 1997).

Despite the advantages, the frontier techniques have their own set of disadvantages. For instance, the non-parametric data envelopment analysis (DEA) method assumes that random error is non-existent and that all deviations from the frontier represent inefficiency (Coelli et al., 2005). On the other hand, although the parametric approaches i.e. stochastic frontier approach (SFA) allows for random error, there is a need of functional form and production technology specification (Coelli et al., 2005). Furthermore, the separation of noise and inefficiency relies on strong assumptions on the distribution of the error term. In essence, all the methods are not necessarily competing and there is no specific set of criteria to select the most relevant approach to examine firms' performance. The choice of the method is somewhat arbitrary and largely depends on the subject matter, the quality and amount of data available, and the aims pursued (Tortosa-Ausina, 2002).

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