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Financial Openness and Bank Development: The Experience of East Asia

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Abstract: The finance-growth link is being studied extensively over the years. Empirical findings favouring the supply-leading role for financial intermediaries are in line with theoretical models that assigned a special role for intermediaries in rectifying market imperfections. Existing extensions focus on underlying factors that are critical for financial advancement. We investigated the financial openness-bank development link for selected East Asian economies (Indonesia, South Korea, Malaysia, Philippines, Singapore and Thailand). Our panel indicates that financial openness in the region was largely concentrated within the intermediated banking system. In the 1990s, bank openness increased in association with a significant increase in bank credit and intermediation. Additional insights into the experience of each nation show that a direct positive link between bank openness and its activities are traced for Singapore, Indonesia, South Korea, and Thailand. Thus, along the finance-growth paradigms, financial openness is a plus to banking development in East Asia.

Keywords: Financial development, financial openness, intermediation, financial liberalisation, economic growth

I. Introduction

The idea that finance and real economic performance are linked has gained considerable interests among researchers. Theoretical models assigning an active role for financial activities performed by financial intermediaries indicate that finance exerts real effect via its ability to resolve various market imperfection-type problems that prohibit efficient allocation of resources.[1] Banks are proposed, among others, to act as an efficient monitoring

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[1] These proposals that real activities benefited by progress in the financial sector are modern formulations of century-old ideas. Bagehot (1873) and Schumpeter (1912) highlight that economic hegemony is largely tied to the presence of a fluid financial sector that pumped society's savings into their best uses. The term financial intermediaries and banks are used interchangeably in the paper without changing its general meaning. A broader theme of finance-growth literature covers advancement in both financial intermediaries (bank-based) and markets (market-based). Our focus in this study is on the inter-relationship among financial openness and bank development. See Levine (2002), Beck and Levine (2002), Arestis *et al.* (2001), and Levine and Zervos (1998) for evidence related to market-based studies.

agent (Diamond 1984; Ramakrisnan and Thakor 1984; Boyd and Prescott 1986); provide insurance against idiosynchrotic needs of liquidity (Diamond and Dybvig 1983); efficiently smooth risk inter-temporally (Allen and Gale 1997); provide research function that channels capital to earn highest return (Greenwood and Jovanic 1990); alter savings profile that leads to optimal capital investment (Benchivenga and Smith 1991; Japelli and Pagano 1993); provide incentives for good governance and corporate control (Bhide 1993); and induce effective contract enforcement (Rajan and Zingales 1998). With less friction, intermediation increases and resources are employed optimally, thus igniting real effect on to the economy.

However, this supply-leading role assigned to banks is not unanimous. Robinson (1952) argues in favour of a reverse causation chain, i.e. it is banks that benefited from real growth and not the other way around, proposing a passive role for banks suiting the demand-following view, in which, financial sectors react to the growing demand for financial products and services arising from real activities. Lucas (1988) believes that the role of the financial sector is 'over stressed' in understanding real growth. Empirical works that followed, despite being mixed in results, generally support the positive link running from financial activities to growth (for reviews of recent works see Pagano 1993; Becsi and Wang 1997; Levine 1997; 2003).[2] Macro and micro-based cross-sectional evidence presented by King and Levine (1993), Jayaratne and Strahan (1996), Rajan and Zingales (1998), Beck *et al.* (2000), Demirguc-Kunt and Maksimovic (2002) are commonly quoted as providing significant evidence pointing toward growth-enhancing role for banks.[3] Extension of existing studies explore the underlying features of financial development that explain variations in financial development found across countries and time. Among these are La-Porta *et al.* (1997; 1998), Levine (2002) and Demiguc-Kunt and Maksimovic (2002), Rajan and Zingales (2003), Stultz and Williamson (2003), Hung (2003), and Beck *et al.* (2003).

We examined a potential factor that could be an impetus for financial development, i.e. financial openness, for the case of selected East Asian economies. Rajan and Zingales (2003) argue that simultaneous openness in trade and financial sector explains variations of financial development from 1913 to 1999. Within a highly open economy (trade and financial), financial development is alleviated via the interests of all parties (private incumbents and governing authorities). Bekaert *et al.* (2001) argue that financial liberalisation not only reduces constraints for external finance by increasing the availability of funds but also through its

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[2] Gurley and Shaw (1955), Goldsmith (1969), McKinnon (1973), and Shaw (1973) are among the earlier proponents that suggest finance matters for growth. Financial repression policies (excessive ruling on financial activities) are anti-growth as it prohibits financial advancement.

[3] Findings derived from pure cross-countries based studies are challenged on the ground of heterogeneity of sample countries and possibility of simultaneous bias due to endogeneity of variables investigated (see Arestis and Demetriades 1997; Shan and Morris 2002). In addition, as noted by Levine and Zervos (1993), reliance on cross-countries analysis also precludes significant conclusion on the causation pattern between finance and growth. Findings based on time-series evidence is rather mixed. Supporting time-series evidence is provided by Klaus and Maurice (1998), Choe and Moosa (1999), Lehr and Wang (2000), Xu (2000), Arestis *et al.* (2001), and Fase and Abma (2003). Demetriades and Luintel (1996), Shan *et al.* (2001), Shan and Morris (2002) and Al-Yousif (2002) argue on either weak causality or some form of bi-direction causality. We mediate between the two methodologies' debate in this paper by employing a panel data analysis that incorporates both cross-country and time dimensions.

effect on better corporate governance insisted by foreign players. In addition to limited finance-growth evidence coming from this region, the region's experience provides a classic case for testing the financial openness-bank development link.[4] It is often argued and empirically witnessed (World Bank 1993) that the region's miracle growth recorded prior to the crisis of 1997-98 is associated with the embarkation of policies that led to a high degree of trade and financial openness. The fact that the crisis took place following aggressive financial liberalisation and openness policies posted new challenges in establishing a firmer ground for the finance-growth paradigm.

The first set of our results statistically describes the status of the region's financial openness and bank development. Our panel data analysis shows that financial openness in the region mainly refers to bank openness with Singapore leading the rank followed by South Korea, Malaysia, Philippines, Indonesia and Thailand. Relative to the second half of the eighties, banks in the region were persistently more exposed to the foreign sector in the 1990s. There are minor significant changes in portfolio investments and no significant changes traced for foreign direct investments. The increasing bank openness period is associated with a significant increase in bank credit issuance and intermediation activities. Taking into account country-specific experience, a firmer link between bank openness and its development (credit issuance and intermediation) can only be supported by Singapore, Indonesia, South Korea, and Thailand. The results are favourable in linking the region's financial openness (bank openness) to bank development (credit and intermediation). The rest of the paper is outlined as follows: in Section 2, we describe our data set and method of analysis. The empirical results and discussion follow in Section 3. We conclude with a brief summary and implications in Section 4.

2. Data Sets and Method of Analysis

Data sets employed in this study were downloaded from the Asian Development Bank (ADB) database. Where necessary, we also gathered some data from the International Financial Statistics (IFS) CD-ROM. The ADB maintains a comprehensive database for the selected East Asian countries under its Asia Regional Information Centre (ARIC) that traces various dimensions of economic performances of the countries since 1990. In addition to ARIC's database, various other sites of ADB's web provide comprehensive and longer dated data series for all of its other developing member countries (DMCs). Appendix 1 provides definitions and sources of the data series used in the study. It involves three groups of annual time series spanning over a 16-year period (1985-2000) for six East Asian countries, i.e. Indonesia, South Korea, Malaysia, Philippines, Singapore, and Thailand. The structure-

[4] Limited studies investigated the finance-growth nexus for the emerging East Asia economies. Among those that provide explicit treatment are Murinde and Eng (1994) for Singapore, Choe and Moosa (1999) for South Korea, Wang (2000) for Taiwan, and Fase and Abma (2003) for selected Asian countries. Some of the cross-country studies cited earlier do include selected East Asia countries in the sample; however, the long years average-out cross-country analysis suffers some methodological problems (see footnote 3) and do not illustrate comprehensively the unique experience of East Asia. We statistically illustrate these experiences in this study.

macro variables are composed of a set of variables that were used in the empirical estimations as control vectors (to be explained later). This captures representative country specific structure and macro variables that include annual population growth (POP), contribution of agriculture sector to country's GDP (AGRI), unemployment rate (UNEMP), fiscal balance relative to GDP (GOV), annual inflation rate (INF), annual monetary (M2 money) growth (M2G), and trade-output ratio (TRADE). The next two classes of data represent our core interests in the study, i.e. Financial Openness and Bank Development. Financial Openness is measured in four different ways. These sub-classifications bring further insights into the nature and effect of financial openness experienced in the region. OPENALL is the absolute amount of net capital flows comprising both foreign direct investments (FDIs) and portfolio investments (CAP) crossing the borders of these nations. We then decomposed this broad measure into its two components, i.e. FDIs (OPENFDI) and portfolio investments (OPENCAP). The level and fluctuations of FDIs and portfolio investments are subject to different influencing factors. Their characters are different, with FDIs representing longer term financial flows and are generally less volatile compared to portfolio investments. The breakdown allows better status investigations and isolation of effect on bank development if it exists. OPENBANK is calculated as the ratio between foreign liabilities (FLBANK) to foreign assets held by banks (FABANK). OPENBANK measures net foreign exposure of banks. Ratio of larger (smaller) than 1 indicates that banks are net borrowers (lenders) in the foreign sector and implies a high degree of bank openness.[5] The last group of data, Bank Development, represents indicators of banks' core activities over the period under study. In addition to two conventional measures (claim on private sector (PCREDIT) and financial depth (FDEPTH)) that are widely employed in existing studies, we added two additional measures, i.e. the credit-deposit ratio (INTM1) and credit-M2 money ratio (INTM2). These ratios reflect banking intermediation activities with the later capturing a broader measurement taking into account activities of non-bank institutions. We propose these intermediation measures as additional dimensions of measuring bank development that reflect banks' willingness and ability to channel their sources of funds in the form of credits.[6]

Our empirical analysis is based on panel data fixed effect model (FEM) which incorporates the preceding balanced annual data series of East Asia. In the first stage we provide empirical evidence that statistically describes the status of financial openness and banking development in the region. This status investigation is performed in two dimensions, i.e. across countries and years. We benchmarked the cross-country investigations to Singapore that is widely recognised as a highly open economy possessing a highly developed banking system. Chronological patterns of financial openness and bank development were benchmarked to an average status, i.e. a 5-year average from 1985 to 1989. Our preliminary

[5] We adopted a relative measure such as OPENBANK to capture net foreign exposure of banking operation. This also takes into account concerns over risk of banks in their foreign operations that are mostly generated from asset-liability imbalance. Thus, regardless of the volume, OPENBANK reflects the net position of banks.

[6] Several other measurements have also been adopted such as currency ratio (Jung 1986), financial sector GDP (Klaus and Maurice 1998), flow of fund data (Choe and Moosa 1999), and interest rates spread (Wang 2000).

analysis shows that single-year benchmarking results in different status conclusions, largely influenced by specific events occurring in the benchmark year. Thus, instead of adopting a single-year benchmark, we adopted the 5-year average benchmarking. This benchmarking strategy not only precludes single year influence but also allows us to better capture the average status of the second half of the eighties where financial openness policies were being implemented across the region. For the case of financial openness, the following equation is estimated:

$$OPENNESS_{jt} = \alpha + \beta X_{jt} + \gamma DC_j + \delta DY_t + \varepsilon_{jt} \quad (1)$$

where $OPENNESS_{jt}$ is the level of openness (4 definitions) for country j at year t; X_{jt}, the structure-macro variables control vectors for country j at year t; DC_j, the country j specific dummy vectors; DY_t, the year t specific dummy vectors; α, β, $\gamma$and δ are vectors of regression coefficients; and e_{jt} the disturbance term.

In controlling for other factors associated with dependent variables, we included a set of conditioning variables comprising of measures of structural and macro-economic variables described earlier. In addition to coefficients for control vectors, each of the estimation yielded five country dummies (Indonesia, South Korea, Malaysia, Philippines, and Thailand) and eleven-year dummies (1990-2000). Ordinary least squares (OLS) estimations were performed to derive Newey-West heteroskedasticity-autocorrelation consistent (HAC) regression estimates. Examination of progress status across countries and time was examined based on the significance of country (DC_j) and year (DT_t) dummies, respectively. In total eight estimations were performed for this status investigations. Test statistics at 5 and 10 per cent level of significance are provided in our regressions analysis.

Next, we established a firmer link between financial openness and banking development in these countries. This was performed by estimating the following equation:

$$BANKDEV_{jt} = \alpha + \beta X_{jt} + \gamma DC_j + \lambda DINT_{jt} + \zeta OPENNESS_{jt} + \mu_{jt} \quad (2)$$

where $BANKDEV_{jt}$ represents banking activities (4 indicators) and $DINT_{jt}$ are interactive dummies to be explained shortly. The definitions of conditioning and other independent variables remain as above. In total sixteen estimations were performed to cater for four financial openness measures for each of the four bank development indicators. The OLS estimations of the above equation provide specific evidence that directly links financial openness and bank progress. The coefficient for OPENNESS, e, (the slope coefficient) provides the direct influence of financial openness on bank development for the benchmark country, Singapore. In addition to country dummies (DC_j) that dictate differences across countries in fixed term (intercept differential), we also estimated coefficients for interactive dummies ($DINT_{jt}$), defined as the product of country dummy (DC_j) and $OPENNESS_{jt}$. Significant intercept and slope differentials signifies that the effect of financial openness on bank development is not common to all and suggests the importance of underlying country-specific factors in influencing the ultimate outcome of policies that promote financial openness. The sum of benchmark country's slope coefficient (ζ) and coefficient of interactive dummies (λ) (slope differential) measures unique slope coefficient for each nation

investigated. The direction and degree of influence of financial openness on bank development in each country is dictated by the sum of slope and interactive dummy coefficient ($\zeta + \lambda$).

3. Empirical Results and Discussion

Tables 1 and 2 provide the empirical estimations of Equation 1 for the dependent variables of interests, i.e. financial openness and banking development. The statistically derived output allows a more accurate assignment of status for each nation compared to conventional descriptive justifications that rely purely on raw aggregate data. Results tabulated in Table 1 indicate that for overall openness (OPENALL), across countries, all countries (except Thailand) are significantly more open relative to Singapore.[7] Nevertheless, this is not valid when financial openness is restricted to FDIs. All of the countries are of equal status with respect to FDIs. The increasing openness is retained when financial openness is measured by portfolio investments (OPENCAP). With OPENCAP as a dependent variable, South Korea ranks highest followed by Philippines, Malaysia, Indonesia, and Thailand. A notable reversed conclusion is achieved with respect to bank openness (OPENBANK). As widely stated, Singapore's banking system is highly open to foreign players compared to other countries in the region. Relatively, among other nations Thailand ranks lowest, followed by Indonesia, Philippines, Malaysia, and South Korea. Ranking at the bottom does not imply that the banking system is closed but rather relatively less open compared to the highly open benchmark nation (Singapore).[8]

Chronological evidence highlights new insights into the status of financial openness in East Asia. Compared to the second half of the eighties (1985-1989), the degree of financial openness of these nations as defined by the first two financial openness measurements (OPENALL and OPENFDI) remains statistically the same. All year dummies are not significantly different from zero with OPENALL and OPENFDI as dependent variables. However, in terms of portfolio investments (OPENCAP), a 10 per cent significant increase is dictated in 1993 and 1997. As a whole, there is a significant increase in portfolio investments indicated by a significant chi-square that rejects the null hypothesis that all year dummies are zero. The two significant years coincide with the peak and the beginning year of the crisis that witnessed significant net portfolio investments flows (inward and outward).[9] Views that financial openness of East Asia increased during the 1990s, therefore, are sensitive to measurements used. Statistically strong evidence pointing toward a continued high degree of financial openness is supported for the case of the banking system. All of the

[7] Readers are reminded that this rank is based on relative measurement (i.e. net flows scaled to GDP). This also shows that liberalisation strategies engaged by these nations in the second half of the eighties were successful in attracting external funds.

[8] Singapore is consistently ranked as among the world's highly open economies. In 2003, the nation was ranked as the world's second freest economy behind Hong Kong by the Heritage Foundation's Index of Economic Freedom that incorporates ten broad factors of economic freedom (see O'Driscoll *et al.* (2003)).

[9] This is evidenced by the observation that shares prices in each of these six East Asian nations overall reached their peak by end of 1993.

Table 1: East Asian financial openness: across countries and years

Variable	A. Dependent: OPENALL Coeff	A. Dependent: OPENALL T-Stat	B. Dependent : OPENFDI Coeff	B. Dependent : OPENFDI T-Stat	C. Dependent: OPENCAP Coeff	C. Dependent: OPENCAP T-Stat	D. Dependent: OPENBANK Coeff	D. Dependent: OPENBANK T-Stat
Constant	-0.100	-2.897**	-0.061	-3.351**	-0.039	-1.495	0.439	0.729
Population growth	0.000	-0.041	-0.010	-2.666**	0.010	2.034**	-0.209	-2.379**
Unemployment	0.004	1.201	-0.001	-0.359	0.004	2.006**	-0.186	-4.462**
Agriculture sector	0.000	0.250	0.002	2.196**	-0.002	-1.502	0.178	6.364**
Government expenditure	-0.002	-1.124	0.000	0.218	-0.002	-1.975**	0.034	2.075**
Inflation	-0.001	-0.612	-0.001	-1.026	0.000	0.018	0.005	0.318
M2 Money growth	0.001	1.295	0.001	3.825**	-0.001	-1.142	0.011	1.293
Trade	0.081	4.757**	0.049	4.847**	0.032	2.553**	0.127	0.470
Indonesia	0.054	1.836 *	0.001	0.090	0.053	2.226**	-2.792	-4.824**
Malaysia	0.076	2.547 **	0.007	0.384	0.069	2.948**	-1.694	-2.932**
Philippines	0.099	3.749 **	0.018	1.263	0.081	3.843**	-1.735	-3.276**
South Korea	0.072	3.457 **	-0.004	-0.373	0.076	4.980**	-0.701	-2.154**
Thailand	0.047	1.577	-0.002	-0.098	0.049	2.071**	-2.803	-4.927**
1990	0.000	0.007	0.012	1.674 *	-0.012	-1.352	0.035	0.166
1991	0.009	0.730	0.018	1.701 *	-0.009	-0.854	0.595	2.503**
1992	0.006	0.391	-0.004	-0.282	0.009	1.071	0.961	2.452**
1993	0.042	1.443	0.001	0.073	0.041	1.744*	0.865	2.773**
1994	0.020	1.278	-0.003	-0.436	0.023	1.582	0.554	2.842**
1995	0.003	0.198	-0.002	-0.249	0.005	0.350	0.712	3.975**
1996	0.006	0.369	-0.002	-0.271	0.008	0.638	1.451	7.450**
1997	0.015	0.885	-0.012	-1.333	0.027	1.815*	1.337	5.506**
1998	-0.010	-0.550	0.007	0.645	-0.017	-1.203	1.646	5.630**
1999	0.009	0.362	0.003	0.215	0.006	0.258	1.432	5.348**
2000	-0.001	-0.043	0.006	0.444	-0.007	-0.419	1.623	4.254**
Adjusted R square		0.730		0.720		0.611		0.444
Null: All control variables are zero Chi-Squared (7)		94.096**		81.176**		54.346**		80.864**
Null: All country dummies are zero Chi-Squared (5)		23.755**		9.801*		46.024**		47.879**
Null: All year dummies are zero Chi-Squared (11)		7.136		10.446		42.513**		74.144**

Notes:

1. The above are panel data regression estimates for Equation 1 with OPENNESS (four indicators) as dependent variables.
2. Single asterisk (*) indicates significance at 10 percent level and double asterisk (**) indicate significance at 5 percent level.
3. All estimates are Newey-West heteroskedactic-autocorrelation consistent (HAC).
4. OPENNESS: Absolute net flows of FDIs and Portfolio Investments (OPENALL); Absolute net FDIs (OPENFDI); Absolute Net Portfolio Investments (OPENCAP); Net banks foreign exposure (OPENBANK). See Appendix 1 for details of other regression variables.

Table 2: East Asian banking development: across countries and years

Variable	A. Dependent: FDEPTH		B. Dependent : PCREDIT		C. Dependent: INTM1		D. Dependent: INTM2	
	Coeff	T-Stat	Coeff	T-Stat	Coeff	T-Stat	Coeff	T-Stat
Constant	0.122	1.086	0.884	5.379**	0.712	2.894**	1.988	5.686**
Population growth	0.015	0.732	-0.042	-1.703*	-0.159	-3.616**	-0.221	-3.61**
Unemployment	-0.049	-7.21 **	-0.037	-2.810**	-0.052	-2.712**	-0.006	-0.209
Agriculture sector	0.007	0.960	-0.030	-2.778**	0.032	1.916*	-0.046	-1.876*
Government expenditure	0.011	2.618**	0.012	2.691**	0.017	1.839 *	-0.010	-0.824
Inflation	-0.006	-1.323	0.000	-0.139	-0.002	-0.278	0.013	2.285**
M2 Money growth	-0.001	-0.535	-0.001	-0.385	0.002	0.534	0.005	0.863
Trade	0.225	4.341**	-0.098	-1.387	-0.003	-0.025	-0.227	-1.537
Indonesia	0.194	1.383	0.147	1.517	-0.063	-0.309	0.347	1.008
Malaysia	0.155	1.407	0.566	5.598**	0.130	0.606	1.449	5.663**
Philippines	0.221	2.064**	0.369	3.659**	-0.088	-0.435	0.486	1.550
South Korea	0.078	0.978	-0.083	-1.201	0.001	0.009	0.046	0.253
Thailand	0.140	1.090	0.283	2.413 **	-0.069	-0.306	0.504	1.442
1990	-0.039	-1.123	-0.005	-0.122	0.241	2.254**	0.180	1.356
1991	-0.022	-0.454	-0.017	-0.386	0.316	3.149 **	0.138	1.111
1992	-0.011	-0.248	0.011	0.289	0.330	4.123**	0.234	2.116**
1993	-0.005	-0.118	0.075	1.221	0.336	3.678**	0.242	1.844*
1994	-0.003	-0.057	0.139	2.023**	0.403	4.294**	0.322	2.206**
1995	0.001	0.014	0.222	2.760**	0.501	4.165**	0.466	2.856**
1996	-0.023	-0.395	0.256	3.072**	0.544	3.292**	0.526	2.245**
1997	0.033	0.464	0.328	7.296**	0.519	5.518**	0.456	2.033**
1998	0.216	2.806**	0.442	5.244**	0.446	4.059**	0.253	1.511
1999	0.280	3.129**	0.340	4.251**	0.256	2.036**	0.089	-0.432
2000	0.171	1.829*	0.122	0.948	0.022	0.096	-0.367	-1.294
Adjusted R Square		0.890		0.902		0.544		0.872
Null: All control variables are zero Chi-Squared (7)		29.777**		72.178**		37.610**		67.631**
Null: All country dummies are zero Chi-Squared (5)		10.104*		144.155**		2.507		97.986**
Null: All year dummies are zero Chi-Squared (11)		26.337**		113.539**		45.145**		35.141**

Notes:

1. The above are panel data regression estimates for Equation 1 with BANKDEV (four indicators) as dependent variables.
2. Single asterisk (*) indicates significance at 10 percent level and double asterisk (**) indicate significance at 5 percent level.
3. All estimates are Newey-West heteroskedactic-autocorrelation consistent (HAC).
4. BANKDEV: Bank development measures (Financial Depth (FDEPTH), Clain on Private Sectors (PCREDIT); Credit-Deposits ratio (INTM1), and Credit-M2 ratio (INTM2); See

Variable	A. Dependent: FDEPTH		B. Dependent : PCREDIT		C. Dependent: INTM1		D. Dependent: INTM2	
	Coeff	T-Stat	Coeff	T-Stat	Coeff	T-Stat	Coeff	T-Stat
Constant	0.396	1.217	0.156	-0.401	-0.769	-1.054	0.304	0.417
Population Growth	-0.004	-0.156	-0.003	-0.166	-0.046	-1.351	-0.090	-1.899*
Unemployment	-0.009	-0.854	-0.018	-0.664	-0.090	-2.272**	-0.076	-1.960**
Agriculture Sector	-0.008	-0.848	-0.032	-1.777*	0.025	0.810	-0.029	-0.904
Government Expenditure	0.007	1.581	0.009	1.933*	0.016	2.348**	-0.006	-0.600
Inflation	-0.008	-1.956*	-0.003	-0.805	0.010	1.129	0.020	2.481**
M2 Money Growth	-0.001	-0.413	0.005	2.214**	0.009	1.805*	0.018	2.466**
Trade	0.261	4.860**	0.051	0.547	0.095	0.551	-0.166	-0.934
Indonesia	0.142	0.475	0.971	4.953**	1.242	3.893**	1.307	3.450**
Malaysia	-0.041	-0.126	2.076	4.789 **	2.254	2.984**	3.609	4.023**
Philippines	0.074	0.240	1.252	6.222**	1.613	5.425**	2.182	4.663**
South Korea	-0.065	-0.215	0.571	2.533**	0.962	2.489 **	0.905	2.259**
Thailand	-0.172	-0.590	0.651	2.742**	1.353	3.293**	1.437	3.404**
Interactive Dummy (Indonesia)	0.255	0.961	-0.378	-1.792*	-0.674	-1.929 *	-0.738	-2.142**
Interactive Dummy (Malaysia)	0.381	1.374	-0.932	-2.742**	-1.510	-2.625**	-1.816	-2.805**
Interactive Dummy (Philippines)	0.370	1.411	-0.524	-2.553**	-1.217	-3.735**	-1.475	-4.373**
Interactive Dummy (South Korea)	0.323	1.247	-0.370	-1.846*	-0.849	-2.682 **	-0.952	-3.060**
Interactive Dummy (Thailand))	0.610	2.403**	0.053	0.204	-1.046	-2.433 **	-0.980	-2.600**
OPENBANK	-0.365	-1.406	0.468	2.407**	1.111	3.629**	1.223	4.061**
Adjusted R Square		0.879		0.910		0.572		0.885
Net Direct Effect of OPENBANK:								
Indonesia		-0.110		0.089		0.437		0.485
Malaysia		0.016		-0.464		-0.399		-0.593
Philippines		0.005		-0.056		-0.105		-0.252
South Korea		-0.042		0.098		0.263		0.270
Thailand		0.246		0.521		0.065		0.242
Average		0.023		0.038		0.052		0.030
Null: All control variables are zero Chi-Squared (7)		242.568**		212.692**		32.575**		45.688**
Null: All country dummies are zero Chi-Squared (5)		22.728**		174.057**		89.324**		86.411**
Null: All interactive dummies are zero Chi-Squared(5)		25.167**		110.164**		81.895**		62.189**

Notes:

1. The above are panel regression estimates for Equation 2 with BANKDEV (four indicators) as dependent variables.
2. Single asterisk (*) indicates significance at 10 percent level and double asterisk (**) indicate significance at 5 percent level.
3. All estimates are Newey-West heteroskedactic-autocorrelation consistent (HAC).
4. BANKDEV: Bank development measures (Financial Depth (FDEPTH), Clain on Private Sectors (PCREDIT); Credit-Deposits ratio (INTM1), and Credit-M2 ratio (INTM2); OPENBANK: Banks net foreign exposure (Foreign Liabilities of Banks/Foregn Assets of Banks). See Appendix 1 for details of other regression variables.

year dummies coefficients are individually (and collectively) positive and significantly different from zero at 5 per cent level. Openness in East Asia is largely concentrated in the intermediated banking system. Thus, relative to the second half of the eighties, the banking firms in these East Asian countries are significantly more exposed to foreign sectors.

Status of bank development is highlighted in Table 2. Across countries, little differences are traced in terms of financial depth except for Philippines that shows a significantly higher level of depth. Three countries (Malaysia, Philippines and Thailand) experienced significantly greater increase in credit issuance than the benchmark country. With respect to intermediation activities, generally all countries are of the same intensity. Malaysia's broad intermediation (INTM2-Malaysia) activity is significantly greater than the rest. Compared to the benchmark year, financial depth (FDEPTH) remains relatively unchanged prior to the crisis. A significant increase in financial depth occurred in the immediate years following the crisis (1998, 1999, and 2000).[10] Thus, growth of East Asia prior to the crisis is not driven by inflationary force, parallel to low inflation rate dictated during the period. A strong evidence of a significant increase in bank development is traced chronologically for the credit and intermediation intensity. Relative to 1985-1989, issuance of credit to the private sector (PCREDIT) increased significantly during the second half of the 1990s from 1994 to 1999. Coefficients for year dummies are significantly different from zero during these years. This validates the credit boom years of East Asia prior to the crisis. Bank intermediation measures (INTM1 and INTM2) indicate a significant increase in intermediation activities prior to the crisis. Stronger and persistent evidence is traced with the credit-deposits ratio (INTM1). Intermediation activities have increased significantly relative to benchmark years. In sum, these status representations point that openness in the East Asian financial sector is largely concentrated within the intermediated banking system. Years of increasing bank openness are associated with a significant increase in credit issuance and intermediation activities. We now turn to a more specific analysis that directly links financial openness to bank development.

Estimations of Equation 2 provide direct influence of financial openness on bank development. The estimated regressions generate additional insights into the experience of each of the individual countries examined. In total, 16 regressions were run for Equation 2, i.e. four regressions (4 bank development indicators) for each the financial openness measurements. The estimated regressions results show that none of the equations that employed OPENALL, OPENFDI and OPENCAP as a measure of financial openness (independent variable) are statistically significant. There is no significant link between these measures of financial openness and bank development. Thus, to conserve space we do not report the results in this paper.[11] Table 3 presents significant findings that support the proposition that a higher degree of bank openness translates into a higher degree of bank development. Consistent with the preceding analysis, there is no significant direct link

[10] The significant increase in financial depth during the post-crisis years (1998, 1999, and 2000) is largely influenced by a dramatic decline in region's output. In contrast to other affected countries, Indonesia's monetary growth skyrocketed from 23 per cent per annum in 1997 to 62 per cent in 1998. Hyper inflation rate of 58 per cent is recorded for Indonesia in 1998. With these post-crisis years included, the null that all year dummies are zero is rejected.

[11] Results are available upon request from the author.

between East Asia bank openness and region's financial depth. Significant results are dictated when bank development is measured by credit and intermediation. Significant positive country dummies coefficients (intercept differential) in credit and intermediation equations suggest that the fixed effects across crisis-affected nations are greater than for Singapore. This implies that gains from bank openness and liberalisation is not unambiguous but condition upon several other underlying country-specific factors.[12] Direct influence of bank openness is implied by the slope coefficient. For the benchmark country (Singapore), bank openness positively influenced credit issuance and intermediation intensities. The coefficients for OPENBANK were all positive and significantly different from zero in credit and intermediation equations. Nevertheless, this direct positive effect is not true in all countries. Except for the case of Thailand in credit equation, all of the coefficients (slope differential) for the interactive dummies ($DINT_{jt}$) were significantly negative, indicating that the direct influence of bank openness on bank development in each of these crisis-affected nations is smaller than its effect in Singapore or within a certain range that can also possibly turn negative.

The net direct effect of bank openness on bank credit and intermediation activities (sum of ζ (slope coefficient) and λ (slope differential)) provides insights into the experience of each these East Asian nations.[13] The direct effect of bank openness on credit and intermediation remains positive for Indonesia, South Korea and Thailand. However, the net direct effect turns negative for Malaysia and Philippines. Taking the average, bank credit and intermediation activities in East Asia are positively influenced by openness in the banking sector. Thus, financial (bank) openness exerts critical influence on the advancement of banking activities in East Asia.

4. Conclusions and Implications

A proposition that links financial openness and bank development implied by finance-growth nexus literature is examined in this study in conjunction with the experience of selected East Asian nations during the 1990s. On theoretical ground, a higher degree of financial openness motivates development in the banking sector, which in turn, owing to the unique role of financial intermediaries in resolving market imperfections, would spur real effects. Episodes of growth and turbulence experienced by the East Asian economies in the 1990s posted new challenges to this proposed chain. We investigated this financial openness-bank development link pertaining to the finance-growth paradigm for selected East Asian countries. Our results indicate a significant increase in East Asian banks' financial openness. A period of increasing bank openness is associated with a significant increase in bank development (credit and intermediation) giving support to the financial openness-bank development link. Direct positive effects of bank openness on bank credit and intermediation activities is valid

[12] Potential underlying factors that are currently examined include legal framework, economic freedom, corporate governance, macro-economic status, culture, and openness. See for example Rajan and Zingales (2003), Stultz and Williamson (2003), Hung (2003), and Beck *et al.* (2003).

[13] We omit discussion on net direct effect for financial depth since none of the slope differentials (except for Thailand) are significant.

for Indonesia, South Korea, and Thailand. Thus, from the perspective of finance-growth paradigm, financial openness stimulates banking development and skepticisms on greater bank openness is rather blur.

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Appendix 1: Data Sets

Countries (6): Indonesia, South Korea, Malaysia, Philippines, Singapore, Thailand.

Source of data:

1. Asia Development Bank (ADB)-Asia Regional Information Centre (ARIC): http://aric.adb.org/
2. Asia Development Bank (ADB)-Asia Development Outlook (ADO) various issues: http://www.adb.org/documents/
3. International Monetary Fund (IMF)-International Financial Statistics (IFS-CD ROM)

Period/Frequency: Annual Data (16 years, 1985-2000)

Data Description:

No.	Category	Definitions	Source
1.	Structure-Macro	Population Growth (POP)	ADB/IMF
		Agriculture Sector % to GDP (AGRI)	ADB
		Unemployment Rate (UNEMP)	ADB
		Government Finance % GDP (GOV)	ADB
		Consumer Prices (INF)	ADB
		M2 Money (M2)	ADB
		Exports (EXP) and Imports (IMP) (TRADE= (EXP + IMP)/GDP)	ADB
2.	Bank Development	Claim on Private Sector (CLP)	ADB
		Total Bank Deposits (DEP)	ADB
		4 Definitions of Bank Development:	
		1. Financial Depth (FDEPTH) = M2/GDP	
		2. Private Credit (PCREDIT) = CLP/GDP	
		3. Credit-Deposit Ratio (INTM1) = CLP/DEP	
		4. INTM2 = CLP/M2	
4.	Financial Openness	Foreign Direct Investments (FDI)	ADB
		Portfolio Investment (CAP)	ADB
		Foreign Asset of Banks (FABANK)	IMF
		Foreign Liability of Banks (FLBANK)	IMF
		4 Definitions of Financial Openness:	
		1. OPENALL: (FDI + CAP)/GDP	
		2. OPENFDI: FDI/GDP	
		3. OPENCAP: CAP/GDP	
		4. OPENBANK: FL/FA	