ECONOMIC FREEDOM, DEVELOPMENT AND BANK INTERMEDIATION SPREADS

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ABSTRACT

The impact of economic freedom on the well being of the economy has been widely documented in the literature. Noticeably absent is empirical evidence on the influence of economic freedom on cost of financial intermediation. This limitation is somewhat surprising given the fact that the banking sector remains the most important channel for savings and allocations of credit. By using data on the ASEAN-5 banking sectors, the paper attempts to fill in this demanding gap. The results indicate that restrictions on the activities of which banks could undertake reduces their margins. We also find evidence supporting for government interventions contention. However, the impacts of the different dimensions of economic freedom are not uniform across countries with different levels of income. **JEL Classification:** G21, G28

INTRODUCTION

The importance of the banking sector is premised on the ground that banks are the main channel of savings and allocations of credits in an economy (Levine, 1997; Dell' Ariccia and Marquez, 2004). The banking sector provides important financial intermediation function by converting deposits into productive investments (King and Levine, 1993a, b). Unlike in other developed nations where financial markets and the banking sector work in unison to channel funds, in developing countries, financial markets are undersized and sometimes completely absent (Arun and Turner, 2004). Therefore, it falls on the banking sector to bridge the gap between savers and borrowers and to perform all tasks associated with the profitable and secure channeling of funds.

Because of banks vital influence on the economy, great emphasis has been given on the regulation and supervision of the banking sector (Barth *et al*. 2006). This is to ensure the safety and soundness of the banking sector and to ascertain that banking institutions meet their basic fiduciary responsibilities. Ultimately, this task falls under a government's duty to enforce contracts and

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protect its citizens against fraud by requiring banks to publish their financial statements, so that borrowers, depositors, and other financial actors can make informed choices. In this vein, Demirguc-Kunt and Detragiache (1998) and Jappelli and Pagano (2002) among others find evidence supporting for strong institutions to ensure law and contract enforcement and information sharing among banks.

However, when government coercion rises beyond the minimal level, it becomes corrosive to freedom and the first freedom to be affected is the economic freedom. Greater direct control by government is a threat to the banking system's function because excessive government interference may induce inefficiencies and outright corruption (Beach and Kane, 2008). Furthermore, heavy bank regulation reduces opportunities and restricts economic freedom. Beach and Kane (2008) points out that in a free banking environment the marketplace should be the primary source of protection through such institutions act as independent auditors and information services providers. Such oversight is distinguished from burdensome or intrusive government regulation and government ownership of banks, both of which interferes with market provision of financial services to consumers. Therefore, it is such government intervention in the market and not the market itself that limits economic freedom.

These important insights have spurred explorations into the various channels of which economic freedom influences economic growth (e.g. Heckelman and Powell, 2010; Bergh and Karlsson, 2010; Heckelman and Knack, 2009; Altman, 2008; Doucouliagos and Ulubasoglu, 2006; Powell, 2003; Dawson, 2003; Adkins *et al*. 2002; De Haan and Sturm, 2000; Heckelman and Stroup, 2000; Heckelman, 2000; De Haan and Siermann, 1998). In essence, these studies conclude that there exists a positive impact of various measures of economic freedom on economic growth.

Table 1
Asian Countries: The Role of Banks in Financial Intermediation
(as a percentage of GDP) [a]

	Domestic Private Bank Credit [b]			Domestic Private Debt Securities Outstanding			Stock Market Capitalization		
	1997	2007	2008	1997	2007	2008	1997	2007	2008
Indonesia	55	25	26	1	2	1	11	40	15
Malaysia	153	105	101	43	60	54	64	128	66
Philippines	56	24	25	0	1	1	33	62	26
Singapore	101	93	104	11	17	16	97	237	114
Thailand	166	92	94	2	12	13	12	59	29
Memo:									
Hong Kong	170	140	143	16	12	10	183	794	388
Korea	57	98	108	19	47	43	6	82	38
United States	48	62	62	53	77	69	96	116	64
Japan	191	98	101	30	28	28	51	97	62

Note: [a] End of period.
[b] Refers to deposit money banks.
[c] Datastream calculated indices, comprises representative sample of stocks covering a minimum 75-80% of total market capitalization.
Source: IMF, Datastream, BIS Statistics.

Noticeably absent in the literature is an examination on the links between economic freedom and bank intermediation margins. This limitation is somewhat surprising given the importance of bank lending in promoting economic growth and development (e.g. Chinn and Ito, 2007; Beck and Levine, 2004; Cetorelli and Gambera, 2001; Rajan and Zingales, 1998; Levine, 1998; Levine and Zervos, 1998; Demirguc-Kunt and Maksimovic, 1998) and given the impact that economic freedom is likely to have on the behaviour of banks. Within the context of the ASEAN-5 countries, the banking sector continues to dominate financial intermediation activities (see Table 1). Despite some decline between 1997 and 2007, bank credit to the private sector relative to GDP in the region remains high. Furthermore, with the exception of a few economies (e.g. Singapore and Malaysia) the corporate bond markets in these countries remain small.

Given the underdevelopment of capital markets, it is reasonable to assume that the importance of banks as financial intermediaries is more prevalent in the region. Therefore, the performance of banks in terms of their intermediation functions is crucial as an effective channel for business funding. In this vein, Jaffry *et al*. (2007) points out that banks play an important economic role in providing financial intermediation by converting deposits into productive investments in developing countries. The banking sector of developing countries have also been shown to perform critical role in the intermediation process by influencing the level of money stock in the economy with their ability to create deposits (Mauri, 1983, 1985; Bhatt, 1989; Askari, 1991; Yue, 1992).

The purpose of the present paper is to build on the earlier contributions on factors influencing banks intermediation margins and to establish the influence of economic freedom. The paper also investigates to what extent banks intermediation margins are influenced by internal factors (i.e. bank specific characteristics) and to what extent by external factors (i.e. macroeconomic conditions and economic freedom). Although empirical evidence on factors influencing bank performance is vast, to the best of our knowledge, virtually nothing has been published to address the impact of economic freedom on the banking sector. In light of the knowledge gap, the present study attempts to fill a demanding gap in the literature.

The article begins with a brief review of the related studies. This is followed by section 3, where we outline the econometric framework and variables employed in the panel regression analysis. We present the empirical findings in section 4. The article concludes and provides discussions on the policy implications in section 5.

REVIEW OF LITERATURE

The performance of the banking sector is a subject that has received a lot of attention in recent years. In essence, the empirical studies have mainly followed two alternative approaches, namely the dealership and/or the firm theoretic approach. On the one hand, the dealership approach first proposed by Ho and Saunders (1981) and further extended by McShane and Sharpe (1985), Angbazo (1997), and Allen (1988), views banks as a dynamic dealer, setting

interest rates on loans and deposits to balance the asymmetric arrival of loan demands and deposit supplies. On the other hand, the firm theoretic approach originally developed by Klein (1971) and Monti (1972) view banking firms in a static setting where demands and supplies of deposits and loans simultaneously clear both markets (see among others Zarruck, 1989; Wong, 1997).

Although the dealership approach reckons markets and institutions distortional effects, these factors could not be directly incorporated into the model. To address this concern, the more recent studies have examined the influence of other internal (bank specific) and external (macroeconomic and market specific) factors. Furthermore, the dealership approach assumes that regardless of their ownership, banks apply similar business strategies and are exposed to a similar set of performance determinants. However, this assumption appears to be inappropriate, particularly for developing countries, which have continuously embrace financial sector reforms and liberalizations. To overcome these shortcomings, some studies have augmented on the empirical specification of the dealership approach and introduce dummy variables to capture for the impact of bank ownership (Micco *et al*. 2007).

The empirical evidence on the performance of the banking sector is vast. To date, the numerous studies have mainly focused on the U.S. banking sector (e.g. DeYoung and Rice, 2004; Stiroh and Rumble, 2006; Hirtle and Stiroh, 2007; Tregenna, 2009) and the banking sectors of the western and developed countries (Williams, 2003; Pasiouras and Kosmidou, 2007; Kosmidou *et al*. 2007; Hawtrey and Liang, 2008; Kosmidou, 2008; Kosmidou and Zopounidis, 2008; Athanasoglou *et al*. 2008; Albertazzi and Gambacorta, 2008; Kasman *et al*. 2010).

By contrast, studies examining the performance of the ASEAN-5 countries banking sectors are scarce. Generally, these studies focus on the comparison between the foreign and domestic banks' performance. Generally, the empirical evidence showed that foreign banks have succeeded in capitalizing on their advantages and perform better compared to their domestic bank peers. Leightner and Lovell (1998) find that the average Thai bank experienced declining total factor productivity (TFP), while the foreign banks have experienced increasing TFP. In a study on the Malaysian banking sector, Katib and Mathews (2000) find that on average Malaysian banks have not efficiently combined their inputs. They suggest that most of Malaysian commercial banks have been inefficient due to scale.

Unite and Sullivan (2003) suggests that the entry of foreign banks in the Philippines has resulted in the reduction of interest rate spreads and profitability of the domestic banks affiliated with family business groups. 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 exposures during the crisis years and have gradually improved their profitability levels during the post-crisis years. The results indicate that the profitability of the foreign owned banks have been higher than the average profitability of the domestic banks.

Sufian (2009) examines the impact of the Asian financial crisis on the efficiency of the Malaysian banking sector. The empirical findings indicate that the decline in technical efficiency is more abrupt under the intermediation approach compared to the value added and operating approaches. The regression

results focusing on bank efficiency and other bank specific traits suggest that efficiency is negatively related to expense preference behavior and economic conditions, while loans intensity positively influence the efficiency of Malaysian banks. More recently, Margono *et al*. (2010) investigates the cost efficiency, economies of scale, technological progress, and productivity growth of the Indonesian banking sector during the period of 1993-2000. They find that the Indonesian banking sector has exhibited an average technical efficiency of 80% during the pre-crisis period, while efficiency level is observed to be considerably lower during the post-Asian financial crisis period.

The above literature reveals the following research gaps. First, the majority of these studies have concentrated on the U.S. banking sector and the banking sectors of the western and developed countries. Second, empirical evidence on the developing countries banking sectors, particularly the banking sectors of the ASEAN countries are relatively scarce. Finally, virtually nothing has been published to examine the impact of economic freedom on the banking sector. In light of these knowledge gaps, the present paper provides new empirical evidence on the impact of economic freedom on the ASEAN-5 countries banking sectors' intermediation margins.

METHODOLOGY AND DATA

We collect data for the period 1994-2008 (when available) for five South East Asian countries: Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The main source of data is the BankScope database maintained by Fitch/IBCA/Bureau van Dijk, which is considered as the most comprehensive database for research in banking. We have data for about 1,657 bank-year observations, although not all variables are available for all banks in all years. The coverage of banks is particularly problematic during the early years of our sample period, because Bankscope does not always keep information for banks that have failed during the sample period. To enhance comparability of banks in our sample, we limit the sample to banks identified by Bankscope as commercial banks.

We retrieve the economic freedom index from the 2010 Index of Economic Freedom report maintained by the Heritage Foundation (www.heritage.org/index). The macroeconomic variables are retrieved from the IMF Financial Statistics (IFS) and World Bank World Development Indicators (WDI) databases. The final sample accounts for more than 90% of Malaysia, Philippines, Singapore, and Thailand, and 80% of the Indonesia banking sectors' total assets respectively. Table 2 provides the summary statistics of the independent and explanatory variables.

Following Ben Naceur and Omran (2011) among others, the dependent variable used in this study is net-interest margins (NIM). The NIM is computed as interest income minus interest expense divided by interest bearing assets. The NIM measures the gap between what the banks pay the providers of funds (savers) and what the banks receive from firms and households whom are users of credit (borrowers). Furthermore, as a robustness check, we also include return on assets (ROA) as an alternative measure of banks' profitability. The ROA, which is calculated as the profit after tax divided by total assets shows the profit earned per dollar of assets. ROA depends on the policy decisions made by banks

as well as other uncontrollable factors relating to the economy and government regulations (Hassan and Bashir, 2003).

Bank Specific Determinants

We include six bank specific variables that are widely followed by policymakers and practitioners as explanatory variables in the regression models. The ratio of loan loss provisions to total loans (LLP/TL) is used as a proxy of credit risk. The coefficient of the LLP/TL variable is expected to be negative. Miller and Noulas (1997) suggest that the decline in loan loss provisions are in many instances the primary catalyst to higher profit margins. Furthermore, to better manage increasing credit risk, banks may incur additional expenses to intensify their monitoring of loans (Barajas *et al*. 1999).

Table 2
Descriptive of the Variables Used in the Regression Models

Variables Dependent	Description	Indonesia	Malaysia	Mean Philippines	Singapore	Thailand
LN(NIM)	The return on total assets of bank in year *t*.	4.747	3.613	4.257	2.398	2.772
Independent						
Bank Specific Characteristics						
LN(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.	7.877	4.800	6.151	4.802	7.724
LN(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.	10.694	10.191	15.442	16.015	9.172
LN(NII/TA)	A measure of diversification and business mix, calculated as non-interest income/ total assets.	1.584	1.165	1.958	0.736	1.129
LN(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.	5.550	2.286	4.636	1.715	3.759
LN(LOANS/TA)	A measure of loans intensity, 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*.	54.692	55.827	51.345	57.976	70.540
LN(TA)	The natural logarithm of the accounting value of the total assets of the bank in year *t*.	7.929	9.270	5.272	8.842	5.478
External Factors						
LN(GDP)	Natural logarithm of gross domestic products.	5.447	4.699	4.466	4.630	5.067
INFL	The rate of inflation.	13.220	2.860	6.367	1.473	3.400
CR3	The three largest banks asset concentration ratio.	0.521	0.435	0.723	0.865	0.485
MKTCAP/GDP	The ratio of stock market capitalization. The variable serves as a proxy of financial development.	0.284	1.719	0.562	1.787	0.568

Z-SCORE	The Z-score index.	7.741	10.885	12.564	20.548	5.390
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.	56.031	64.587	59.267	87.505	66.311
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.	53.490	76.110	56.814	99.383	70.639

[1]

Table 2 (continued)

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.	68.857	79.954	76.277	88.631	79.008
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.	37.143	40.000	48.571	65.714	50.000

The EQASS variable is included in the regression models as a proxy measure of bank capitalization. Strong capital structure is essential for banks in developing economies, since it provides additional strength to withstand financial crises and increased safety for depositors during unstable macroeconomic conditions (Sufian, 2009). Furthermore, lower capital ratios in banking imply higher leverage and risk, and therefore greater borrowing costs. Thus, the relatively better capitalized banks should exhibit higher net-interest margins.

We include the ratio of non-interest income over total assets (NII/TA) in the regression models as a proxy measure of diversification into non-traditional activities. Non-interest income consists of commissions, service charges and fees, net profit from sale of investment securities, and foreign exchange profits. The variable is expected to exhibit positive relationship with banks' margins. On the other hand, the ratio of non-interest expenses to total assets (NIE/TA) is used to provide information on the variations of banks' operating costs. The variable represents total amount of wages and salaries, as well as the costs of running branch office facilities. The relationship between

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[1]

NIE/TA and bank performance may be negative, because the more profitable banks should be keeping their operating costs low.

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 banks' performance. The loans market, especially credit to households and firms, is risky and therefore has greater expected returns compared to other type of assets, such as government securities. A larger share of bank loans to total assets should imply more interest revenue because of the higher risk. However, loans also have higher operational costs because they need to be originated, serviced, and monitored (Garcia-Herrero *et al*. 2009). To capture for the possible cost advantages associated with size (economies of scale), we introduce the TA variable in the regression models. The relationship between size and bank performance has been ambiguous at best. Hauner (2005) points out that the effect of size is positive in the presence of economies of scale.

Macroeconomic and Financial Market Determinants

Banks' net-interest margins tend to be sensitive to macroeconomic conditions. To control for the cyclical output effects, we use gross domestic product (GDP). Generally, higher economic growth encourages banks to lend more and permits them to charge higher margins. It also improves the quality of banks' assets. However, high economic growth improves business environment and lowers bank entry barriers. This would result in competition to intensify and consequently dampens banks' profitability (Liu and Wilson, 2011). We also account for macroeconomic risk by controlling for the rate of inflation (INFL). The extent to which inflation affects bank interest margins depends on whether future movements of inflation are fully anticipated. An inflation rate that is fully anticipated may increase bank profitability, while an unanticipated change would raise costs due to imperfect interest rate adjustment (Perry, 1992).

The CR3 variable (measured as the concentration ratio of the three largest banks in terms of assets) is entered the regression models as a proxy variable for the banking sector's concentration. According to the industrial organization literature, a positive impact is expected under both the collusion and efficiency views (Goddard *et al*. 2001). The *Z*-Score (Z-SCORE) variable is used as a proxy of the banking sector's risk. The index measures how many standard deviations the banking sector is away from exhausting its capital base (a distance-to-default measure). The *Z*-Score is a popular measure of soundness because it combines banks' buffers (capital and profits) with the risks they face in a way that is grounded in theory (Cihak *et al*. 2009). The index combines in a single indicator: (i) *profitability*, given by a period average return on assets (ROA); (ii) *leverage measure*, given by the period average equity-to-asset ratio (*K*); and (iii) *return volatility*, given by the period standard deviation of ROA (*Vol.* (*ROA*))[i]. A higher (lower) Z-SCORE indicates lower (higher) probability of insolvency (De Nicolo *et al*. 2003; Cihak *et al*. 2009).

We also control for the impact of financial sector development on the ASEAN-5 banking sectors. Following among others Ben Naceur and (2011) we use the ratio of stock market capitalization over GDP (MKTCAP/GDP) as a measure of the size of the equity market. The MKTCAP/GDP may also indicate the complementarity or substitutability between bank and equity market

financing (Ben Naceur and Omran, 2011). Demirguc-Kunt and Huizinga (1999) suggest that stock market capitalization to bank assets is negatively related to bank margins. They suggest that the relatively well developed stock markets can substitute for bank finance. We therefore expect the variable to be negatively related to the net-interest margins of banks operating in the ASEAN-5 countries banking sectors.

Economic Freedom Indicators

The OVER_FREE variable is introduced in regression model 2 to examine the impact of overall economic freedom on the ASEAN-5 countries banking sectors. 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 also selected three other indicators which are closely related to the banking sector. These include BUSI_FREE, MONE_FREE, and FINA_FREE indices. BUSI_FREE is the business freedom index. The index measures how free entrepreneurs can start businesses, how easy it is to obtain licenses, and the ease of closing businesses. Impediments to any of these three activities are deterrents to businesses and therefore to job creations. MONE_FREE is the monetary freedom index. The index combines a measure of price stability with an assessment of price controls. Both inflation and price control distorts market activity. Price stability without microeconomic intervention is an ideal state of a free market. FINA_FREE is the financial freedom index. The index is a measure of banking institutions' security as well as independence from government's control. State ownership of banks and other financial institutions such as insurers and capital markets is an inefficient burden, and political favoritism has no place in a free capital market. All the indices have 0 to 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.

Econometric Specification

To examine the relationship between the net-interest margins of banks operating in the ASEAN countries banking sectors and the bank specific and macroeconomic determinants described earlier, we estimate a linear regression model in the following form:

$$NIM_{j,t} = \beta_1 \sum_{n=48}^{5} BankCharateristics_{j,t} + \beta_2 \sum_{n=48}^{5} Macro \& FinancialMarkets_t$$

$$+ \beta_3 \sum_{n=48}^{4} EconomicFreedom_t + \eta_i + \varepsilon_{i,t}$$

(1)

where $NIM_{i,t}$ is the net-interest margins (NIM), *BankCharacteristics* is a vector of bank specific characteristics, *Macro&FinancialMarkets* is a vector of macroeconomic and financial market condition variables, and *EconomicFreedom* is a vector of economic freedom indices, η is an unobserved

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bank specific effect, ε is the error term, and the subscripts 'j' and 't' represent individual bank and time period, respectively.

Berger *et al.* (2000) suggests that bank performance tend to persist over time reflecting impediments to market competition, informational opacity, and sensitivity to macroeconomic shocks. Furthermore, Garcia-Herrero *et al.* (2009) points out that potential endogeneity could be a problem when assessing bank performance determinants. In this vein, Poghosyan and Hesse (2009) suggest that empirical works on the determinants of bank performance may suffer from several sources of inconsistencies, such as highly persistence performance, omitted variables, and endogeneity bias. For instance, the more efficient banks may have sufficient resources to provision for 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 (Garcia-Herrero *et al.* 2009).

To address this concern, we introduce a lagged dependent variable in the regression models by employing the Generalized Methods of Moments (GMM) estimator introduced by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998). The system GMM (see Blundell and Bond, 1998) allows

Table 3:
Correlation Matrix for the Explanatory Variables

Variables	LN (TA)	LN (LLP/TL)	LN (EQASS)	LN (NII/TA)	LN (NIE/TA)	LN (LOANS/TA)	LN (GDP)	INFL	CR3	Z-SCORE	MKTCAP/GDP
LN (TA)	1.000										
LN (LLP/TL)	0.061***	1.000									
LN (EQASS)	-0.309**	-0.071**	1.000								
LN (NII/TA)	-0.075**	0.157**	0.082**	1.000							
LN (NIE/TA)	-0.257**	0.147**	-0.044**	0.317**	1.000						
LN (LOANS/TA)	-0.165**	-0.334**	-0.100**	-0.150**	0.033	1.000					
LN (GDP)	0.246**	-0.219**	-0.075**	-0.147**	-0.025	0.088**	1.000				
INFL	-0.082**	-0.181**	0.049**	0.124**	0.378**	0.015	0.370**	1.000			
CR3	-0.197**	0.134**	0.229**	0.094**	0.035	-0.212**	-0.275**	-0.172**	1.000		
Z-SCORE	0.066**	-0.321**	0.159**	0.016	-0.131**	0.108**	-0.065**	-0.099**	-0.080**	1.000	
MKTCAP/GDP	0.086**	-0.070**	0.015	-0.019	-0.363**	0.084**	-0.468**	-0.635**	0.173***	0.460***	1.000

Note: The notation used in the table below is defined as follows: LLP/TL is a measure of bank risk calculated as the ratio of total loan loss provisions divided by total loans; EQASS is a measure of capitalization, calculated as book value of shareholders equity as a fraction of total assets; NIE/TA is a proxy measure for costs, calculated as non-interest expenses divided by total assets; ROA is a proxy measure of bank profitability measured as bank profit after tax divided by total assets; TA is a proxy measure of size, calculated as a natural logarithm of total bank assets; GDP is natural log of gross domestic products; INFL is the rate of inflation; CR3 is the three largest banks asset concentration ratio; MKTCAP GDP is the ratio of stock market capitalization; Z-SCORE is the Z-Score index.

The table presents the results from Spearman ρ correlation coefficients.

** indicate significance at 1% level.

us to control for persistence and endogeneity issues and therefore yields consistent estimates. The GMM estimator joins in a single system the regression equations in differences and levels, each one with its set of instrumental variables. By doing so, the present study attempts to exploit the panel structure of the dataset and controls for unobserved bank specific effects, potential endogeneity problems of the explanatory variables, time specific effects, and the

use of lagged dependent variables. Furthermore, the panel data regression method provides efficient solution and enables valuable inferences to be drawn in respect to the degree of performance of banks across different economic and institutional conditions.

Following De Bandt and Davis (2000) and Staikouras *et al.* (2008) among others, the log-linear form is chosen as it typically improves the regression model's goodness of fit and may reduce simultaneity bias. As suggested by Hoechle (2007) and Green (2003) among others, the estimation was conducted by using the Windmeijer (2005) finite sample correction for two-step GMM estimator to control for potential heteroscedasticity.

The reliability of our econometric methodology depends critically on the validity of the instruments, which can be evaluated with the Hansen 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)[ii]. We also present test statistics for the first and second order serial correlations in the error process. 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).

Table 3 provides information on the degree of correlation between the explanatory variables used in the panel regression analysis. The matrix shows that in general the correlation between the explanatory 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.

EMPIRICAL FINDINGS

In Table 4, we report the baseline regression results. Several general comments regarding the test results are warranted. Firstly, the results for most variables remains stable across the various regressions tested. Secondly, it can be observed from Table 4 that for all the regression models estimated, the Hansen test 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 can be detected respectively. Thirdly, the highly significant of the lagged dependent variable's coefficient confirms the dynamic character of the model specification, thus justifying the use of dynamic panel data model estimation.

Referring to the impact of credit risk, the coefficient of LLP/TL has consistently exhibit a negative sign, suggesting that banks with higher credit risk tend to report lower margins. The result is in consonance with the *skimping* hypothesis. To recap, Berger and DeYoung (1997) suggests that under the *skimping* hypothesis, a bank maximizing long-run profits may rationally choose to have lower costs in the short-run by skimping on the resources devoted to loans underwriting and monitoring, but bear the consequences of greater loan performance problems. The findings clearly imply that banks operating in the ASEAN-5 countries banking sectors should focus more on credit risk management, which has been proven to be problematic in the recent past.

During the period under study, capital strength as measured by EQASS is positively related to bank interest margins. The empirical finding is consistent with Goddard *et al*. (2004), Pasiouras and Kosmidou (2007), and Kosmidou (2008) providing support to the argument that well capitalized banks face lower costs of going bankrupt, thus reduce their cost of funding. Furthermore, strong capital structure is essential for banks in developing economies, since it provides additional strength to withstand financial crises and increased safety for depositors during unstable macroeconomic conditions (Sufian, 2009).

The empirical findings seem to suggest that NII/TA has consistently exhibit positive and significant impact on bank net-interest margins. 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 higher income. The empirical findings provide support to the earlier study by among others Canals (1993)). On the other hand, it can be observed from Table 4 that expense preference behaviour as measured by the NIE/TA variable has consistently exhibit negative relationship with bank interest margins. The finding is in consonance with the *bad management* hypothesis of Berger and DeYoung (1997). Low measure of cost efficiency is a signal of poor senior management practices, which apply to input usage and day-to-day operations. Moreover, the relatively efficient banks should be operating at lower costs, which feed through higher profitability. Furthermore, most of the ASEAN-5 countries banking sectors have not reached the maturity level required to link quality effects from increased spending to higher earnings.

The relationship between size (TA) and bank interest margins seems to be positive. 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. However, the result should be interpreted with caution since the coefficient of the variable is only statistically significant at the 10% level and when we control for *financial freedom* (FINA_FREE) in the regression model.

The results about GDP seem to support the argument on the association between economic growth and financial sector's performance. The high economic growth could have encouraged banks operating in the ASEAN-5 countries to lend more, permit them to charge higher margins, and improve the quality of their assets. Similarly, the coefficient of the INFL variable seems to be positive. Rising inflation often works in favour of banks, since it reduces the real value of non-performing loans. The results may also imply that the levels of inflation have been fully anticipated by banks operating in the ASEAN-5 countries banking sectors. This helps them adjust the interest rates accordingly and consequently earn higher interest income.

Table 4
Panel GMM Regression Results

Explanatory Variables	All Countries				
	(I)	**(II)**	**(III)**	**(IV)**	**(V)**
CONSTANT	-16.103***	-23.309***	-6.380	-8.051	-24.727***
	(-2.84)	(-3.28)	(-0.99)	(-1.53)	(-4.04)
Bank Specific Characteristics					
LN(NIM)$_{t-1}$	0.245***	0.240***	0.231***	0.257***	0.212***
	(4.82)	(4.71)	(4.74)	(5.13)	(3.58)
LN(LLP/TL)	-0.053**	-0.058**	-0.047**	-0.060**	-0.030
	(-2.12)	(-2.19)	(-2.00)	(-2.36)	(-0.99)
LN(EQASS)	0.122***	0.128***	0.120***	0.125***	0.131***
	(3.41)	(3.58)	(2.98)	(3.59)	(2.98)
LN(NII/TA)	0.171***	0.172***	0.168***	0.150***	0.146**
	(2.94)	(2.80)	(2.79)	(2.79)	(2.19)
LN(NIE/TA)	-0.144*	-0.148*	-0.174**	-0.135*	-0.165*
	(-1.86)	(-1.88)	(-1.99)	(-1.66)	(-1.72)
LN(LOANS/TA)	0.009	0.002	0.017	0.012	-0.007
	(0.47)	(0.11)	(0.97)	(0.58)	(-0.30)
LN(TA)	0.206	0.221	0.172	0.196	0.346*
	(1.25)	(1.29)	(1.11)	(1.21)	(1.84)
Macroeconomic and Financial Markets Conditions					
LN(GDP)	5.073***	5.713***	4.310***	4.320***	6.204***
	(3.77)	(4.11)	(3.18)	(3.40)	(4.31)
LN(INFL)	0.066***	0.071***	0.077***	0.061**	0.049*
	(2.70)	(2.75)	(2.92)	(2.44)	(1.79)
LN(CR3)	-7.117***	-7.825***	-7.428***	-6.826***	-9.083***
	(-3.31)	(-3.40)	(-3.68)	(-3.25)	(-3.65)
LN(MKTCAP/GDP)	-5.261***	-5.861***	-3.988***	-4.850***	-6.873***
	(-3.59)	(-3.71)	(-2.75)	(-3.30)	(-3.97)
Z-SCORE	-0.280***	-0.300***	-0.280***	-0.296***	-0.348***
	(-4.03)	(-4.07)	(-4.16)	(-3.95)	(-4.17)
Economic Freedoms					
OVER_FREE	–	0.084	–	–	–
		(1.55)			
BUSI_FREE	–	–	-0.108*	–	–
			(-1.82)		
MONE_FREE	–	–	–	-0.060**	–
				(-2.11)	
FINA_FREE	–	–	–	–	0.124***
					(3.59)
AR(1) *p*-value	0.000	0.001	0.001	0.001	0.003
AR(2) *p*-value	0.182	0.208	0.240	0.143	0.419
Sargan *p*-value	0.419	0.608	0.314	0.553	0.807
No. of Obs.	1,657	1,657	1,657	1,657	1,657

Note: The notation used in the table below is defined as follows: LLP/TL is a measure of bank risk calculated as the ratio of total loan loss provisions divided by total loans; EQASS is a measure of capitalization, calculated as book value of shareholders equity as a fraction of total assets; NIE/TA is a proxy measure for costs, calculated as non-interest expenses divided by total assets; ROA is a proxy measure of bank profitability measured as bank profit after tax divided by total assets; TA is a proxy measure of size, calculated as a natural logarithm of total bank assets; GDP is natural log of gross domestic products; INFL is

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the rate of inflation; CR3 is the three largest banks asset concentration ratio; MKTCAP/GDP is the ratio of stock market capitalization; Z-SCORE is the Z-Score index; 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.
Values in parentheses are *z*-statistics.
***, **, and * indicate significance at 1, 5, and 10% levels.

Turning to the impact of concentration in the national banking sectors, it can be observed from Table 4 that the coefficient of the three bank concentration ratio (CR3) exhibits a negative sign (statistically significant at the 1% level in all cases). The empirical findings seem to reject the Structure-Conduct-Performance (SCP) hypothesis. To recap, the SCP hypothesis advocates that banks in highly concentrated markets tend to collude and in the process earn monopoly profits (Short, 1979; Gilbert, 1984; Molyneux *et al.* 1996).

Referring to financial market development, it can be observed from Table 4 that stock market capitalization (MKTCAP/GDP) exerts negative impact on the performance of banks in the ASEAN-5 countries. The results clearly advocate that during the period under study, the ASEAN-5 stock markets offers substitution possibilities rather than complements the products and services offered by banks to borrowers in the ASEAN-5 countries. On the other hand, the empirical findings seem to suggest negative impact of banking sector risk (Z-SCORE) on banks operating in the ASEAN-5 countries. The result is in consonance with Boyd and De Nicolo (2006) lending support to the stringent capital requirements of Basel II. The findings seem to call for a more effective policymakers' role to ensure banks are not exposed to excessive risk and at the same time to induce efficient risk management systems.

Which Economic Freedoms Foster Bank Performance?

To address the issue whether economic freedom influences bank intermediation margins, we re-estimate equation (1) to include the *overall economic freedom* (OVER_FREE) index and other dimensions of economic freedom computed by the Heritage Foundation. These include a measure of restrictions on the entrepreneurs to start businesses (BUSI_FREE), a measure of the effectiveness and independence of monetary policy (MONE_FREE), and a measure of banking security as well as independence from government control (FINA_FREE). All the indices are constructed such that higher values denote greater economic freedom. The results are presented in columns (II) to (V) of Table 4.

As observed, the empirical findings in column (II) of Table 4 seem to suggest that the coefficient of the *overall economic freedom* (OVER_FREE) is positive. The empirical findings comes as no surprise since economic freedom is key to the creation of an environment that allows 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 better living standards (Holmes *et al.* 2008). Holmes *et al.* (2008) points out that higher level of economic freedom is associated with a higher level of per capita GDP. They also suggest that countries with high levels of freedom tend to experience faster growth and lower unemployment and inflation rates.

Concerning the impact of *business freedom* (BUSI_FREE), the empirical findings presented in column (III) of Table 4 seem to suggest that the

coefficient of the BUSI_FREE variable is negative. The negative coefficient of the *business freedom* (BUSI_FREE) variable to a certain extent lend support to the fact that the greater ability to obtain licenses to start, operate, and close businesses impedes bank net-interest margins. A plausible reason could be due to fact that greater ability to obtain licences would result in the intensification of competition and consequently dampens bank net-interest margins.

Interestingly, the impact of monetary freedom (MONE_FREE) is negative implying that higher (lower) monetary policy independence reduces (increases) the earnings of banks operating in the ASEAN-5 countries banking sectors, providing support to the benefits of government interventions contention. A stable and reliable monetary policy is crucial to business environment, as it may help firms and societies to make investments, savings, and other long-term plans. High inflation rates not only confiscate wealth, but also distort pricing, misallocate resources, and raise the costs of doing business.

Within the context of the ASEAN-5 economies, 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, petroleum products, etc. Although price stability without government interventions is an ideal state of a free market, the government could prevent excessive price hikes by market leaders by price control mechanisms. The negative coefficient of MONE_FREE indicates that the greater government interventions in the goods and products markets and imposed control on the exchange rate positively influence bank intermediation margins.

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 exerts positive influence on bank margins. The more financial institutions are controlled by the government, the less free they are to engage in essential financial activities that facilitate private sector–led economic growth and diversify their income base.

In essence, the empirical findings from this study highlight that certain government roles are conducive to the banking sector, while some others serve as hindrance. When institutions in a state are provided with secure property rights, fair and balanced judicial system, and effective constitutional limits on government's ability to transfer wealth through taxation and regulation, it reduces the profitability of unproductive political activity (Baumol, 1990).

Does Countries Income Levels Matters?
In the preceding analysis, the empirical findings show that the different dimensions of economic freedoms exert significant influence on bank net-interest margins. However, the impact may not be uniform across countries with different levels of economic developments. Therefore, in the following analysis we control for the possibility that bank intermediation margins are inherently different across countries with diverse income levels. Specifically, we focus on the interaction of the four different dimensions of economic freedom namely *overall economic freedom* (OVER_FREE), *business freedom* (BUSI_FREE), *monetary freedom* (MONE_FREE), and *financial freedom* (FINA_FREE) and

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distinguish between banks operating in the high-income (HIGH_INC), middle-income (MID_INC), and low-income (LOW_INC) countries. Panels A, B, and C of Table 5 present the regression results.

The first four columns of Table 5 present the results for the high-income country regressions. It is interesting to note that greater financial freedom (FINA_FREE) is associated with lower earnings for banks operating in the high-income country banking sector (column (IV) of Panel A). The empirical findings from this study to a certain extent lend support to Laeven (2005) who find diversification costs to outweigh any benefits accruing from economies of scope

among banks operating in the East Asian countries[iii]. In essence, the negative coefficient of the FINA_FREE variable is consistent with the diversification discount hypothesis and highlights the dark side of diversification among banks operating in the high-income country banking sector.

In Panels B and C of Table 5 we report the regression results for the middle and low-income countries respectively. In most cases, the results indicate that the coefficients of the variables stay mostly the same as in the baseline regression models: they keep the same sign, the same order of magnitude, and remain significant as in the baseline regression models (albeit sometimes at different levels). Concerning the impact of the different dimensions of economic freedoms, we find that all the four economic freedom indicators have no statistically significant influence on banks operating in the middle-income countries banking sectors. On the other hand, *business freedom* (BUSI_FREE) and *monetary freedom* (MONE_FREE) seem to exert positive impact on banks operating in the low-income countries banking sectors.

Within the context of the low-income countries, the empirical findings seem to deduce that the costs of externalities (i.e. taxes and subsidies) may outweigh the social benefits, which could be due to severe resource misallocations. In essence, whenever there are externalities costs involved, the market lead to a level of production and consumption which is below the socially efficient level. This is in contrast with a free market, whereby the prospects of monopoly or oligopoly profits may stimulate firms to enhance their research and development activities. Furthermore, the government's policy to intervene in the foreign exchange market and accumulate international reserves necessitates high fiscal costs, as reserves accumulation involves foregone domestic investments particularly in the low income countries.

Robustness Checks: Controlling for the Impact of the Asian Financial Crisis

It is also of interest to asses how the different dimensions of economic freedom affects bank intermediation margins during the turbulent and tranquil periods. In what ensues, we control for the first tranquil period (DUMTRAN1), the crisis period (DUMCRIS), and the second tranquil period (DUMTRAN2). We focus on the interaction of the four different dimensions of economic freedom namely *overall economic freedom* (OVER_FREE), *business freedom* (BUSI_FREE), *monetary freedom* (MONE_FREE), and *financial freedom* (FINA_FREE) and DUMTRAN1 (a dummy variable that takes a value of 1 for the first tranquil period (1994-1996), 0 otherwise), DUMCRIS (a dummy variable that takes a value of 1 for the crisis years (1997-1998), 0 otherwise),

and DUMTRAN2 (a dummy variable that takes a value of 1 for the second tranquil period (1999-2008), 0 otherwise). Panels A, B, and C of Table 6 present the regression results.

Panel A of Table 6 contains the regression results for the first tranquil period (DUMTRAN1). As can be seen, all the four different dimensions of economic freedom positively influence bank net-interest margins during the first tranquil period (statistically significant at the 1% in all cases). On the other hand, we find that all the four dimensions of economic freedom exert negative and significant impact on bank margins during the crisis and the second tranquil periods (Panels B and C of Table 6).

Table 5
Panel GMM Regression Results

Explanatory Variables	Panel A: High Income Country				Panel B: Middle Income Countries				Panel C: Low Income Countries			
	(I)	(II)	(III)	(IV)	(I)	(II)	(III)	(IV)	(I)	(II)	(III)	(IV)
CONSTANT	-7.245 (-1.33)	-7.290 (-1.32)	-7.890 (-1.45)	-7.580 (1.40)	-13.689*** (-2.51)	-13.595*** (-2.46)	-12.685** (-2.36)	-15.303*** (-2.71)	-15.722*** (-2.70)	-14.589*** (-2.80)	-16.217*** (-2.86)	-15.508*** (-2.73)
Bank Specific Characteristics												
LN(NIM$_{t-1}$)	0.188*** (3.69)	0.186*** (3.68)	0.186*** (3.69)	0.189*** (4.02)	0.235*** (4.95)	0.236*** (4.92)	0.236*** (4.89)	0.242*** (5.01)	0.217*** (4.59)	0.227*** (4.83)	0.239*** (4.82)	0.205*** (4.02)
LN(LLPTL)	-0.025 (-0.68)	-0.025 (-0.67)	-0.025 (-0.70)	-0.021 (-0.59)	-0.049** (-2.00)	-0.050** (-2.01)	-0.047* (-1.90)	-0.052** (-2.10)	-0.045* (-1.82)	-0.044* (-1.75)	-0.051** (-2.06)	-0.019 (-0.65)
LN(EQASS)	0.232*** (5.00)	0.234*** (4.85)	0.230*** (4.81)	0.215*** (4.89)	0.113*** (3.07)	0.112*** (3.05)	0.112*** (3.07)	0.119*** (3.33)	0.115*** (3.31)	0.115*** (3.28)	0.120*** (3.30)	0.108*** (2.65)
LN(NII/TA)	0.008 (0.11)	0.012 (0.15)	0.019 (0.25)	0.032 (0.50)	0.181*** (3.11)	0.181*** (3.13)	0.180*** (3.19)	0.175*** (3.01)	0.178*** (3.22)	0.166*** (3.22)	0.178*** (2.86)	0.170*** (2.69)
LN(NIE/TA)	-0.023 (-0.38)	-0.023 (-0.37)	-0.030 (-0.48)	-0.049 (-0.78)	-0.170** (-2.05)	-0.171** (-2.08)	-0.176** (-2.09)	-0.151** (-1.93)	-0.195** (-2.31)	-0.172** (-2.24)	-0.155* (-1.89)	-0.221** (-2.30)
LN(LOANS/TA)	0.010 (0.45)	0.012 (0.52)	0.011 (0.49)	0.016 (0.78)	0.017 (0.82)	0.017 (0.85)	0.019 (0.94)	0.012 (0.56)	0.021 (1.07)	0.020 (1.03)	0.010 (0.54)	0.020 (1.05)
LN(TA)	0.642** (2.19)	0.628** (2.15)	0.594** (2.04)	0.482** (2.29)	0.184 (1.19)	0.187 (1.20)	0.186 (1.23)	0.193 (1.19)	0.210 (1.38)	0.196 (1.28)	0.191 (1.19)	0.301* (1.82)
Macroeconomic and Financial Markets Conditions												
LN(GDP)	1.373 (0.10)	1.400 (1.11)	1.598 (1.32)	1.884* (1.65)	4.616*** (3.54)	4.599*** (3.52)	4.417*** (3.46)	4.928*** (3.63)	4.291*** (3.56)	4.147*** (3.72)	4.960*** (3.68)	4.406*** (3.46)
LN(INFL)	0.044* (1.79)	0.044* (1.77)	0.048* (1.98)	0.047* (1.84)	0.070*** (2.81)	0.070*** (2.81)	0.071*** (2.82)	0.067*** (2.71)	0.078*** (3.14)	0.074*** (3.08)	0.067*** (2.66)	0.056*** (2.06)
LN(CR3)	-4.715*** (-2.78)	-4.636*** (-2.60)	-4.717*** (-2.69)	-5.688*** (-3.17)	-7.166*** (-3.51)	-7.198*** (-3.52)	-7.255*** (-3.55)	-7.152*** (-3.43)	-7.443*** (-3.88)	-6.657*** (-3.30)	-7.078*** (-3.42)	-9.056*** (-3.98)
LN(MKTCAP/GDP)	1.918 (1.27)	1.878 (1.23)	1.623 (1.05)	0.626 (0.53)	-4.577*** (-3.28)	-4.518*** (-3.21)	-4.347*** (-3.27)	-5.026*** (-3.33)	-3.745*** (-2.87)	-3.823*** (-3.21)	-4.981*** (-3.26)	-4.185*** (-2.94)
Z-SCORE	-0.184*** (-2.97)	-0.193*** (-3.14)	-0.188*** (-3.14)	-0.191*** (-2.64)	-0.279*** (-4.18)	-0.279*** (-4.21)	-0.275*** (-4.29)	-0.280*** (-4.08)	-0.282*** (-4.22)	-0.260*** (-4.26)	-0.269*** (-3.76)	-0.327*** (-3.79)
Economic Freedom												
OVER_FREE x HIGH_INC	-0.884*** (-2.11)											
BUSI_FREE x HIGH_INC		-0.746** (-2.03)										
MONE_FREE x HIGH_INC			-0.798* (-1.77)									
FINA_FREE x HIGH_INC				-1.092* (-1.83)								
OVER_FREE x MID_INC					-0.028 (-0.94)							
BUSI_FREE x MID_INC						-0.027 (-1.03)						
MID_INC												

Table 5 continued

Table 6
Panel GMM Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
LN(MKTCAP/GDP)	1.918 (1.27)	1.878 (1.23)	1.623 (1.05)	0.626 (0.53)	-4.577*** (-3.28)	-4.518*** (-3.21)	-4.347*** (-3.27)	-5.026*** (-3.33)	-3.745*** (-2.87)	-3.823*** (-3.21)	-4.981*** (-3.26)	-4.185*** (-2.94)
Z-SCORE	-0.184*** (-2.97)	-0.193*** (-3.14)	-0.188*** (-3.14)	-0.191*** (-2.64)	-0.279*** (-4.18)	-0.279*** (-4.21)	-0.275*** (-4.29)	-0.280*** (-4.08)	-0.282*** (-4.22)	-0.260*** (-4.26)	-0.269*** (-3.76)	-0.327*** (-3.79)
					Economic Freedom							
OVER_FREE x HIGH_INC	-0.884*** (-2.11)	–	–	–	–	–	–	–	–	–	–	–
BUSI_FREE x HIGH_INC	–	-0.746** (-2.03)	–	–	–	–	–	–	–	–	–	–
MONE_FREE x HIGH_INC	–	–	-0.798* (-1.77)	–	–	–	–	–	–	–	–	–
FINA_FREE x HIGH_INC	–	–	–	-1.092* (-1.83)	–	–	–	–	–	–	–	–
OVER_FREE x MID_INC	–	–	–	–	-0.028 (-0.94)	–	–	–	–	–	–	–
BUSI_FREE x MID_INC	–	–	–	–	–	-0.027 (-1.03)	–	–	–	–	–	–
MONE_FREE x MID_INC	–	–	–	–	–	–	-0.031 (-1.27)	–	–	–	–	–
FINA_FREE x MID_INC	–	–	–	–	–	–	–	-0.013 (-0.37)	–	–	–	–
OVER_FREE x LOW_INC	–	–	–	–	–	–	–	–	0.062** (1.97)	–	–	–
BUSI_FREE x LOW_INC	–	–	–	–	–	–	–	–	–	0.044* (1.83)	–	–
MONE_FREE x LOW_INC	–	–	–	–	–	–	–	–	–	–	0.011 (0.54)	–
FINA_FREE x LOW_INC	–	–	–	–	–	–	–	–	–	–	–	0.097*** (2.86)
AR(1) p-value	0.000	0.000	0.000	0.000	0.001	0.001	0.001	0.000	0.001	0.000	0.000	0.001
AR(2) p-value	0.248	0.248	0.267	0.272	0.213	0.217	0.235	0.185	0.328	0.238	0.218	0.526
Sargan p-value	1.000	1.000	1.000	1.000	0.332	0.361	0.330	0.366	0.285	0.253	0.360	0.462
No. of Obs.	1,657	1,657	1,657	1,657	1,657	1,657	1,657	1,657	1,657	1,657	1,657	1,657

Note: The notation used in the table below is defined as follows: LLP_TL is a measure of bank risk calculated as the ratio of total loan loss provisions divided by total loans; EQASS is a measure of capitalization, calculated as book value of shareholders equity as a fraction of total assets; NIE_TA is a proxy measure for costs, calculated as non-interest expenses divided by total assets; ROA is a proxy measure of bank profitability measured as bank profit after tax divided by total assets; TA is a proxy measure of size, calculated as a natural logarithm of total bank assets; GDP is natural log of gross domestic products; INFL is the rate of inflation; CR3 is the three largest banks asset concentration ratio; MKTCAP_GDP is the ratio of stock market capitalization; Z-SCORE is the Z-Score index; 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.

Values in parentheses are z-statistics

***, **, and * indicate significance at 1, 5, and 10% levels

Economic Freedom, Development and Bank Intermediation Spreads

Table 6
Panel GAM Regression Results

Explanatory Variables	Panel A: First Tranquil Period				Panel B: Asian Financial Crisis Period				Panel C: Second Tranquil Period			
	(I)	(II)	(III)	(IV)	(I)	(II)	(III)	(IV)	(I)	(II)	(III)	(IV)
CONSTANT	-15.118*** (-2.68)	-14.912*** (-2.72)	-15.509*** (-2.82)	-14.903*** (-2.67)	-15.794*** (-2.79)	-15.698*** (-2.78)	-15.808*** (-2.79)	-15.819*** (-2.79)	-14.100*** (-2.53)	-14.778*** (-2.65)	-12.195*** (-2.11)	-14.924*** (-2.72)
Bank Specific Characteristics												
LN(NIDA$_{bc}$)	0.230*** (4.39)	0.235*** (4.46)	0.226*** (4.28)	0.222*** (4.17)	0.242*** (4.60)	0.242*** (4.57)	0.242*** (4.60)	0.242*** (4.60)	0.232*** (4.83)	0.228*** (4.78)	0.231*** (4.90)	0.234*** (5.13)
LN(LLP/TL)	-0.076*** (-2.87)	-0.074*** (-2.86)	-0.068*** (-2.63)	-0.065** (-2.45)	-0.057** (-2.25)	-0.058** (-2.27)	-0.058** (-2.25)	-0.058** (-2.25)	-0.038 (-1.59)	-0.038 (-1.59)	-0.035 (-1.42)	-0.050** (-2.15)
LN(EQ/ASS)	0.137*** (3.47)	0.136*** (3.47)	0.128*** (3.28)	0.135*** (3.03)	0.122*** (3.29)	0.123*** (3.27)	0.122*** (3.29)	0.122*** (3.29)	0.124*** (3.32)	0.125*** (3.33)	0.128*** (3.60)	0.127*** (3.62)
LN(NII/TA)	0.159*** (3.32)	0.155*** (3.41)	0.167*** (3.28)	0.158*** (3.12)	0.165*** (3.06)	0.163*** (3.06)	0.165*** (3.03)	0.165*** (3.03)	0.159*** (2.72)	0.161*** (2.75)	0.135*** (2.40)	0.169*** (3.11)
LN(NIE/TA)	-0.136* (-1.74)	-0.134* (-1.80)	-0.136* (-1.75)	-0.126* (-1.63)	-0.140* (-1.76)	-0.142* (-1.77)	-0.140* (-1.76)	-0.140* (-1.76)	-0.135* (-1.84)	-0.140* (-1.84)	-0.124* (-1.69)	-0.130* (-1.76)
LN(LOANS/TA)	0.015 (0.54)	0.015 (0.53)	0.012 (0.49)	0.013 (0.45)	0.013 (0.60)	0.013 (0.61)	0.012 (0.60)	0.012 (0.60)	-0.004 (-0.17)	-0.002 (-0.10)	-0.009 (-0.44)	0.002 (0.10)
LN(TA)	0.338 (1.61)	0.332 (1.60)	0.293 (1.50)	0.345* (1.67)	0.211 (1.22)	0.213 (1.23)	0.210 (1.21)	0.211 (1.22)	0.293* (1.83)	0.298* (1.87)	0.335** (1.98)	0.252 (1.58)
Macroeconomic and Financial Markets Conditions												
LN(GDP)	4.373*** (3.68)	4.313*** (3.68)	4.544*** (3.79)	4.428*** (3.60)	5.049*** (3.74)	5.032*** (3.72)	5.056*** (3.74)	5.056*** (3.74)	4.591*** (3.51)	4.755*** (3.60)	4.249*** (3.18)	4.662*** (3.65)
LN(INFL)	0.082*** (2.83)	0.079*** (2.88)	0.079*** (2.73)	0.065** (2.29)	0.075*** (2.76)	0.077*** (2.79)	0.075*** (2.76)	0.075*** (2.75)	0.043* (1.90)	0.048** (2.11)	0.035 (1.52)	0.058** (2.42)
LN(CR3)	-5.360*** (-2.62)	-5.001** (-2.41)	-5.712*** (-2.73)	-5.660*** (-2.67)	-7.131*** (-3.21)	-7.164*** (-3.21)	-7.130*** (-3.22)	-7.135*** (-3.21)	-3.730** (-2.15)	-4.350** (-2.35)	-3.333** (-2.09)	-4.211** (-2.18)
Δ(MKTCAP/GDP)	-7.026*** (-4.09)	-6.953*** (-4.08)	-6.506*** (-4.14)	-6.968*** (-4.07)	-5.796*** (-3.59)	-5.845*** (-3.61)	-5.798*** (-3.58)	-5.788*** (-3.58)	-5.107*** (-3.47)	-5.077*** (-3.52)	-4.938*** (-3.16)	-5.081*** (-3.52)
ZSCORE	-0.224*** (-3.82)	-0.220*** (-3.78)	-0.216*** (-3.68)	-0.235*** (-3.94)	-0.267*** (-4.20)	-0.265*** (-4.22)	-0.267*** (-4.21)	-0.267*** (-4.20)	-0.278*** (-3.42)	-0.234*** (-3.63)	-0.280*** (-3.19)	-0.263*** (-3.64)
Economic Freedom												
OVER_FREE x DUMTRAN1	0.037*** (3.22)	—	—	—	—	—	—	—	—	—	—	—
BUSI_FREE x DUMTRAN1	—	0.034*** (3.17)	—	—	—	—	—	—	—	—	—	—
MONE_FREE x DUMTRAN1	—	—	0.026***	—	—	—	—	—	—	—	—	—

Table 6 continued

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It is also interesting to note that independence from government control (less government interventions) negatively influence bank interest margins during the crisis and post-crisis periods[iv].

In essence, the empirical findings seem to lend support to the *helping hand* theory (see Pigou, 1938), particularly during the crisis and post-crisis periods. To recap, the *helping hand* theory holds that monopoly power, externalities, and informational asymmetries create a constructive role for the strong helping hand of government to help offset market failures. The helping hand theory takes as given both that there are market failures and that the government can ameliorate these failures. When applied to banking, this view of government considers official supervision of banks, limits on bank activities, restrictions on bank entry, and a deposit insurance scheme as appropriate policies that alleviate market failures and improve resource allocation (Barth *et al*. 2006). This could ensure banks provide efficient financial intermediation between households and firms and between investors and entrepreneurs.

Additional Robustness Checks

To further check for the robustness of the results, we perform several other sensitivity analyses. First, we replace NIM with ROA in the regression models and repeat equation (1). We find that the coefficients of the baseline variables stay mostly the same: they keep the same sign, the same order of magnitude, and they remain significant as they were so in the baseline regression models (albeit sometimes at different levels). Second, we 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 excluding the top and bottom 1% of the sample. The results continued to remain robust in terms of directions and significance levels. To conserve space, we do not report the results in the paper, but are available upon request.

CONCLUSIONS AND POLICY IMPLICATIONS

The paper provides new empirical evidence on the impact of economic freedom on the ASEAN-5 countries banking sectors. We cover the period between 1994 and 2008 and controls for a wide array of bank specific characteristics and macroeconomic and financial market conditions variables. The empirical findings from this study suggest that banks which derived a higher portion of its income from non-interest sources and relatively better capitalized tend to earn higher intermediation margins. On the other hand, credit risk and expense preference behavior seem to exert negative impacts on banks' net interest margins.

During the period under study we find pro-cyclical impact of GDP growth on the ASEAN-5 banks' net-interest margins. Likewise, the impact of inflation rate is also positive, implying that during the period under study the levels of inflation have been anticipated by banks operating in the ASEAN-5 countries banking sectors. The empirical findings seem to suggest negative impacts of the national banking sectors concentration and risk. We find that stock markets capitalization is negatively related to banks' net-interest margins, implying that during the period under study, the stock markets in the ASEAN-5

countries offer substitution possibilities to the products and services offered by banks to potential borrowers.

We find evidence supporting for greater freedom for entrepreneurs to start, operate, and close businesses. This could be explained by the fact that higher freedom for entrepreneurs to start businesses is conducive to job creations. The empirical findings seem to suggest that a higher (lower) monetary freedom reduces (enhances) banks' net-interest margins, providing support to the notion of government intervention contention. During the period under study we find that higher (lower) financial freedom enhances bank margins. If anything could be delved, the empirical findings clearly lend support for greater freedom on the activities which banks could undertake. The findings 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 incomes from non-traditional sources.

Despite being proactive in undertaking full-fledged restructuring of the financial sectors following the Asian financial crisis in 1997, the ASEAN-5 banking sectors remains relatively shelved from foreign competition. While foreign bank subsidiaries and foreign bank branches are not governed by different regulations, there are no new licenses granted to either of the two in the ASEAN-5 countries, although the already established foreign bank branches and join venture banks are allowed to open an additional sub-branch and office. Thus, it is not surprising to find that *financial freedom* (FINA_FREE) in most of the ASEAN-5 countries is relatively lower compared to the other aspects of the economy, such as trade, and fiscal, and monetary freedoms (see Panel A of Table 7).

On a similar note, it can be observed from Panel A of Table 7 that most of the ASEAN-5 countries fare poorly in terms of freedom of doing business (BUSI_FREE) and freedom from corruption (CORR_FREE). A plausible explanation is the relatively long and tedious process to start, operate, and close a business hampered by the regulatory environment. For instance, it takes more than the average 35 days to start new business in Indonesia (Heritage Foundation, 2010). Likewise, corruption is perceived to be pervasive in Indonesia. In particular, demands for irregular fees to obtain permits or licences are common. Furthermore, the awarding of government contracts and concessions based on personal relationship is customary in the country.

Another interesting observation is the trend in the ASEAN-5 countries overall economic freedom (OVER_FREE) since the Asian financial crisis in 1997. As can be seen in Panel B of Table 7, in general the level of overall economic freedom in most of the ASEAN-5 countries (except for Singapore) has been on a declining trend. Furthermore, the decline has been more pronounced in the low income countries like Indonesia and the Philippines. This observation is against the findings of De Haan *et al.* (2010) who suggest that banking crises in the short-term reduce (various dimensions of) economic freedom but that, in the long-term, banking crises are associated with higher levels of economic freedom (except for government spending).

Most importantly, the findings does not bode well for the ASEAN-5 countries economic development since the earlier study by among other Goel and Nelson (2005) suggests that greater economic freedom contributes positively to the reduction in the level of corruption, which is the weakest link in

both Indonesia and the Philippines overall economic freedom. Therefore, an immense help towards improving the level of economic freedom is of greater significance as it may help reduce the level of corruptions and consequently lead to a positive impact on the performance of both countries banking sectors.

Table 7
Selected Asian Countries Economic Freedom Index and Its Decompositions

Table 7

Selected Asian Countries Economic Freedom Index and Its Decompositions

This table presents scores of the Freedom indexes of the Heritage Foundation. We present both the composite index of the overall economic freedom as well as the sub-components of this index. The index gives a score of 0 to 100, with higher scores denoting more freedom. Over_Free is the composite index of economic freedom. Busi_Free measures restrictions on the entrepreneurs to start business; Trade_Free is an index of trade openness; Fiscal_Free is an index of fiscal burden of government; Govt_Int is an index of government intervention in the economy; Mone_Free is an index of effectiveness and independence of monetary policy; Invest_Free is an index of restrictions on capital flows and foreign investment; Fina_Free measures the banking sector's security, as well as independence from government control; Prop_Rgt is an index of the protection of property rights; Free_Corr measures the level of corruption; Labour_Free measures the flexibility and/or rigidity of the labour market. Panel A shows the score for each index for the year 2008, by country. Panel B shows the composite score of the overall economic freedom for the period 1995-2008 by country and the banking sectors' net-interest margins.

Panel A: Index of Economic Freedom for the year 2008

Country	Over_Free	Busi_Free	Trade_Free	Fiscal_Free	Govt_Int	Mone_Free	Invest_Free	Fina_Free	Prop_Rgt	Free_Corr	Labor_Free
Hong Kong	89.7	89.0	95.0	92.8	93.1	87.2	90.0	90.0	90.0	83.0	86.5
Indonesia	53.2	49.0	73.0	77.4	89.7	68.2	30.0	40.0	30.0	24.0	50.3
Korea, Rep. of	68.6	84.1	66.4	71.1	77.3	80.0	70.0	60.0	70.0	51.0	56.0
Malaysia	63.9	69.3	76.2	82.2	80.8	78.6	40.0	40.0	50.0	50.0	72.1
Philippines	56.0	53.1	78.8	75.8	90.2	73.8	30.0	50.0	30.0	25.0	52.9
Singapore	87.3	97.8	90.0	90.3	93.9	88.9	80.0	50.0	90.0	94.0	98.0
Thailand	62.3	72.2	75.2	74.6	90.7	66.7	30.0	50.0	50.0	36.0	77.7

Panel B: Economic Freedom and Banking Sector Performance over the period 1995-2008

Year	Hong Kong		Indonesia		Korea, Rep. of		Malaysia		Philippines		Singapore		Thailand	
	Over_Free	NIM	Over_Free	NIM	Over_Free	NIM	Over_Free	NIM	Over_Free	NIM	Over_Free	NIM	Over_Free	NIM
2008	89.7	2.603	53.2	5.099	68.6	2.654	63.9	1.936	56.0	4.044	87.3	0.839	62.3	3.218
2007	89.9	2.387	53.2	5.039	67.8	2.671	63.8	1.977	56.0	4.091	87.1	1.432	63.5	3.250
2006	88.6	2.178	51.9	4.982	67.5	2.685	61.6	2.016	56.3	4.136	88.0	2.272	63.3	3.285
2005	89.5	1.899	52.9	5.165	66.4	2.820	61.9	2.977	54.7	4.139	88.6	3.963	62.5	2.648
2004	90.0	3.398	52.1	5.419	67.8	2.946	59.9	2.221	59.1	5.779	88.9	4.266	63.7	3.087
2003	89.8	4.488	55.8	5.098	68.3	2.572	61.1	2.443	61.3	7.378	88.2	1.018	65.8	3.108
2002	89.4	4.240	54.8	4.791	69.5	2.509	60.1	2.612	60.7	6.320	87.4	1.249	69.1	2.719
2001	89.9	3.518	52.5	4.249	69.1	2.249	60.2	2.775	60.9	5.678	87.8	2.510	68.9	2.142
2000	89.5	3.691	55.2	4.088	69.7	2.293	66.0	3.114	62.5	4.790	87.7	2.695	66.6	2.009
1999	88.5	4.252	61.5	6.521	69.7	2.233	68.9	2.954	61.9	4.301	86.9	2.037	66.9	1.310
1998	88.0	3.927	63.4	11.395	73.3	2.439	68.2	3.514	62.8	5.557	87.0	2.476	67.3	1.185
1997	88.6	2.751	62.0	4.774	69.8	2.388	66.8	3.156	62.2	5.323	87.3	2.231	66.1	2.817
1996	90.5	1.842	61.0	4.182	73.0	2.635	69.9	3.225	60.2	4.293	86.5	2.967	71.0	3.326

Despite the costly financial sector reforms, banking sectors in most of the ASEAN-5 countries are still characterized by persistently high interest rate spreads (Panel B of Table 7). It is also interesting to note different patterns across countries of different income groups. On the one hand, net-interest margins seem to have declined and are relatively low in the high and upper middle income countries (i.e. Singapore and Malaysia). On the other hand, net-interest margins seem to have increased or remain stable in the low income countries (i.e. Indonesia the Philippines). In this vein, Beck and Demirguc-Kunt (2009) suggest that the low income countries have typically higher net interest margins and overhead costs.

It is also interesting to note that the relatively less free economies tend to exhibit higher net-interest margins suggesting high intermediation costs which reflect inefficiency in financial intermediation activities. The high intermediation costs could exert negative impediments on the savings, investments, and employment growth, and consequently on the growth of the economy. In this vein, Sologub (2008) points out that interest rate spreads are an adequate measure of bank intermediation inefficiency. Furthermore, Robinson (2002) suggests that interest rate spreads reflect the costs of financial intermediation that banks incur, which is inclusive of their normal profits. This undesirable observation has important remedies for the growth and development of the low-income countries (such as Indonesia and the Philippines), as numerous studies have demonstrate the link between the efficiency of financial intermediation and economic growth.

Quaden (2002) argues that a more efficient banking sector benefits the real economy by allowing "higher expected returns on surplus and lower borrowing costs for investing in new projects that requires external financing." If the banking sector interest rate spread is large, it discourages potential savers due to low returns on deposits and thus limits the financing for potential borrowers. Valverde (2007) suggests that only a small fraction of savings will be mobilized into investments by the banking sector if the costs of financial intermediation are high. Therefore, the higher the inefficiency of the banking sector, the higher would be the intermediation costs, thereby increases the tendency for a larger fraction of savings to be lost in the process of financial intermediation. This would ultimately reduce lending, investment, and consequently economic growth of these countries.

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ENDNOTES

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[i] $Z = \dfrac{ROA + K}{Vol.(ROA)}$, where *ROA* (profitability) is a period average of ROA, *K* (leverage measure) is the period average equity-to-asset ratio, and *Vol*. (*ROA*) is the return volatility given by the period standard deviation of ROA.

[ii] Following Garcia-Herrero *et al*. (2009) among others, we instrument for all regressors, while the macroeconomic characteristics are treated as exogenous.

[iii] The countries included in the analysis are Hong Kong (China), Indonesia, the Republic of Korea, Malaysia, the Philippines, Singapore, and Thailand.

[iv] In this vein, Barth *et al*. (2006) points out that greater independence may be associated with less oversight and therefore more possibilities for corrupt behavior by the supervisor.