

## Economic Freedom and Banking Development: The Experiences of Selected East Asian Countries

*(Kebebasan Ekonomi dan Pembangunan Perbankan: Pengalaman Negara-Negara Asia Timur Terpilih)*

Soo-Wah Low  
Noor Azlan Ghazali  
Shamshubaridah Ramlee  
Rasidah Mohd Said

### ABSTRACT

*This paper investigates the role of economic freedom in banking sector development using a panel data set for the period 1975-2006 in six East Asian countries, namely Singapore, Malaysia, Indonesia, Thailand, South Korea and the Philippines. We find a direct positive link between economic freedom and banking sector development for the benchmark country, Singapore and the effects of economic freedom on banking development are not common to all countries. Differential effects are observed for Malaysia and Thailand indicating that specific country factors are at work. To establish a firmer link between economic freedom and banking development, we decompose the economic freedom index into its various sub-components. We find that legal quality is the only sub-component that is positively and robustly related to all measures of banking development that we employ and that the effect for Malaysia is different from that in Singapore. This suggests that, protection of property rights and effective enforcement of contracts are critical elements in promoting banking development. A country's legal system needs to be strengthened if banking sector is to function well. However, the extent to which legal systems need improvement differs across countries with different institutional framework.*

### ABSTRAK

*Kertas kajian ini bertujuan untuk menyelidik peranan kebebasan ekonomi terhadap pembangunan sektor perbankan. Hubungan antara kebebasan ekonomi dengan pembangunan perbankan dilihat dengan menggunakan data panel untuk tempoh 1975-2006 di enam negara Asia Timur yang terdiri daripada negara Singapura, Malaysia, Indonesia, Thailand, Korea Selatan dan Filipina. Kajian ini menggunakan Singapura sebagai negara penanda aras dan mendapati bahawa kebebasan ekonomi mempunyai hubungan positif dengan pembangunan perbankan negara tersebut. Namun, kesan kebebasan ekonomi terhadap pembangunan perbankan tidak serupa bagi setiap negara terpilih. Kesan berbeza dilihat di negara Malaysia dan Thailand yang dengan ini menunjukkan faktor spesifik negara berlaku. Sebagai langkah untuk menguatkan lagi hubungan antara kedua-dua pembolehubah, kajian ini memecahkan indeks kebebasan ekonomi kepada beberapa sub-komponen. Kajian ini mendapati bahawa sub-komponen mutu perundangan negara mempunyai hubungan positif lagi kuat dengan semua pengukur pembangunan perbankan iaitu kesan adalah berbeza untuk Malaysia berbanding Singapura. Ini bermakna, perlindungan hak harta dan penguat kuasa berkesan dalam kontrak merupakan elemen kritikal untuk pembangunan sektor perbankan. System perundangan sebuah negara perlu diperkemas untuk membolehkan sektor perbankan berfungsi dengan baik. Walau bagaimanapun, magnitud sistem perundangan perlu diperkukuh berbeza antara negara memandangkan kerangka perundangan adalah berbeza di kalangan negara terpilih.*

### INTRODUCTION

Is economic freedom vital for the development of banking sector? Which categories of economic freedom should be prioritised by developing nations in promoting efficient domestic banking system within an increasingly globalised economy? Economic freedom or in short the *absence of government coercion or constraint* is often argued to be a critical element for economic development. It forms as vital ingredient for economic efficiency that optimally allocates nation's resources. Theoretically

argued, economic freedom motivates competitive environment that leads to the establishment of efficient financial system, innovative ideas and productive capacities. Nevertheless, understanding of the links between economic freedom and financial activities remains vague.

A well-developed banking sector often represents a major element of economic development. Theoretical explanations suggest that banking activities exert real effect by resolving various market imperfection-type problems. Banks act as efficient monitoring agent,

provider of liquidity, efficient risk smoother, provider of research function and incentive for good governance and corporate control. With less fiction, greater intermediation takes place, igniting real activities. Studies by King and Levine (1993a), Rajan and Zingales (1998), and Beck *et al.* (2000) are among those that point toward growth-enhancing role of banks. Accordingly, being bank-dependent nations, it is critical for these economies to systematically design the development of their banking systems.

Many studies on financial development examine the various conditions that influence the pattern of financial development which include legal framework, liberalisation, openness, culture, and macro economic conditions (examples are La-Porta *et al.* 1998; Levine 2002; Rajan & Zingales 2003; Stultz & Williamson 2003; Beck *et al.* 2003; Hung 2003). In particular, empirical investigations of 1997/1998 financial crisis have alerted that the inefficiency of the East Asian banking system was mostly due to various forms of government interferences. Much of these arguments center on the ineffective incentive mechanisms (moral hazards) and weak governance that surround region's banking operations (McKinnon & Phil 1998; Krugman 1998; Mishkin 1999). In short, less freedom is available in these economies due to various government interventions. Nevertheless, existing development policies while retaining the role of market, also recognizes the critical function of the government in the promotion of a sound banking system, a key to achieving a sustainable economic growth.

So far, previous studies on banking development have employed various institutional and policy variables without relating to economic freedom index. The present study extends the banking literature by providing a link between the level of economic freedom of a country and its banking sector development. More specifically, we examine the role of economic freedom (in various definitions) on the development of banking sector in selected bank-dependent East Asian nations, defined here to include the five Association of Southeast Asian Nations (ASEAN) countries - Singapore, Malaysia, Indonesia, Thailand, the Philippines plus South Korea. We employ the overall economic freedom index as well as the components of the index to identify the categories of economic freedom that contributes most directly to the promotion of a sound banking system which is vital for sustainable economic growth. This study employs the economic freedom measure sourced from the Fraser Institute and provides greater insights into the link of selected categories of economic freedom and the banking sector development. It is hoped that the findings of this study will assist the region's policy makers in formulating banking policies within an increasingly globalised economies. The findings on economic freedom subcomponents would provide insights into the specific areas that require government's attention for formulating banking reform policies.

## LITERATURE REVIEW

Economists have long recognised that minimum government intervention in economic activities will lead to economic growth. There is an extensive literature that highlight the importance of various institutional and policy variables in promoting economic growth. (see for example, Torstensson 1994; Knack & Keefer 1995; Barro 1996). More specifically, this growth literature points out that stable and predictable rule of law, good enforcement of contracts, protection of individual and property rights, sound money, *etc.* are the keys to economic progress. According to Gwartney and Lawson (2003a, 2003b), the Economic Freedom of the World (EFW) Index captures many of the institutional and policy related areas of a country and thus can be used as a proxy for institutional and policy framework of a country.

The empirical literature that link economic freedom and economic growth is relatively recent and only a few studies were available until the late 1990s. Many of these studies use a measure of economic growth as a dependent variable and an aggregate measure or the underlying components of economic freedom as part of a set of explanatory variables (for examples, Dawson 1998; Ayal & Karras 1998; Gwartney *et al.* 1999; de Hann & Sturm 2000; Carlson & Lundstrom 2002; Gaunder 2002; Karabegovic *et al.* 2003). More recently, Doucouliagos and Ulubasoglu (2006) offer a quantitative review of the empirical literature on the link between economic freedom and economic growth. In their study, De Haan *et al.* (2006) offer critical assessment of recent studies that economic freedom has a strong relationship with economic growth. According to the authors, despite some weaknesses, both the economic freedom index and its subcomponents are reliable in identifying which categories of the economic freedom contributes most to economic growth. Collectively, these empirical studies generally find an overall positive relationship between economic freedom and economic growth.

In the financial development literature, the century-old idea that real economic activities are benefited by the progress on the financial sector can be traced back to Bagehot (1873) and Schumpeter (1912). Both emphasized the important role of banking sector in promoting economic growth and pointed out that economic hegemonic is largely tied to the presence of liquid financial sector that pumps society's savings into their best uses. Collectively, the available theoretical literature generally suggests a positive link between financial development and economic growth. Financial intermediaries or generally termed as banks, act as unique agents that resolve various market imperfections-type problems that prohibit efficient allocation of resources. A broader theme of the finance-growth literature covers advancement in both financial intermediaries (bank-based financial system) and financial markets (market-based financial system). For examples, banks are proposed, among others,

to act as efficient monitoring agent (Diamond 1984; Ramakrisnan & Thakor 198; Boyd & Prescott 1986) efficiently smoothed risk intertemporally (Allen & Gale 1997) provide research function that channels capital to earn highest return. However, Lucas (1988) argues in favor of a reverse causation chain, i.e. it is banks that benefited from real economic growth and not the other way around. In other words, banking sector reacts to the growing demand for financial products and services that arise from real activities.

At the empirical studies, both macro and micro-based cross-sectional evidence that focus on financial intermediation, generally provide significant evidence pointing toward growth-enhancing role of banks. Studies on the relationship between banking development and economic growth is mostly encapsulated in the financial development literature (for examples, King & Levine 1993a, 1993b; Jayaratne & Strahan 1996; Rajan & Zingales 1998; Beck *et al.* 2000; Demirguc-Kunt & Maksimovic 2002). A well developed financial system normally includes a well functioning banks and equity markets and there has been substantial research on the various determinants of financial development. More generally, empirical literatures have shown that stable macroeconomic policies contribute to well functioning financial systems. That is, countries with lower and more stable inflation rates are likely to have larger and more active banking and equity sectors (for examples, Boyd *et al.* 2001; Bencivenga & Smith 1992; Huybens & Smith 1999; Demirguc-Kunt & Detragiache 1998, 2005). Djankor *et al.* (2005) find that the volume of credit to private sector is higher in countries that have better credit protection. Similarly, empirical results of Beck *et al.* (2005) also indicate that legal systems with effective conflict resolutions and contract enforcement increases firms' access to financing. Empirical work has also supported the view that a country's capital account openness and its openness to international trade have positive effects on financial sector development. Examples are, Chinn and Ito (2005), Huang and Temple (2005), Do and Levchenko (2004), among others.

So far, empirical research on the major determinants of financial development i.e. banks and equity markets has employ many factors that represent various institutional and policy variables without relating to economic freedom index. Given that the selection of variables used in past studies can never be exhaustive, this may raise concern over the robustness of existing findings. Our study shed additional light by examining the link between economic freedom and banking development. The index of economic freedom is constructed using forty-two variables that reflect different policy areas of a country.

The summary index is made up of several sub-components that measure the degree of freedom in five broad areas. Appendix 1 provides detailed description of variables included in the following five broad areas: (1)

size of government; (2) legal structure and security of property rights; (3) access to sound money; (4) freedom to trade internationally; and (5) regulation of credit, labour and business. Such grouping of variables in the economic freedom index has the advantage of mitigating arbitrary selection of variables to be used in a regression. Additionally, with the grouping of variables into five broad areas, the index also provides a clearer picture of the relevant policy areas that should be prioritized and thus reveals greater understanding on the role of government in promoting banking success. Additionally, as pointed out King and Levine (1993a, 1993b), the degree of government intervention can exert important influences on a country's financial system and eventually on its economic outcomes as well. Financial repression policies such as excessive ruling on financial activities are considered anti-growth because they prohibit financial advancement. This reasoning forms a basis that calls for a freer market that either minimizes government interventions or a market that replaces government interventions with market determined variables as inputs for financial or banking decisions. Accordingly, the next logical question that follows is, what role does economic freedom play in influencing the development of banking sector? Since the index of economic freedom is composed of components that reflect major institutional and policy areas of a country, this clearly prescribe an important role for the government. However, it is important to note that government intervention beyond the minimal state will lead to inefficiency. If economic freedom is a key determinant for banking sector development, then government should not implement policies that severely limit economic freedom. In addition to examining the link between the overall economic freedom index and banking development, we also investigate which components of the economic freedom index should be prioritised in promoting banking sector development. Based on our findings, we hope to derive policy recommendations for the role of government in promoting sound banking system that is critical for sustainable economic development.

## DATA AND METHODOLOGY

We employ a panel data analysis to examine the link between economic freedom and banking sector development. Our period of study is from 1975 through 2006 and the sample consists of a group of six selected East Asian countries that have complete information for the entire study period. They are Singapore, Malaysia, Indonesia, Thailand, South Korea and the Philippines. Data sets employed in this study are downloaded from World Development Indicators (WDI) of the World Bank, Database on Financial Development and Structure and the Fraser Institute. The data set on economic freedom is available from the Fraser Institute which reported the data

at five-year intervals over the period 1970 through 1999 and on an annual basis starting from 2000 through 2006. Most empirical studies employ the economic freedom index of the Fraser Institute because the economic freedom index published by other sources such as the Heritage Foundation and the Wall Street Journal is available only since 1995. Many studies that investigate the link between economic freedom and economic growth argue that if the panel is composed of annual data instead of averages, it would be difficult to disentangle the long run effects of the variable of interest from the business cycle changes when interpreting the results (see Folster & Henrekson 2001). For this reason, we used the five-year intervals data from 1975 through 2004 and for the remaining years of 2005 and 2006, data are averaged over a period of two years.

We employ data starting from 1975 instead of 1970 due to some missing data for countries included in our sample. Based on the economic freedom definition provided by Gwartney *et al.* (1996), "individuals have economic freedom when: (1) property they acquire without the use of force, fraud, or theft is protected from physical invasions by others; and (2) they are free to use, exchange, or give their property to another as long as their actions do no violate the identical rights of others. On the basis of this definition, an index of economic freedom should measure the extent to which rightly acquired property is protected and individuals are free to engage in voluntary transactions." The economic freedom index and its sub-component are rated on a scale of 0-10 in which 0 means that a country is totally not free and 10 means that that it is totally free.

The panel estimation is performed using a one-way fixed model, which assumes constant slopes but different intercepts for each of the country examined. We account for the country effect by using i-1 dummy variables and the intercept for each country  $i$ , is then estimated. In examining the link between the economic freedom index and banking sector development, we employ both the summary economic freedom index as well as the five sub-components of the index to identify which component of the index is important for the promotion of banking sector. In the following Equation 1, we first relate the overall economic freedom index to banking sector development. The economic freedom index is constructed using forty-two variables that represent various institutional and policy variables that previous studies have shown to be important determinants of banking sector development.

$$Y_{it} = \alpha_0 + \alpha_i \text{Country}_i + \beta_1 \text{GDP}_{it} + \beta_2 \text{Freedom Index}_{it} + \varepsilon_{it} \quad (1)$$

Where, the subscripts  $i$  and  $t$  indicate country and time period respectively.  $Y$  represents variables that proxy for banking sector development;  $\alpha_0$  is the intercept for benchmark country which is Singapore (Singapore is chosen as a benchmark county since it is widely recognized as a highly opened economy with a developed

banking system. In 2008, the nation is ranked as the world's freest economy behind Hong Kong by the Canada's Fraser Institute, Gwartney *et al.* (2008), in the Economic Freedom of the World: 2008 Annual Report, available at [www.freetheworld.com](http://www.freetheworld.com));  $\text{Country}_i$  represents country dummies for the remaining countries, Malaysia, Indonesia, Thailand, South Korea and the Philippines and they are included to account for country-specific effects;  $\text{GDP}$  represents the real GDP percapita growth rate and it is included to control for the effects of economic performance on banking development;  $\text{Freedom Index}$  is the summary index for economic freedom;  $e$  is the error term. To measure banking sector development, we employ three indicators that are commonly used in the literature and these indicators are obtained from the Database on Financial Development and Structure. (King & Levine 1993a, 1993b; Levine 1997, 2004; Beck *et al.* 2000).

The first indicator is Private Sector Credit/GDP. Private sector credit is defined as the ratio of claim on private sector to GDP. This indicator is frequently used as a measure of depth for the banking system and it includes credit issued to the private sector only. Unlike loans of public sector, credit issued to private sectors is subjected to more stringent evaluation by professional managers who are capable of pooling risk and selecting viable projects. As noted by Levine (2004), the intuition in this variable is that, a high level of private sector credit suggests high mobilisation of savings and that banks are actively engaged in monitoring and risk management activities which point to one of the criteria that characterise a well-developed banking sector. The second indicator is M2/GDP, defined as the ratio of M2 (money and quasi money) to GDP and this indicator captures the overall size of the banking sector and is also a typical indicator of financial depth. The third indicator is Liquid Liabilities/GDP. Liquid liabilities is defined as the total liquid liabilities (currency plus demand and interest bearing liabilities) of financial intermediaries divided by GDP and it measures the size and depth of financial intermediaries relative to the economy.

Next, to establish a firmer link between economic freedom and banking sector development, we decomposed the overall economic freedom index into its five sub-components as shown in Equation 2. The economic freedom subcomponents have captured many of the institutional and policy variables that have been identified separately as being important drivers of banking development. As such, these other variables are not included in the regression to avoid the potential problem of multicollinearity. This is to identify which categories of economic freedom that contributes mostly directly to the promotion of a sound banking system.

$$Y_{it} = \alpha_0 + \alpha_i \text{Country}_i + \beta_1 \text{GDP}_{it} + \beta_2 \text{Government Size}_{it} + \beta_3 \text{Legal Quality}_{it} + \beta_4 \text{Sound Money}_{it} + \beta_5 \text{International Trade}_{it} + \beta_6 \text{Regulatory Quality}_{it} + \varepsilon_{it} \quad (2)$$

where the subscripts  $i$  and  $t$  indicate country and time period respectively.  $Y$  represents variables that proxy for banking sector development;  $a_0$  is the intercept for benchmark country which is Singapore;  $Country_i$  represents country dummies for the remaining countries, Malaysia, Indonesia, Thailand, South Korea and the Philippines and they are included to account for country-specific effects;  $GDP$  represents the real GDP per capita growth rate. The remaining independent variables are the economic freedom sub-components that measure the degree of freedom for country  $i$  in year  $t$  in the following five broad areas, size of government; legal structure and security of property rights; access to sound money; freedom to trade internationally; and regulation of credit, labor and business.

Government Size measures the degree of government intervention in the economy through consumption spending, redistribution via transfers and subsidies and taxation; Legal Quality captures various aspects of legal systems such as judicial independence, impartiality of the courts, protection of property rights, legal enforcement of contracts, and military interferences in law and politics; Sound Money is an index which composed of indicators such as money growth rate, variability of inflation and the extent of monetary controls; International Trade measures a country's freedom to trade internationally and it reflects the size of the trade sector, barriers to trade and capital flows; Regulatory Quality measures the freedom from government's regulations and controls in the financial markets, labor market and the

overall business environment. Please refer to the Table 6 for detailed description of the economic freedom sub-components.

## EMPIRICAL RESULTS

Table 1 presents summary statistics for variables used in the study. The three indicators of banking sector development (Private Sector Credit/GDP, M2/GDP and Liquid Liabilities/GDP) have average values that range from 62.8 percent to 72.3 percent. This is not surprising given the fact that the sample countries are considered bank-dependent nations. On average, the economic freedom index recorded a score of 6.58, with minimum and maximum values of 5.10 and 8.80 respectively. As reported, the sub-component of economic freedom that has the lowest average score of 5.54 is Legal Quality. A low score is an indication that the legal system of a country lacks the ability to provide for property rights protection and good enforcement of contracts. Additionally, the highest standard deviation value for Legal Quality suggests that there is a large variation in policy on legal systems across different countries.

Table 2 reports the average values of the economic freedom index and its sub-components over the years 1975-2006 for each of the six countries. As shown, Singapore has the best ranking in terms of both the overall economic freedom index as well as its sub-component indices. In terms of the overall index, Singapore earned

TABLE 1. Descriptive statistics (1975-2006)

Variable	Mean	Std Dev	Minimum	Maximum
Private Sector Credit/GDP (%)	72.27	42.11	13.17	191.83
M2/GDP (%)	63.11	32.95	13.80	128.61
Liquid Liabilities/GDP (%)	62.82	32.37	14.60	123.32
Real per capita GDP Growth Rate (%)	4.05	2.17	-1.13	8.15
Economic Freedom Index	6.58	0.95	5.10	8.80
Government Size	6.72	0.89	4.84	8.39
Legal Quality	5.54	1.62	2.44	8.42
Sound Money	7.47	1.58	4.03	9.69
International Trade	7.28	1.17	5.00	9.60
Regulatory Quality	5.88	0.99	3.31	8.24

TABLE 2. Average values of Economic Freedom Index and its sub-components (1975-2006)

	Singapore	Malaysia	Indonesia	Thailand	South Korea	Philippines
Economic Freedom Index (EFI)	8.03	6.89	5.88	6.48	6.24	5.94
Sub-components of EFI						
Government Size	7.68	5.64	6.67	6.72	6.40	7.21
Legal Quality	7.76	6.31	3.92	5.86	5.74	3.65
Sound Money	8.47	8.02	7.68	7.17	6.70	6.56
International Trade	9.39	7.81	6.62	6.69	6.71	6.44
Regulatory Quality	6.84	6.56	4.61	5.95	5.40	5.89

the highest average score of 8.03 and Indonesia has the lowest score of 5.88. Singapore also ranked top in each of the five sub-components of the economic freedom index.

We report the nonparametric correlations for economic freedom indices in Table 3. As shown, the Spearman rank order correlation coefficients reported in Panel A are quite high for several pairs of the economic freedom subcomponents. The correlations between Legal Quality and both International Trade and Regulatory Quality are 0.69 and 0.61 respectively. International Trade has a correlation coefficient of 0.66 with Regulatory Quality. We report the Kendall Tau correlation coefficients in Panel B and they are similar to the Spearman coefficients. Legal Quality has correlations of 0.52 with International Trade and of 0.45 with Regulatory Quality. The correlation between International Trade and Regulatory Quality is 0.46. These high correlations could indicate potential problems of multicollinearity when the overall economic index is decomposed into its various sub-components.

Table 4 reports the results on the relationship between banking sector development and the overall economic freedom index. All the three models (models A, B and C) are significant and have adjusted R-square that range from 0.771 to 0.866. The results of the White's (1980) tests indicate that the regression models show no problem of heteroskedasticity and that the models' functional forms are correctly specified. As shown, the coefficients of the

economic freedom index are positive and highly significant in all the three models. This coefficient provides the direct influence of economic freedom on bank development for the benchmark country, Singapore. The positive coefficient implies that higher level of economic freedom is associated with a more developed banking sector. The coefficients of country dummy  $a_i$  are the differential intercepts of the five remaining countries namely, Malaysia, Indonesia, Thailand, South Korea and the Philippines. Significant coefficients signify that the effect of economic freedom on banking sector development is not common to all countries. As reported, the intercept differential of Malaysia is significant across the three models.

This suggests that the effect of economic freedom on bank development for Malaysia is different from that of Singapore. When the dependent variables used are M2/GDP and Liquid Liabilities/GDP, the intercept differentials for both Malaysia and Thailand are significant. This finding highlights the importance of the underlying country-specific factors in influencing the ultimate outcome of policies that promote the development of banking sector. That is, economic freedom leads to different level of banking progress for different countries. As for the real GDP per capita, interestingly the coefficients are consistently negative and significant across the three models. That means, high GDP per capita is associated with less developed banking sector. This

TABLE 3. Nonparametric correlations for economic freedom indices (significance levels in parentheses).

Panel A: Spearman rank-order correlation coefficients						
	Government Size	Legal Quality	Sound Money	International Trade	Regulatory Quality	Economic Freedom Index
Government Size		0.06 (0.72)	0.33 (0.03)	0.17 (0.28)	0.24 (0.12)	0.38 (0.01)
Legal Quality			0.47 (0.00)	0.69 (0.00)	0.61 (0.00)	0.81 (0.00)
Sound Money				0.55 (0.00)	0.43 (0.00)	0.78 (0.00)
International Trade					0.66 (0.00)	0.83 (0.00)
Regulatory Quality						0.75 (0.00)
Panel B: Kendall Tau b correlation coefficients						
Government Size		0.02 (0.82)	0.24 (0.02)	0.11 (0.30)	0.19 (0.07)	0.27 (0.01)
Legal Quality			0.33 (0.00)	0.52 (0.00)	0.45 (0.00)	0.64 (0.00)
Sound Money				0.38 (0.00)	0.32 (0.00)	0.60 (0.00)
International Trade					0.46 (0.00)	0.66 (0.00)
Regulatory Quality						0.57 (0.00)

TABLE 4. Relationship between banking sector development and the overall economic freedom index.

Variable	Dependent Variable					
	Model A Private Sector Credit/GDP (%)		Model B M2/GDP (%)		Model C Liquid Liabilities / GDP (%)	
	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat
Constant	-74.159	-1.416	-89.045	-2.839**	-90.415	-2.784**
Economic Freedom Index	24.421	4.036**	23.443	6.470**	23.735	6.327**
Real GDP per Capita	-4.946	-2.344*	-2.843	-2.250*	-2.856	-2.183*
Malaysia	42.614	3.022**	40.943	4.848**	35.766	4.090**
Indonesia	-20.792	-1.157	-4.921	-0.457	-4.798	-0.431
Thailand	23.351	1.543	26.022	2.872**	26.475	2.822**
South Korea	18.689	1.174	2.650	0.278	3.333	0.338
Philippines	-29.015	-1.459	-7.948	-0.667	-8.814	-0.715
Adjusted R <sup>2</sup>	0.771		0.866		0.851	
N	42		42		42	
F(5,34)	8.79		14.43		11.44	
Prob>F	0.000		0.000		0.000	

White's (1980) Test of First and Second Moment Specification:

Chi Square	13.67	19.27	22.47
Prob>Chi Square	0.847	0.504	0.315

Notes:

1. The above are LSDV regression estimates for Equation 1 with banking sector development indicators as dependent variable.
2. \*\* and \* indicate significance at 1 percent and 5 percent respectively.
3. A F-test is conducted to examine the existence of fixed group effects. The null hypothesis is that all dummy coefficients except the benchmark country are zero. The robust model is LSDV and the efficient model is the pooled regression. It is concluded that the fixed group effect model is better than the pooled OLS model.

finding is consistent with financial intermediation literature on financial system structure. i.e. bank-based versus market-based system. Collectively, research findings in this area have established that the structure of financial system changes during development and as countries develop, their financial systems become (Examples of studies include Demirguc-Kunt and Levine (1996, 2001), and Demirguc-Kunt (2006), among others) more market-based. Additionally, it is widely known that market-based financial system underlies developed countries with high GDP per capita. Having said that, this could possibly provide explanation for the inverse relation between GDP and banking sector development.

Table 5 presents the findings of the relationship between banking sector development and the five sub-components of the economic freedom index. The overall results are similar to those reported in Table 4. Models with all three dependent variables (models D, E and F) are significant and have adjusted R-square that range from 0.804 to 0.883. The White's (1980) test results also show no problems of heteroskedasticity and misspecification of the models' functional forms. Given the potential problems of multicollinearity among the economic freedom sub-components, we perform a diagnostic check using variance inflation factors (VIFs). The results show that none of the sub-components has a value greater than 10. The variance inflation factors of economic freedom subcomponents are as follow: government size,

3.54; legal quality, 7.10; sound money, 2.22; international trade, 6.93; and regulatory quality, 3.84. Regression estimates of Equation 2 provide information on the direct influence of each of sub-component of economic freedom index on banking development for the benchmark country, Singapore. Similar to the findings reported in Table 4, the coefficients of real GDP per capita in all models are negative and significant. In model D, when Private Sector Credit/GDP is the dependent variable, the coefficients of Government Size, Legal Quality and intercept differential for Malaysia are positive and significant at the 0.05 level. Larger score on the government size index means less government intervention.

The positive coefficient of government size suggests that increased freedom in terms of lower government consumptions, taxes and enterprises lead to a more developed banking sector. As argued by Demirguc-Kunt (2006), large financing requirement of government has the effect of crowding out private investment by increasing the required rate of return on government securities and absorbing a big portion of the savings mobilised by the financial system. In other words, lower government consumptions and financing requirements lead to higher level of private sector credit. Such argument is sensible given that the coefficient of Government Size is only significant in model D and not in model E and F. It is shown that the only sub-component of economic freedom index that is robustly related to banking sector

TABLE 5. Relationship between banking sector development and the sub-components of the economic freedom index.

Variable	Dependent Variable					
	Model A Private Sector Credit/GDP (%)		Model B M2/GDP (%)		Model C Liquid Liabilities / GDP (%)	
	Coeff	t-stat	Coeff	t-stat	Coeff	t-stat
Constant	-69.660	-0.846	-166.443	-3.443**	-171.952	-3.512**
Government Size	16.417	2.268*	6.353	1.495	6.167	1.433
Legal Quality	12.094	2.152*	7.725	2.342*	7.667	2.296*
Sound Money	4.001	1.245	0.610	0.323	0.279	0.146
International Trade	-4.009	-0.524	10.303	2.293*	10.333	2.271*
Regulatory Quality	-3.828	-0.566	8.036	2.023*	9.602	2.387*
Real GDP per Capita	-4.620	-2.140*	-2.818	-2.225*	-2.794	-2.178*
Malaysia	60.671	2.543*	57.169	4.083**	51.568	3.637*
Indonesia	-26.310	-0.873	27.611	1.562	30.015	1.677
Thailand	15.256	0.631	46.112	3.249**	46.859	3.260**
South Korea	9.790	0.404	24.440	1.719	26.064	1.810
Philippines	-29.246	-0.937	17.064	0.932	16.328	0.880
Adjusted R <sup>2</sup>	0.804		0.849		0.883	
N	42		42		42	
F(5,30)	5.02		7.59		6.70	
Prob>F	0.002		0.000		0.000	
White's (1980) Test of First and Second Moment Specification:						
Chi Square	41.02		33.43		32.36	
Prob>Chi Square	0.641		0.877		0.882	

*Notes:*

1. The above are LSDV regression estimates for Equation 2 with banking sector development indicators as dependent variable.
2. \*\* and \* indicate significance at 1 percent and 5 percent respectively.
3. A diagnostic measure for collinearity using the variance inflation factor (VIF) is employed to check for the presence of multicollinearity among the sub-components indices. None of the VIFs has values greater than 10.
4. A F-test is conducted to examine the existence of fixed group effects. The null hypothesis is that all dummy coefficients except the benchmark country are zero. The robust model is LSDV and the efficient model is the pooled regression. It is concluded that the fixed group effect model is better than the pooled OLS model.

development across the three models is Legal Quality. That is, a legal structure that clearly defines property rights and rightfully enforces contracts may prove essential for the promotion of banking sector. The significant coefficient of intercept differential suggests that the effect of economic freedom components on the bank development in Malaysia is different from that in Singapore. When the indicator for banking development is M2/GDP, the components of Legal Quality and International Trade are found to be important determinants of banking development. Increased freedom to trade with foreigners and policies that encourage international capital flows are likely to promote investment and may therefore contribute to the promotion of banking development if financing is sourced from banking institutions.

The intercept differentials for both Malaysia and Thailand are positive and significant, suggesting that the effects of legal quality and international trade on banking development in these countries are different from that of the benchmark country. When Liquid Liabilities/GDP is

employed as the indicator for banking development, we are able to identify three components of economic freedom index that have positive roles in promoting banking progress. They are Legal Quality, International Trade and Regulatory Quality. That is, clearly defined legal system, policies that promotes international trade and less restrictive regulatory system all contribute to the development of banking sector. On legal quality and international trade, previous explanation applies here. On Regulatory Quality, higher score means less regulatory restraints in the credit market, labor market and in the overall business environment. Accordingly, a country with high score on this component provides more incentives and better investment climate for businesses to flourish than a country that has low score on regulatory quality. Our findings also indicate that the effects of legal structure, international trade and regulatory quality on banking sector development in Singapore are different from those in Malaysia and Thailand. That is, all these three factors are essential for improving the size and depth of banking sector and more importantly, institutional



## APPENDIX I. The areas and components of the EFW index

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- Area 1: Size of Government: Expenditures, Taxes, and Enterprises
- A General government consumption spending as a percentage of total consumption
  - B Transfers and subsidies as a percentage of GDP
  - C Government enterprises and investment
  - D Top marginal tax rate
    - i Top marginal income tax rate
    - ii Top marginal income and payroll tax rates
- Area 2: Legal Structure and Security of Property Rights
- A Judicial independence
  - B Impartial courts
  - C Protection of property rights
  - D Military interference in rule of law and the political process
  - E Integrity of the legal system
  - F Legal enforcement of contracts
  - G Regulatory restrictions on the sale of real property
- Area 3: Access to Sound Money
- A Money growth
  - B Standard deviation of inflation
  - C Inflation: most recent year
  - D Freedom to own foreign currency bank accounts
- Area 4: Freedom to Trade Internationally
- A Taxes on international trade
    - i Revenue from taxes on international trade as a percentage of exports and imports
    - ii Mean tariff rate
    - iii Standard deviation of tariff rates
  - B Regulatory trade barriers
    - i Non-tariff trade barriers
    - ii Compliance cost of importing and exporting
  - C Size of the trade sector relative to expected
  - D Black-market exchange rates
  - E International capital market controls
    - i Foreign ownership/investment restrictions
    - ii Capital controls
- Area 5: Regulation of Credit, Labor, and Business
- A Credit market regulations
    - i Ownership of banks
    - ii Foreign bank competition
    - iii Private sector credit
    - iv Interest rate controls/negative real interest rates
  - B Labor market regulations
    - i Minimum wage
    - ii Hiring and firing regulations
    - iii Centralized collective bargaining
    - iv Mandated cost of hiring
    - v Mandated cost of dismissing
    - vi Conscription
  - C Business regulations
    - i Price controls
    - ii Administrative requirements
    - iii Bureaucracy costs
    - iv Starting a business
    - v Extra payments/bribes
    - vi Licensing restrictions
    - vii Cost of tax compliance
-

factors do indeed matter and banking reform policies must therefore take into account these factors accordingly.

#### CONCLUSION

This paper examines the link between economic freedom and banking sector development using panel data analysis for the period 1975-2006 in six East Asian countries namely, Singapore, Malaysia, Indonesia, Thailand, South Korea and the Philippines. We find that economic freedom is positively and strongly related to all three measures of banking development that we employ. That is, economic freedom has a positive influence on banking development in the benchmark country, Singapore and our results also show significant different effects for Malaysia and Thailand, suggesting that effect of economic freedom on banking development in these countries are different from that in Singapore. Since a single measure of economic freedom makes it difficult to draw policy conclusion, we proceed to investigate which sub-components of the economic freedom are important for progress in banking sector. On balance, we find that lower government consumptions and transfers, increased freedom to trade internationally, fewer regulatory restrictions and a good legal structure are all essential requirements for banking development. However, not all of the index sub-components are significantly related to banking development indicators. The only sub-component that has positive and robust relation is Legal Quality. It seems clear that strong legal system that protects property rights and ensures effective enforcement of contracts is critical for a well functioning banking sector. This suggests that government should sharpen its policy focus on the improvement in legal system. However, it is important to note that due to differences in institutional factors, legal system that seems appropriate in one country may prove ineffective in other countries that have different institutional settings.

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Soo-Wah Low  
 Graduate School of Business  
 Universiti Kebangsaan Malaysia  
 43600 UKM Bangi  
 Malaysia  
 E-Mail: swlow@ukm.my