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the APEC Experience Offer A Lesson for
Asia

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Financial Development and Growth: Can the APEC Experience
Offer A Lesson for East Asia?¹

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ABSTRACT

In models of endogenous growth with financial development researchers typically find that a lower share of government ownership in the domestic financial sector leads to a greater efficiency and a higher rate of growth. We find no such evidence in the economies of the APEC. A greater privatisation of financial intermediaries in the APEC has only led to a greater volume of capital without any significant change in the overall efficiency. Nevertheless, a significant improvement in efficiency in the APEC has come from a greater access of the member countries to the international credit market. This finding implies that the real growth in East Asia should continue despite the recent problems of the domestic financial intermediaries, provided the region's access to international credit market continues to grow under the umbrella of APEC.

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"Better financial systems stimulate economic growth ..." King-Levine (1993b)

1. Introduction

King-Levine (1993b) come to the above conclusion in a closed economy model. This paper examines the implication of that conclusion for the open economies such as the members of the APEC. Following King and Levine we measure financial development with four specific indicators. Considering the small open economies of the APEC, however, we identify one of those four indicators measuring the degree of privatisation of the domestic financial intermediaries to most closely reflect the domestic financial development and a combination of the others measuring the private access to the total volume of international credits to indirectly reflect the general financial development in the world. We then compare the relative contribution of the above two parallel sources of financial development to growth. The common experience in the APEC includes a greater privatisation of banks due to a lower government share in the total assets of the domestic financial intermediaries as well as a greater internationalisation of the credit market due to trade liberalisation. We ask: Has the privatisation of financial intermediaries significantly stimulated growth in these open economies? Surprisingly, our answer is "No." Our finding is that the contribution of financial development to growth in the APEC has come mainly from the internationalisation of the credit market. The greater privatisation of domestic assets has only led to a higher rate of saving and a higher rate of accumulation of capital without any significant change in the overall efficiency.

The latter finding goes well with Solow (1956) model of growth where a higher rate of saving does not produce a higher long run growth. It, however, poses a puzzle for the recently developed models of endogenous growth. Those models link financial development to long run economic growth through its beneficial effect on the total factor productivity in the economy. Examples of such models include Greenwood-Jovanovic (1990), Benceivenga-Smith (1991), Saint Paul (1992) King-Levine (1993a) and Pagano (1993). They model different functions of the financial intermediaries such as diversifying liquidity risk, diversifying project risk, efficient financing and evaluating innovative projects that raise the long run growth rate by acting as a kind of "lubricant"¹ for their respective growth engines. The lubrication effect comes from a more efficient allocation of resources together with a reduced consumption of resources by the financial intermediaries.

¹ King-Levine (1993a)

These models however are based on a closed economy framework. Consequently, they explain well why financial development in the world as a whole raise growth in countries with access to international credit market; or, why a greater access to international credit market increases rates of growth. The apparent lack of relationship between a greater privatisation of domestic financial intermediaries and growth that we observe in the APEC sample, however, poses a puzzle to those models. Indeed if funds flow freely across borders, entrepreneurs are not totally constrained by the state of development of their domestic financial institutions. Nevertheless, the pressure of international competition is likely to raise the efficiency of the part of the domestic financial sector that has been privatised. It follows that a greater degree of privatisation of the financial sector is likely to foster growth relatively more significantly in the open economies than in the closed economies. So our finding that a greater privatisation of the banks in the APEC has no significant effect on growth of output per capita is surprising. How do we reconcile the strong connection between degree of access to international credit markets and growth but a lack of connection between the degree of privatisation of domestic financial intermediaries and growth in the APEC? We find a clue to this puzzle in a separate observation that a higher degree of privatisation of financial intermediaries has led to a higher ratio of MI to GDP accompanied by a lower demand for domestic currency in the APEC. It is not clear why a lower share of government ownership in the domestic financial intermediaries would precipitate a higher MI to GDP ratio and hence a higher inflation tax burden on the private sector that is harmful for growth. Possibly the temporary increase in the cost of restructuring associated with privatisation has raised government deficits requiring the government to raise some form of tax. The government has chosen the most popular one - the seignorage that taxes holders of domestic currency by reducing its purchasing power. This tax discourages people from holding domestic currency and that leads to either inflation or devaluation. Under a fixed exchange system, which prevailed among many members of the APEC, this process distorts market allocation of resources and creates a shortage of foreign exchange. Both are harmful for growth and have possibly neutralised the positive contribution of privatisation on growth. Why has the privatisation process raised the deficit in the first place? We leave the task of answering that question for future research. Instead we focus on understanding how the contribution of privatisation of financial intermediaries income compare with that of internationalisation of the credit market in raising the growth rate of per capita income of the members of the APEC.

This paper has five sections. Following introduction we briefly review the literature in Section 2. Section 3 describes the data and methodology of the empirical analysis conducted in the paper. The main findings are listed in Section 4. A few concluding remarks are included in Section 5 followed by the complete list of references. Appendix A contains in Tables 1-8 that presents a summary of findings from several regressions. Appendix B contains the complete data set used in this paper.

2. Theoretical Background

Members of the APEC provide an excellent background for examining the relative contribution of the greater access to international credit market and the better financial system at home on economic growth because of their high degree- of openness. It is also helpful to note that the sample period of this study is from 1964 to 1993. Most of these countries were developing countries during this period with a relatively lower stock of capital labour ratio and, hence, a higher marginal product of capital. It is, therefore, expected that funds mainly flow into these countries contributing to their development in competition with the funds generated at home by the domestic financial institutions.

In King and Levine (1993b) a more efficient financial intermediary sector channels a larger fraction of saving to finance a greater number of innovative projects. This increases the technological advancement rate and the growth rate of final goods. Saint Paul (1992) emphasises the role of the financial intermediaries in diversifying the risks of investment through technological and financial diversification. In the absence of a financial sector, investments in incompletely specialised capital goods or technologies is the optimal choice. With the help of a financial sector, firms can choose to invest in specialised capital goods and investors themselves diversify away their risks by adjusting their shares in different firms through the financial market. In their model the introduction of the financial sector reduces the risk of specialised investment and, hence, increases the expected return encouraging a higher rate of saving and investment in fully specialised capital that raises productivity in the economy. Bencivenga-Smith (1991) highlights the role of diversification of liquidity risk. As investors prefer to leave a part of their assets as liquid assets to meet their unforeseeable liquidity risk, funds channelling to productive projects is lowered. Due to the law of large numbers, financial intermediaries which pooled savings together can keep the level of liquid assets to a minimum possible level. Consequently, it is possible to allocate a higher proportion of

funds to finance innovative projects and that raises the total factor productivity or overall efficiency in the economy. They also suggest that the effect of an increase in growth rate is not necessarily associated with a higher saving rate and the diversification of the liquidity risk alone can increase the growth rate of final goods. Greenwood-Jovanovic (1990) emphasise the role of collecting and analysing information by the financial intermediaries. To perform these functions, there is a fixed cost for financial intermediaries to construct trading networks and a small variable cost applied to each dollar channelled. With this setting, the more efficient the financial intermediaries, the higher the proportion of funds to be channelled in a more efficient way due to the advantage of diversification and economies of scale. As a result a higher long run equilibrium growth rate is attained. The models above suggest that the development of financial intermediaries increases the efficiency of investment decisions. Pagano (1993) proposes that the development of financial intermediaries initiates a higher economic growth rate through a higher rate of growth of capital stock. When the efficiency of the financial intermediaries increases, a higher proportion for each unit of fund can be used for increasing the capital stock. If the amount of savings is held constant, the growth rate of capital is increased and so the growth rate of final goods.

In the open economies, entrepreneurs have free access to funds from the international financial market and the financial intermediaries are not confined only to their domestic entrepreneurs. This implies that the amount of funds which the financial intermediaries channelled is not necessarily equal to the amount of domestic investment as assumed in these models. When the domestic financial intermediary sector is inefficient, there are difficulties for entrepreneurs in financing their profitable projects through domestic financial intermediaries. This problem can however be overcome if entrepreneurs have access to the international credit market. With the access to foreign financial intermediaries, domestic entrepreneurs can make use of the funds supplied by foreigners. This can increase the growth rate of capital stock, the overall efficiency and, hence, the growth rate output. The growth rate of open economies is, therefore, better explained by the overall financial development in the world in general.

3. Data and Methodology

The data set for this paper has been compiled using various data sources as described in this section. The methodology used in this study basically follows that of King-Levine (1993a) but this study focuses on only the APEC members. Also, unlike King and Levine (1993a) who use 30-year averages between 1960-90, we use 10-year averages for the period 1964-93 to expand the data

set. After adjusting for the missing information we have a total of 37 data points in the sample consisting seventeen members of the APEC².

Four financial indicators are used to measure financial development.³ They are as follows: LLY⁴ measured by the ratio of liquid liabilities to GDP, BANK⁵ measured by the share of the domestic assets of private financial intermediaries in the total domestic assets of the private financial intermediaries and the central bank, PRIVATE⁶ measured by the fraction of credit received by private enterprises to total credit received by the government and the public and private enterprises, and PRIVY⁷ measured by the ratio of credit received by private enterprises to GDP. The four financial indicators described above help us to examine different aspects of financial development. In particular, LLY measures the overall liquidity per unit of GDP, BANK measures the extent of private control over the domestic financial intermediaries, PRIVATE measures the fraction of overall liquidity available to the private enterprises and PRIVY measures the private access to total volume of national and international credit per unit of GDP.

There are four growth indicators⁸ : GYP denoting real per capita GDP growth rate⁹, GK denoting real per capita physical capital stock growth rate¹⁰ , INV denoting the ratio of investment to GDP and EFF denoting growth rate of overall of total factor productivity". Also, we

² We cannot collect any relevant information from Brunei. So, the number of countries involved in this study is 17 instead of the 18 members of the APEC countries.

³ Information of financial indicators are collected from International Financial Statistics (IFS) published by International Monetary Fund (IMF) except Chinese Taipei and Hong Kong. The information of Chinese Taipei is collected from "The Statistical Yearbook of the Republic of China" published by Administrative Yuan of the Republic of China whereas that of Hong Kong is obtained from "Hong Kong Statistics" published by Statistic Department of the Hong Kong Government.

⁴ LLY is calculated by dividing the sum of IFS line 34 and line 35 by GDP for each year. Then, ten-year averages are calculated. For Chinese Taipei and Hong Kong, LLY is calculated with dividing M2 by GDP

⁵ BANK is calculated by dividing the sum of IFS lines 22a to 22f by the sum of IFS lines 12a to 12f and 22a to 22f. Each data point is constructed by the respective ten-year average. There is no information on BANK for People's Republic of China, Chinese Taipei, Hong Kong and Singapore.

⁶ PRIVATE is calculated by dividing IFS line 32d by the sum of IFS line32a to 32d and 32f and ten-year averages are used to construct data points. There is no information on PRIVATE for Hong Kong and Indonesia.

⁷ PRIVY is calculated by dividing IFS line 32d by GDP. Ten-year averages are used as data points. There is not enough information to construct PRIVY for Hong Kong and Indonesia.

⁸ The information on growth indicators are collected from World Data published by World BANK Unless specified.

⁹ $GYP = [\ln \text{real GDP per capita}_{t+10} - \ln \text{real GDP per capita}_{t+1}] / 10$

¹⁰ $GK = [\ln \text{real per capita Capital Stock}_{t+10} - \ln \text{real per capita Capital Stock}_{t+1}] / 10$. The information on real per capita physical capital stock is from Nehru-Dhareshwar "Rivista de Analysis Economic" (1993) 108 (1):37-59 <<http://www.worldbank.org/html/prdgm/grthweb//ddnehdha.htm>> for all countries except Chinese Taipei, Hong Kong and Papua New Guniea. For Chinese Taipei, the information is from "The Statistical Yearbook for the Republic of China". For Hong Kong and Papua New Guniea, their information is collected from King-Levine "Capital Fundamentalism, Economic Development and Economic Growth" Carnegie-Rochester Conference Serieson Public Policy Vol 40 (1994)

include following King and Levine (1993b) a set of other economic factors¹² to control for the macroeconomic condition in examining the effect of financial development on economic growth rate. They are TRADE¹³ measuring degree of openness, GOV¹⁴ measuring the share of government expenditure in GDP, (INF)¹⁵ denoting the inflation rate, LYO denoting the log of per capita GDP level at the initial year and LSCH denoting the log of secondary enrolment rate at the initial year.

There are two parts of analysis, contemporary and initial-year analysis. Contemporary analysis examines the relationship between the state of financial development and growth rate in the same period of time whereas initial-year analysis examines that of the state of financial development in the first year of each ten-year period and the ten-year average growth rate. The initial year analysis aims at examining the lagged effect of financial development. For this part of the analysis, LLYI, BANKI, PRIVATI, PRIVYI, TRADI, GOVI and INFI which are the initial-year data for LLY, BANK, PRIVATE, PRIVY, TRADE, GOV and INF are constructed.

Table I shows the correlation coefficients among the four financial indicators. Note that LLY and PRIVY are highly correlated while BANK and PRIVY are very weakly correlated. Recall that LLY is a measure of overall liquidity in proportion to GDP, PRIVY is a measure of the private access to international credit market and BANK measures the degree of privatisation of the domestic financial sector. The high correlation between LLY and PRIVY, therefore, suggests that the source of a greater volume of liquidity in the APEC is a greater private access to international credit market. A low correlation between BANK and PRIVY suggests, however, that a greater privatisation is not related to a greater private access to international credit market. It is important to note that BANK relates to domestic assets of domestic financial intermediaries. It neither includes funds directed to overseas by domestic financial intermediaries nor that channelled to the domestic economy from overseas financial intermediaries. The other three financial indicators are not confined to measure financial development in the domestic financial intermediary sector. Since the portion of

< <http://www.worldbank.org/html/prdmg/grthweb/datasets.htm> >. Depreciation rate and gross investment data are calculated and collected respectively to facilitate extrapolation of the data. In the process of calculating the depreciation of Mexico, it is found that its annual depreciation rates are 0.00006 and 0.00013 whereas that of other countries are between 0.05 and 0.22. It is expected that the data on real gross domestic fixed investment in Mexico is represented in thousand and so it is multiplied by 1000 for adjustments.

¹² Following King-Levine (1993), EFF is constructed by GYP - 0.3 (GK)

¹³ These controlling factors are constructed by information from World Data.

¹⁴ TRADE is the calculated by dividing the total value of exports and imports by GDP and ten-year average is used to construct data points.

¹⁵ GOV is the amount of government expenditure divided by GDP and ten-year average is used.

¹⁶ INF is constructed by $[1n(D_{t+10}) - Ln(D_{t+1})]/10$

financial services provided by overseas financial intermediaries is significant in the APEC countries, BANK stands out as a distinctive financial indicator in the APEC measuring mainly the state of the domestic financial sector.

4. Main Findings

We note from Table 2 that the correlation coefficients between BANK and growth indicators are significantly different from that between other financial indicators and growth indicators. In particular, BANK is negatively correlated to both the growth rate of per capita income (GYP) and the total factor productivity or the overall efficiency (EFF). Also, the regression results presented in Table 3 and Table 4 show that BANK does not have a significant effect on GYP and EFF whereas the other financial indicators do. There is weak evidence, however, that BANK positively influences the investment rate (INV) and the resulting growth rate of capital (GK). These findings isolate BANK as a poor predictor of growth in the APEC and stand in sharp contrast with the findings of King and Levine (1993a) for the closed economy models of the world as a whole. King and Levine (1993a), however, sceptically note that "the variable BANK does not measure to whom the financial system is allocating credit." Also, governments in many countries attempts to indirectly influence the credit channelling decisions of the domestic banks and distort allocation of credits even after liberalisation. In this context we note that Gregorio and Guidotti (1994) also report a weakly negative relationship between their measure of financial development in Latin America and growth. They conclude that the result is due to "financial liberalisation in a poor regulatory environment" and "the main channel of transmission from financial development to growth is the efficiency rather than the volume of investment." Interestingly, we note from Table 5 that the amount of loans channelled to government as a percentage to GDP (GL)¹⁶ actually decreases with higher BANK. There is further evidence that a higher BANK also accompanies a higher ratio of MI to GDP as described in Table 6. We consider this as evidence for the fact that government has a greater tendency to resort to seignorage that increases MI following a greater degree of privatisation. It does so possibly facing the new reality of little chance of getting automatic loans below the market interest rate from the privatised banks unlike the past to finance its expenditure.

¹⁶ The ratio of loans channelled to government to GDP (GL) is constructed by: the ratio of total loans to GDP (TL) - the ratio of loans received by private firms to GDP (PRIVY).

Theoretical models suggests that financial development can take two forms, improvement in efficiency and increase in size. The above discussion suggests that the privatisation of domestic financial intermediaries measured by BANK possibly measures only the latter. In open economies, a greater access to the internationally competitive financial market represents both a greater volume of financial services as well as a better efficiency of allocation. We argue the financial indicator PRIVY is the best measure of such development among all four financial indicators that we considered. The financial indicator LLY measures the amount of all loans but includes the stock of domestic currency as well. The latter does not correspond to the volume of financial services. Moreover, as noted above if the government has a tendency to finance its expenditure by increasing money supply, LLY would overestimate the beneficial aspect of financial development on growth. The indicator PRIVATE is a measure of the efficiency in allocating funds only with the traditional assumption that a higher portion of loans directed to government represents a lower efficiency in allocating resources. It does not, however, captures the size of the financial development. The indicator PRIVY, on the other hand, is a combination of a size indicator such as LLY as well as an efficiency indicator such as PRIVATE. Moreover, by definition it accounts for only the loans received by the private firms and, therefore, excludes the currency part of the liquidity that is related to seigniorage but inherently present in LLY. Precisely, PRIVY can be expressed¹⁷ as PRIVATE * (LLYCurrency/GDP), where currency represents the part of the liquidity measured by LLY that is primarily utilised by the government.

Empirical findings presented in Table 7 show that PRIVY has a significant positive effect on four growth indicators in the APEC countries. The effect is transmitted through three channels. They are the higher real per capita physical capital growth rate, improved efficiency in other production factors and the higher investment rate. For the initial-year analysis related to PRIVYI, we find that there is lagged effect of PRIVY (i.e. PRIVYI) on GYP, EFF and INV at a 95% confidence interval and that of GK is at a 90% confidence interval. This set of results is attached in Table 8. So, it can be concluded that the increase in the ratio of loans channelled to private firms to GDP does cause growth. If PRIVY is an appropriate financial indicator for the open economies

¹⁷ TL is constructed by PRIVY/PRIVATE.

PRIVY = Loans received by private firms / GDP
= (Loans received by Private firms / Total Loans) * (Total Loans / GDP)

such as APEC, then there is evidence that financial development cause growth; their relationship is not simply a correlation.

5. Concluding Remarks

The above analysis reveals that financial development in APEC have led to economic growth but through a conspicuous channel. A greater privatisation of domestic financial intermediaries may have increased the volume of saving and capital but it has not necessarily increased the overall efficiency in those economies. Despite the inefficiencies in the domestic sector, however, a greater flow of credit through internationally competitive channels has led to growth in efficiency and per capita output. There are a few lessons that we can learn from this experience.

The growth in open economies with open access to international credit market is not constrained by the state of development of the domestic financial intermediaries. This explains why the domestic financial indicator BANK is a poor predictor economic growth in APEC. A corollary for the East Asia follows: We should not expect the long run growth to be hampered by the recent crisis in the domestic financial system as long as the government does not limit the private access to international financial intermediaries out of unwise concern for the fate of the domestic financial intermediaries. Such policies would likely to lower the efficiency of resource allocation and to hinder growth. Unfortunately, as Claessens and Glaesener (1997) point out that the East Asian members of the APEC "maintain significant entry barriers to foreign providers of the financial services" and "the credit ratings of the domestic banks now depend to a large extent on the quality of the expected support from the State rather than on the quality of banks' balance sheets and profitability." This paper suggests, on the contrary, that a key to economic growth for these East Asian countries is a freer access to the international credit market. The privatisation of domestic financial intermediaries does help an economy to generate high level of saving and, therefore, to accumulate a country's physical capital stock. In a closed economy the privatisation of the banks also injects a growth spur. Nevertheless, this policy is not a substitute for the free access to the international credit market that expedites a free flow of international capital from other countries. The later policy makes the former much less important in promoting economic growth in the long run. After all it is quite evident from our study that financial development in the world injected growth in the APEC because of its openness even though the privatisation of domestic banks has not stimulated economic growth.

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APPENDIX A

Table I

Correlation	LLY	BANK	PRIVATE
BANK	0.500		
PRIVATE	0.218	0.3256	
PRIVY	0.878	0.1145	0.1809

Table 2

Correlation	LLY	BANK	PRIVATE	PRIVY
GYP	0.3018	-0.2342	0.4587	0.3756
GK	0.3196	0.0290	0.4476	0.4123
EFF	0.1867	-0.3725	0.3234	0.2250
INV	0.3401	0.1050	0.4741	0.4917

Table 3

Depende nt	GYP	GYP	GYP	GYP
Independent				
Financial	LLY 0.0298 (0.0130)	BANK 0.0000 (0.0482)	PRIVA 0.03618 (0.0175)	PRIVY 0.0448 (0.0142)
TRADE	0.0061 (0.0045)	-0.019 (0.0204)	-0.0024 (0.0075)	0.0067 (0.0045)
GOV				
INF				
LYO	-0.0099 (0.0030)	-0.0079 (0.0051)	-0.0079 (0.0031)	-0.0104 (0.0030)
CONSTANT	0.0939 (0.024)	0.1017 (0.0409)	0.06803 (0.0293)	0.0915 (0.0247)
Adjusted R ²	0.3164	0.0346	0.2837	0.3872
F-Statistics	6.5540	1.3110	5.2240	7.7400

(standard errors)

Table 4

Dependent	GYP	GK	EFF	INV
Independent				
BANK	0.0000 (0.0482)	0.2175 (0.0785)	0.0534 (0.0310)	0.2126 (0.0819)
TRADE	-0.019 (0.0204)	0.0129 (0.0291)	-0.0247 (0.0122)	0.0463 (0.0346)
GOV				-0.6678 (0.1646)
INF			-0.1018 (0.0474)	
LYO	-0.0079 (0.0051)	-0.0391 (0.0107)	-0.0046 (0.0030)	-0.0066 (0.0084)
LSCH		0.0618 (0.0186)		
CONSTANT	0.1017 (0.0409)	-0.0758 (0.0732)	0.1165 (0.0295)	0.2073 (0.0673)
Adjusted R ²	0.0346	0.323	0.2464	0.3904
F-Statistics	1.3110	4.1010	3.1250	5.1630

(Standard errors)

Table 5

$$GL=0.38494 - 0.31629 \text{ BANK}$$

(Standard errors) (0.1180) (0.1360)

Adjusted R² = 0.1499

F-statistics = 5.410

Table 6

$$M1 = -0.2645 + 0.4933 \text{ BANK}$$

(Standard errors) (0.1049) (0.1182)

Adjusted R² = 0.3697

F-statistics = 17.43

Table 7

Dependent INV	GYP	GK	EFF	
Independent				
PRIVY	0.0448 (0.0142)	0.0763 (0.0265)	0.0219 (0.0103)	0.1082 (0.0290)
TRADE	0.0067 (0.0045)	0.0242 (0.0085)	-0.0006 (0.0033)	0.0381 (0.0093)
GOV				
INF				
LYO	-0.0104 (0.0030)	-0.0116 (0.0056)	-0.0069 (0.0022)	-0.0121 (0.0061)
CONSTANT	0.0915 (0.0247)	0.0978 (0.0459)	0.0622 (0.0179)	0.2879 (0.0503)
Adjusted R ²	0.3872	0.3897	0.2221	0.5396
F-Statistics	7.7400	7.8100	4.0460	13.5020

(standard errors)

Table 8

Dependent	GYP	GK	EFF	INV
Independent				
PRIVYI	0.0417 (0.0149)	0.0508 (0.0284)	0.0220 (0.0099)	0.0860 (0.0316)
TRADI		0.0267 (0.0095)		0.0404 (0.0105)
GOVI				
INFI				
LYO	-0.0106 (0.0032)	-0.0109 (0.0060)	-0.0068 (0.0021)	-0.0120 (0.0067)
CONSTANT	0.10309 (0.0256)	0.1078 (0.0490)	0.06272 (0.0170)	0.3037 (0.0546)
Adjusted R ²	0.2995	0.2912	0.2537	0.4475
F-Statistics	7.8410	5.3830	6.440	9.6360

(standard errors)

APPENDIX B

Data Set for Contemporary Analysis

COUNTRY	LLY*	BANK*	PRIVATE*	PRIVY*	GYP ⁺	GK ^x	EFF ⁺	INV ⁺	TRADE ⁺	GOV ⁺	INF ⁺	LYO ⁺	LSCH ⁺	M1/GDP
AUSTRALIA I	0.4974	0.9316	0.5551	0.2529	0.0260	0.0343	0.0157	0.2680	0.2947	0.1536	0.0520	8.9834	4.1271	0.1752
AUSTRALIA II	0.4239	0.9075	0.6728	0.2898	0.0126	0.0227	0.0058	0.2454	0.3194	0.1713	0.0865	9.2412	4.4659	0.1252
AUSTRALIA III	0.5101	0.9582	0.8276	0.5408	0.0123	0.0138	0.0081	0.2282	0.3579	0.1780	0.0422	9.4026	4.5433	0.1251
CANADA I	0.3770	0.9696	0.7556	0.2529	0.0325	0.0293	0.0237	0.2392	0.4140	0.2116	0.0416	9.0282	4.0254	0.1817
CANADA II	0.4582	0.9314	0.8608	0.4195	0.0139	0.0384	0.0023	0.2358	0.4998	0.2136	0.0735	9.3759	4.5109	0.1237
CANADA III	0.4825	0.9618	0.8765	0.4895	0.0083	0.0271	0.0002	0.2060	0.5335	0.2015	0.0271	9.5656	4.6347	0.1494
CHILE III	0.7236		0.9792	0.8042	0.0713	0.0748	0.0489	0.3627	0.3446	0.0918	0.0753	5.1912	3.6109	0.0829
CHINA III	0.3908	0.4404	0.6649	0.8464	0.0465	0.0198	0.0406	0.2266	0.5848	0.1057	0.1660	7.2762	4.1897	
CHINESE TAIPEI I	0.4020		0.7183	0.3186	0.0638	0.1107	0.0306	0.2565	0.4930	0.2009	0.0453	7.1846	3.5978	
CHINESE TAIPEI II	0.6501		0.7863	0.5740	0.0560	0.0883	0.0295	0.3159	0.8633	0.2159	0.0727	7.9217	4.1503	
CHINESE TAIPEI III	1.2540		0.8449	0.9834	0.0588	0.1582	0.0114	0.3314	0.7926	0.2603	0.0685	8.3248	4.3581	
HONG KONG I	0.7266				0.0617	0.0392	0.0500	0.2440	1.6700	0.0781	0.0457	7.6610	3.3673	0.2899
HONG KONG II	0.8218				0.0542	0.0618	0.0356	0.2902	1.7551	0.0758	0.0764	8.2771	3.8918	0.1931
HONG KONG III	1.7819				0.0454	0.0464	0.0315	0.2623	2.4647	0.0701	0.0721	8.8960	4.2767	0.1864
INDONESIA III	0.3146	0.6899			0.0370	0.0639	0.0179	0.2877	0.4864	0.0975	0.0689	5.9733	3.6636	0.1086
JAPAN I	0.7645	0.9373	0.9213	0.8282	0.0702	0.1087	0.0376	0.3569	0.1958	0.1090	0.0535	8.8157	4.4067	0.3160
JAPAN II	0.8522	0.9358	0.8372	0.8690	0.0266	0.0508	0.0114	0.3175	0.2603	0.1012	0.0398	9.4940	4.5109	0.3166
JAPAN III	1.0563	0.9469	0.8569	1.1352	0.0291	0.0462	0.0152	0.3013	0.2016	0.0905	0.0119	9.7920	4.5433	0.2897
KOREA I	0.2530	0.7449	0.8678	0.2481	0.0727	0.1082	0.0402	0.2247	0.3676	0.1729	0.1101	6.3975	3.5553	0.1038
KOREA II	0.3282	0.7623	0.8843	0.3843	0.0568	0.1001	0.0267	0.2978	0.6784	0.1355	0.1431	7.1981	4.0254	0.1083
KOREA III	0.3748	0.7993	0.9543	0.5269	0.0652	0.0892	0.0385	0.3294	0.6487	0.1019	0.0552	7.8364	4.5109	0.0955
MALAYSIA III	0.7046	0.9723	0.8849	0.6775	0.0333	0.1268	-0.0048	0.3020	1.3327	0.1493	0.0160	7.5864	3.9703	0.2141
MEXICO III	0.2459	0.7905	0.5214	0.1844	-0.0034	0.0097	-0.0063	0.2130	0.3018	0.0851	0.3490	7.5437	3.9703	0.0824
NEW ZEALAND I	0.2269	0.7834	0.7765	0.1153	0.0174	0.0227	0.0106	0.2492	0.4576	0.1543	0.0563	9.0189	4.3175	0.1752
NEW ZEALAND II	0.2670	0.7994	0.6945	0.1723	0.0035	0.0245	-0.0038	0.2554	0.5896	0.1677	0.1182	9.2332	4.3944	0.1249
NEW ZEALAND III	0.4927	0.9178	0.8811	0.4748	0.0041	0.0367	-0.0069	0.2299	0.5728	0.1614	0.0592	9.3051	4.4543	0.2245
PHILLIPINES III	0.3176	0.7025	0.7451	0.1931	-0.0020	0.0056	-0.0036	0.2011	0.5684	0.0862	0.0859	6.4333	4.2195	0.0801
PAPUA NEW GUINEA II	0.2935	0.9259	0.9403	0.1598	-0.0136	-0.0006	-0.0134	0.2379	0.9056	0.2902	0.0663	6.8857	2.4849	0.1169
PAPUA NEW GUINEA III	0.3557	0.8801	0.8820	0.2759	0.0272	-0.0085	0.0297	0.2319	0.9319	0.2193	0.0312	6.7226	2.3979	0.1123
SINGAPORE I	0.6118		2.4016	0.4335	0.0819	0.1341	0.0416	0.2997	2.4060	0.1159	0.0332	7.3969	3.8067	0.2827

SINGAPORE II	0.6343		1.8501	0.6795	0.0614	0.0932	0.0334	0.4331	3.5473	0.1118	0.0387	8.2634	3.9512	0.2565
SINGAPORE III	0.8364		1.2483	0.8488	0.0492	0.1607	0.0010	0.3921	3.4056	0.1131	0.0245	8.8977	4.2627	0.2328
THAILAND II	0.3813	0.7910	0.6920	0.3005	0.0385	0.0553	0.0219	0.2749	0.4744	0.1151	0.0608	6.3038	3.2581	0.1424
THAILAND III	0.6546	0.8895	0.8260	0.5724	0.0628	0.1279	0.0244	0.3419	0.6517	0.1054	0.0387	6.7277	3.4340	0.1075
UNITED STATES I	0.6462	0.8735	0.7365	0.5516	0.0236	0.0224	0.0169	0.1961	0.1091	0.2075	0.0396	9.3940	4.2485	0.2400
UNITED STATES II	0.6342	0.9000	0.8033	0.6374	0.0135	0.0140	0.0093	0.1981	0.1825	0.1798	0.0658	9.6167	4.4188	0.1791
UNITED STATES III	0.6602	0.9115	0.8326	0.6932	0.0133	0.0175	0.0081	0.1816	0.2017	0.1774	0.0288	9.7654	4.5433	0.1727

I indicates the period of 1964 to 1973

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III indicates the period of 1984 to 1993

* Data source: International Financial Statistics by International Monetary Fund

+ Data source: World Data published by World Bank

x Data source: King-Levine data set or Nehru-Dhareshwar data set

Data Set for Initial-year Analysis

COUNTRY	LLYI*	BANKI*	PRIVATI*	PRIVYI*	GYP ⁺	GK ^x	EFF ⁺	INV ⁺	TRADI ⁺	GOVI ⁺	INFI ⁺	LYO ⁺	LSCH ⁺
AUSTRALIA I	0.5261	0.9071	0.4681	0.2180	0.0260	0.0343	0.0157	0.2680	0.3153	0.1427	0.0274	8.9834	4.1271
AUSTRALIA II	0.4571	0.9602	0.6669	0.2842	0.0126	0.0227	0.0058	0.2454	0.3162	0.1619	0.1706	9.2412	4.4659
AUSTRALIA III	0.4031	0.9366	0.7460	0.3116	0.0123	0.0138	0.0081	0.2282	0.3480	0.1762	0.0544	9.4026	4.5433
CANADA I	0.3569	0.9818	0.7240	0.2163	0.0325	0.0293	0.0237	0.2392	0.3786	0.2019	0.0266	9.0282	4.0254
CANADA II	0.4065	0.9533	0.8494	0.3238	0.0139	0.0384	0.0023	0.2358	0.4980	0.2152	0.1378	9.3759	4.5109
CANADA III	0.4432	0.9320	0.8678	0.4527	0.0083	0.0271	0.0002	0.2060	0.5363	0.2041	0.0309	9.5656	4.6347
CHILE III	0.5193		0.9790	0.6377	0.0713	0.0748	0.0489	0.3627	0.2281	0.0921	0.0454	5.1912	3.6109
CHINA III	0.3805	0.4609	0.7463	1.0865	0.0465	0.0198	0.0406	0.2266	0.4958	0.1334	0.1190	7.2762	4.1897
CHINESE TAIPEI I	0.3144		0.6258	0.2112	0.0638	0.1107	0.0306	0.2565	0.3356	0.1797	0.0497	7.1846	3.5978
CHINESE TAIPEI II	0.4658		0.7990	0.4624	0.0560	0.0883	0.0295	0.3159	0.8608	0.1571	0.2939	7.9217	4.1503
CHINESE TAIPEI III	0.9109		0.8134	0.6991	0.0588	0.1582	0.0114	0.3314	0.8830	0.2215	0.1007	8.3248	4.3581
HONG KONG I	0.6572				0.0617	0.0392	0.0500	0.2440	1.5631	0.0798	0.0516	7.6610	3.3673
HONG KONG II	0.7294				0.0542	0.0618	0.0356	0.2902	1.7112	0.0763	0.1127	8.2771	3.8918
HONG KONG III	1.2245				0.0454	0.0464	0.0315	0.2623	2.0918	0.0748	0.0940	8.8960	4.2767
INDONESIA III	0.1889	0.5748			0.0370	0.0639	0.0179	0.2877	0.5082	0.1006	0.0794	5.9733	3.6636
JAPAN I	0.7030	0.9308	0.9436	0.7848	0.0702	0.1087	0.0376	0.3569	0.1913	0.1303	0.0488	8.8157	4.4067
JAPAN II	0.7946	0.9265	0.9120	0.8650	0.0266	0.0508	0.0114	0.3175	0.2795	0.0976	0.1840	9.4940	4.5109
JAPAN III	0.9209	0.9441	0.8249	0.9562	0.0291	0.0462	0.0152	0.3013	0.2726	0.0993	0.0228	9.7920	4.5433
KOREA I	0.0895	0.5465	0.7222	0.0918	0.0727	0.1082	0.0402	0.2247	0.1918	0.1928	0.2846	6.3975	3.5553
KOREA II	0.3246	0.7228	0.9046	0.3783	0.0568	0.1001	0.0267	0.2978	0.6686	0.1471	0.2428	7.1981	4.0254
KOREA III	0.3357	0.7891	0.8963	0.4644	0.0652	0.0892	0.0385	0.3294	0.7181	0.1114	0.0298	7.8364	4.5109
MALAYSIA III	0.5765	0.9183	0.8312	0.5277	0.0333	0.1268	-0.0048	0.3020	1.0663	0.1591	0.0540	7.5864	3.9703
MEXICO III	0.2834	0.5761	0.3423	0.1150	-0.0034	0.0097	-0.0063	0.2130	0.2693	0.0875	0.4636	7.5437	3.9703
NEW ZEALAND I	0.2543	0.6345	0.7096	0.1173	0.0174	0.0227	0.0106	0.2492	0.4466	0.1499	0.0395	9.0189	4.3175
NEW ZEALAND II	0.2598	0.7708	0.8149	0.1540	0.0035	0.0245	-0.0038	0.2554	0.5546	0.1535	0.0293	9.2332	4.3944
NEW ZEALAND III	0.2755	0.8137	0.9706	0.1993	0.0041	0.0367	-0.0069	0.2299	0.6998	0.1625	0.0788	9.3051	4.4543
PHILLIPINES III	0.2782	0.6748	0.6223	0.2447	-0.0020	0.0056	-0.0036	0.2011	0.4923	0.0807	0.4276	6.4333	4.2195
PAPUA NEW GUINEA II	0.3077	0.9830	0.9651	0.1463	-0.0136	-0.0006	-0.0134	0.2379	0.8673	0.3313	0.0854	6.8857	2.4849
PAPUA NEW GUINEA III	0.3521	0.9799	1.0064	0.2368	0.0272	-0.0085	0.0297	0.2319	0.9259	0.2408	0.0738	6.7226	2.3979
SINGAPORE I	0.5738		3.2848	0.3823	0.0819	0.1341	0.0416	0.2997	2.5631	0.1024	0.0258	7.3969	3.8067
SINGAPORE II	0.5520		2.6121	0.5454	0.0614	0.0932	0.0334	0.4331	3.1909	0.1172	0.1412	8.2634	3.9512
SINGAPORE III	0.6772		1.0781	0.8891	0.0492	0.1607	0.0010	0.3921	3.2496	0.1076	0.0062	8.8977	4.2627

THAILAND II	0.3176	0.8186	0.7467	0.2279	0.0385	0.0553	0.0219	0.2749	0.4556	0.0916	0.1858	6.3038	3.2581
THAILAND III	0.5444	0.8141	0.6744	0.4394	0.0628	0.1279	0.0244	0.3419	0.4807	0.1289	0.0144	6.7277	3.4340
UNITED STATES I	0.6655	0.8713	0.7029	0.5104	0.0236	0.0224	0.0169	0.1961	0.0966	0.2108	0.0178	9.3940	4.2485
UNITED STATES II	0.6275	0.8933	0.7990	0.6494	0.0135	0.0140	0.0093	0.1981	0.1728	0.1865	0.0816	9.6167	4.4188
UNITED STATES III	0.6579	0.9142	0.8139	0.6674	0.0133	0.0175	0.0081	0.1816	0.1868	0.1765	0.0394	9.7654	4.5433

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x Data source: King-Levine data set or Nehru-Dhareshwar data set