

HOW FINANCIAL DEVELOPMENT CAUSED ECONOMIC GROWTH IN APEC COUNTRIES: FINANCIAL INTEGRATION WITH FDI OR PRIVATIZATION WITHOUT FDI

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Politicians fashionably argue in favour of financial development to promote economic growth following the seminal study of King and Levine (1993a and 1993b). Financial development, however, could come through alternative channels that are sometimes not compatible in small, open economies. A relatively popular channel promotes privatization of domestic financial intermediaries but with restrictions on foreign ownership. The other competing channel works through foreign direct investment (FDI) requiring foreign ownership of national assets. Until the last decade of globalization, from the 1960s through the early 1990s, in many Asia-Pacific Economic Cooperation (APEC) economies and especially in East Asia, privatization of national banks went hand in hand with barriers against FDI. The recent trend in globalization creates a political tension between those who welcome and the others who oppose FDI. This paper evaluates the relative contribution of those two alternative channels of financial development to economic growth. The model of analysis builds on King and Levine (1993b) but restricts its attention to small open economies of APEC. Contrary to the previous findings, privatization of the domestic financial sector alone turns out to have a negative impact on the growth of productivity and a weakly negative impact on the growth rate of per capita income. This discrepancy could possibly be rationalized by a special characteristic of the APEC sample where endogenous credit rationing by privatized banks could have lowered the relative proportion of entrepreneurs in the economy for reasons presented in Stiglitz and Weiss (1981). In this environment, FDI could serve as a catalyst to increase entrepreneurial access to international credit, which in turn could raise productivity by

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inducing additional entrepreneurial activities in the economy. However, financial integration led by FDI does bring the prospect of lower economic growth due to increased business fluctuations, especially for the small open economies. Nevertheless, it is surprising to find that a significant improvement in efficiency and growth was experienced by the APEC nations through the international channel with the flow of FDI. Consequently, barriers to globalization out of purely nationalist concerns may be ill-fated even for small open economies.

Key Words: FDI, Financial Integration, Privatization, APEC, Efficiency, Growth Regression, Financial Development Indicators.

JEL Classification: C20, C82, F23, F36, F43, O16, O38

I. INTRODUCTION

Foreign direct Investment (FDI) often takes the form of a one-way flow of capital and technology from a group of rich countries to the developing world. Conflicts of interests that stem from that unidirectional flow give rise to politically charged debates. The APEC experience, on the other hand, is an interesting case of distinction.

The 21 members of APEC account for more than 50 per cent of the world's output. The United States of America and Japan, the two main sources of FDI in the world, and China, one of the world's largest recipients of FDI, are members. FDI flows both ways among most of the other 18 members, which are small open economies. Urata (2003) reports that the multidirectional flow of FDI has been an integrating force in APEC, promoting efficiency among its members. It provides financial resources for fixed investment that facilitates technology diffusion. It also offers alternative sources of finance to indigenous entrepreneurs who would otherwise be constrained by the volume of capital that the domestic financial intermediaries can mobilize within their respective economies.

The emergence of APEC coincides with a change in the global political atmosphere that has favoured structural changes, as well as in the domestic financial institutions of the member economies. Those changes have been mostly complementary to regional financial integration and hence suitable for attracting FDI. However, Urata (2003) notes that those changes have not been uniform and significant impediments to FDI exist even within APEC. In a study about FDI in the

South-East Asia, Ritchie (2002) reports that, despite trade and financial liberalization, the countries in that subregion have only limited success in leveraging foreign technology to foster economic growth.

The origin of such opposition to FDI can be traced to international politics. The strong national bias in some of the big sources of FDI induced by the influential members of APEC, such as the United States and Japan, generate cynicism among the opponents of FDI. They argue that the philosophy of liberalization misses the important issue of national interests. For example, Bora and Graham (1997) note that “some individuals feel a sense of national loss when foreigners acquire existing domestic companies”. Others raise concern about an undue increase in macroeconomic volatility in small open economies from global financial integration. In a study conducted by IMF, Prasad and others (2003) warn about such a possibility.

FDI, however, supplies relatively less volatile and potentially plentiful sources of capital. Noorbakhsh, Paloni and Youssef (2001) note that FDI serves to balance loan and equity capital in private investment without the heavy drag of debt service. This serves a nation especially well following a debt crisis.

Nevertheless, cynicism against political manipulation by the big players and concerns for macroeconomic fluctuations, the adverse effects of changes in domestic institutions on political stability, negative impacts on the indigenous culture and the environment have all contributed to large fluctuations in FDI in APEC. In particular, the FDI inflows to the developing East Asian members of APEC show (see table 1) a sharp increase from about \$70 billion in 1995 to more than \$90 billion in 1997, a sharp decrease in 1998 to \$82 billion, followed by a resurgence in the next two years, but a sharp decline again in 2001.

Table 1. FDI inflows into APEC economies in East Asia

(billions of United States dollars)

	1995	1996	1997	1998	1999	2000	2001
FDI inflows	70.16	83.18	90.61	82.07	93.35	127.51	89.97

Source: UNCTAD, *World Investment Report 1996-2002*.

FDI brings into a country a significant volume of financial resources that is complementary to managerial and technical knowledge from abroad. This complementarity between foreign technology and foreign capital plays a significant role in injecting a growth spurt in the recipient country. Nevertheless, some of the highest barriers to FDI in some East Asian countries have been in the areas of financial services. Hardin and Holmes (1997) construct an index of barriers

measured in equivalent units of ad valorem taxes and report that barriers to financial services could be as high as 95 per cent in the Philippines and 88 per cent in the Republic of Korea and Thailand. A similar index of barriers to FDI used by Petri (1997) implies that barriers in the area of services that include financial services in particular are about three times higher than in manufacturing and three to five times higher than in the primary sector in the East Asian countries. Clearly, the flow of FDI faces significant resistance when it comes to offering financial services.

The opponents of FDI-led financial integration argue that growth could be achieved as well with a better financial system at home, following an influential finding by King and Levine (1993a): "*better financial systems stimulate economic growth*". However, their result holds in a closed economy model. Consequently, the conclusion applies to the health of the global financial system as opposed to that of a country. It may be unwise, therefore, to control the flow of international credits that FDI brings into small open economies.

A political tension does exist, however, in the absence of a clear assessment of the contribution of FDI that facilitates regional financial integration relative to that of the liberalized national financial institutions when it comes to economic growth in a small open economy. The current political debate in APEC regarding the potential contribution of FDI in the small open economies of East Asia would, therefore, benefit from such a study.

This paper does just that. In particular, based on the theoretical framework modelled in King and Levine (1993a and 1993b), it examines empirically the contribution of FDI-led financial integration relative to the contribution of the privatized domestic financial institutions to economic growth in small open economies of APEC.

King and Levine use four special indicators to measure financial development. This paper identifies one of those indicators, the degree of privatization of the domestic financial intermediaries, to reflect most closely the development of the domestic financial sector. It uses a combination of the remaining three indicators to measure how easily the private sector can access the international credit market as a result of FDI. It then compares the relative contribution of the two parallel sources of financial development to economic growth. The findings from this comparative study offer significant evidence and important insights that are quite relevant for assessing the potential contribution of FDI in other small open economies of the developing world.

Following the introduction there is a brief review of the background literature. A discussion of the key variables, the methodology of the empirical

analysis and data sources follows. The main findings and concluding remarks are summarized in the conclusion. Appendix tables 1a to 3b contain a summary of findings from several regressions. Appendix table 4 includes the complete data set and the formulas for constructing the variables used in this paper.

II. THEORETICAL BACKGROUND

Recently, theoretical models have linked financial development to long-run economic growth not only through its positive effect on capital mobilization but also through its beneficial effect on the total factor productivity in an economy.

Greenwood and Jovanovic (1990) emphasize the benefits of economies of scale in the processing information on the marginal efficiency of investment that financial intermediaries introduce as they develop over time. Bencivenga and Smith (1991) highlight the role of diversification of liquidity risk. Financial intermediaries pooled savings in order to keep the level of liquid assets that investors prefer to leave in order to meet their unforeseeable liquidity risk to the minimum level possible. Consequently, it is possible to allocate a higher proportion of funds to finance innovative projects and this raises the total factor productivity or overall efficiency in the economy. Saint-Paul (1992) emphasizes the role of the financial intermediaries in diversifying the risks of investment through technological and financial diversification. In the model a financial sector reduces the risk of specialized investment and, hence, increases the expected return from it, encouraging a higher rate of saving and investment in fully specialized capital that raises productivity in the economy. Pagano (1993) concludes that greater efficiency among financial intermediaries implies that a higher proportion of available savings in an economy would be channelled to augment the economy's capital stock. King and Levine (1993b) argue that a more efficient financial intermediary sector channels a larger fraction of savings to finance a greater number of innovative projects. This increases the technological advancement rate and the growth rate of final goods.

The common experience in APEC includes increased privatization of banks and insurance companies due to a lower government share in the total assets of the domestic financial intermediaries, as well as increased internationalization of the credit market due to FDI. Interestingly, most of the member countries in East Asia allow the privatization process to go hand in hand with government policies designed to protect the profit of domestic financial institutions against international competition and, in particular, against FDI. These policies could help to perpetuate a high saving and low productivity state by limiting the number of innovators within the economy for reasons described in Stiglitz and Weiss (1981).

Stiglitz and Weiss (1981) argue that the probability of bankruptcy increases as the interest rate increases such that a bank's net expected return from additional lending may actually decrease if the lending rate increases beyond a maximum limit. This possibility may persuade banks to set their profit-maximizing interest rate below the market-clearing rate, creating an excess demand for credit and a rationing equilibrium in the economy. In particular, they argue that a higher interest rate lowers the number of prudent applicants via an adverse selection effect and encourages each applicant to undertake greater risks via a moral hazard effect. Consequently, as the interest rate increases the probability increases that borrowers will not pay back. Stiglitz and Weiss show that often it is likely that the optimum interest rate for banks could be high but may still lie below the market-clearing interest rate in a capital-poor country.

By the law of diminishing returns, capital-poor members of APEC are likely to have a relatively high level of marginal product of capital. Consequently, in a closed economy and, in particular, in the presence of political barriers against the flow of multinational credits to domestic firms, the market-clearing interest rate in the economy turns out to be higher than the optimum interest rate that maximizes the profits of the privatized financial intermediaries.

The privatized domestic financial intermediaries may be better than the Government in mobilizing savings, and a high interest rate may generate additional savings. However, the economy may still end up with many unsatisfied entrepreneurs who wish to make prudent investments but would simply not be able to find the necessary working capital to run their projects. Privatization, in this case, would lower economic productivity by creating "credit rationing" endogenously. Political barriers to FDI may help perpetuate this high saving and low productivity state.

The flow of multinational credit could act as a catalyst to shift this rationing equilibrium in two ways. First, it would increase the flow of international credit directly to the potential entrepreneurs, then increasing the relative proportion of entrepreneurs in a nation. Second, the use of relatively advanced technology by multinational companies may indirectly lead to an increase in the mean return and a possible reduction in uncertainty concerning the prospects of all domestic firms, which could now deal with these foreign companies, accompanied by a decrease in the deadweight loss for the whole nation that would be associated with bankruptcy.

In other words, FDI could raise entrepreneurial participation in the economy because it shifts the rationing equilibrium directly by providing access to credit from multinationals and indirectly by raising the mean returns of all projects, which

increases the number of successful projects receiving loans also from the privatized national banks. The activities of additional entrepreneurial activities, in turn, could increase overall macroeconomic productivity.

On the other hand, to the extent that the growth of FDI aggravates business fluctuations and hence uncertainty in returns to private investment in a small open economy, the probability of bankruptcy would increase for any given interest rate. In response, the privatized banks would confine their supply of credits to a smaller set of entrepreneurs. Also, some risk-averse entrepreneurs would not pursue their investment projects facing the increased uncertainty due to the presence of FDI. This scenario outlines a possible negative impact of FDI on economic growth.

Consequently, it is not clear from the abstract theoretical perspective alone how economic growth has come to APEC. We would need to design a model for empirical analysis to determine the importance of FDI relative to other competitive channels in transmitting growth to this regional grouping of economies.

III. THE MODEL

The model of analysis for this study follows the general framework of King and Levine (1993a and 1993b). However, it links national economic growth to two distinct channels of financial development. The twin channels refer to the domestic (or national) financial intermediaries versus global financial systems.

First, greater efficiency in the national financial system due to privatization enables innovators to have more capital given the amount that a nation saves. In a macroeconomic equilibrium, investment equals national savings plus capital inflows from abroad. Consequently, the increased flow of multinational credit that accompanies FDI also helps to boost total investment. Note also that under endogenous "credit rationing", such as described in Stiglitz and Weiss (1981), only the number of entrepreneurs who can get loans is limited; the size of the loan received by each successful applicant however is not limited. Hence, a greater privatization of banks may increase the total volume of investment in the economy, even if it does not increase the number of entrepreneurs. An increased flow of multinational credit, on the other hand, could increase both the size of the loan and the number of entrepreneurs who receive loans.

Let INV denote the ratio of investment to GDP, FI denote a financial development indicator and Z denote a vector of indicators of other aspects of economic development. Then, it follows from the above discussion that

$$(1) \quad \text{INV} = I(\text{FI}, Z), \text{ where } \frac{\partial \text{INV}}{\partial \text{FI}} > 0.$$

For a given capital-output ratio Ω , which also depends on the financial and other indicators of development, the growth rate GK of capital per capita directly varies with the difference between the investment rate INV and the sum of the population growth rate n and the depreciation rate DEP of capital such that

$$(2) \quad \text{GK} = \frac{\text{INV}}{\Omega} - (\text{DEP} + n), \quad \Omega = E(\text{FI}, Z).$$

For reasons discussed previously, greater access to the international credit market, facilitated by FDI, brings additional entrepreneurs into the economy. The activities of additional entrepreneurial activities, in turn, generate positive external effects to increase overall macroeconomic productivity¹ and hence the growth rate GTFP of total factor productivity. Consequently,

$$(3) \quad \text{GTFP} = F(\text{FI}, Z), \quad \frac{\partial \text{GTFP}}{\partial \text{FI}} > 0.$$

Along its transition path to the steady state, the growth rate of per capita output GYP is a function of GK and GTFP as follows:

$$(4) \quad \text{GYP} = \text{GTFP} + \alpha \text{GK}, \quad 0 < \alpha < 1,$$

where the parameter α measures the output elasticity of output with respect to capital in a Cobb-Douglas production technology.

The key independent variable for the empirical exercise consists of one of the four financial indicators (FI) that King and Levine (1993b) list: LLY, measured by the ratio of liquid liabilities to GDP; PRIVATE, measured by the ratio of total credit received by private enterprises to total credit in the accounts of the public and private enterprises; BANK, 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; and PRIVY, measured by the ratio of credit received by private enterprises to GDP. Each of these four financial indicators measures a unique aspect of financial development in a country. LLY measures the overall liquidity per unit of GDP. PRIVATE signals the distribution of overall liquidity between the private enterprises and the public sector. Unlike PRIVY, it does not measure the total volume of credit available to an economy per unit of its

¹ Bandyopadhyay (1997) models an economy where growth of total factor productivity due to technology diffusion increases with the relative proportion of the workforce that conducts innovative activities.

GDP. The two financial indicators BANKS and PRIVY play crucial roles in the East Asian context, and deserve special attention.

BANK measures the extent of private control in the domestic financial sector. Some regard BANK as an indicator of efficiency in the country's financial sector. However, in countries which block FDI, endogenous credit rationing could emerge to limit productivity-augmenting entrepreneurial activities. Consequently, part of the beneficial effects due to increases in BANK, as suggested by King and Levine, could be offset in countries that follow a policy of protection from international competition.

PRIVY refers to the total volume of multinational credit per unit of GDP that the business sector can access. In the East Asian subregion, FDI accounts for a significant share of PRIVY primarily because that subregion consists of small open economies. Consequently, PRIVY could be used as a quantitative measure for financial integration brought about by FDI in this subregion and, therefore, PRIVY serves as a proxy for FDI in this paper. In particular, it measures the contribution of FDI indirectly through the implication of FDI on the access of a country's private sector to multinational credit. Table 2 below provides a set of descriptive statistics to characterize the data.

Table 2. Descriptive statistics of the data

<i>Descriptive statistics</i>	<i>LLY</i>	<i>BANK</i>	<i>PRIVATE</i>	<i>PRIVY (proxy for FDI)</i>	<i>GYP</i>	<i>GK</i>	<i>GTFP</i>	<i>INV</i>
Mean	0.5786	0.8685	0.8964	0.5071	0.0360	0.0588	0.0184	0.2718
Median	0.4974	0.9095	0.8372	0.4895	0.0333	0.0462	0.0169	0.2565
Standard deviation	0.3108	0.1206	0.3498	0.2676	0.0255	0.0465	0.0173	0.0587
Maximum value	1.7819	1.0000	2.4016	1.1352	0.0819	0.1607	0.0500	0.4331
Minimum value	0.2269	0.4404	0.5214	0.1153	-0.0136	-0.0085	-0.0134	0.1816

On average, countries enjoy a high level of development. Also, the distribution has a slight upward bias, since the mean exceeds the median for all variables except BANK. Nevertheless, there is a wide variation in the data and, in particular, the variance is significantly large compared with the mean for each variable, indicating suitability of the data for conducting a successful empirical analysis. Table 3 reports how the four financial indicators are correlated.

Table 3. Pair-wise correlation coefficients among financial development indicators

<i>Correlation coefficients</i>	<i>LLY</i>	<i>BANK</i>	<i>PRIVATE</i>
BANK	0.5512 (0.1478)*		
PRIVATE	0.2182 (0.1569)	0.4038 (0.0660)*	
PRIVY	0.8784 (0.0785)*	0.1834 (0.0661)*	0.1809 (0.0454)*

Note: The values in parentheses are standard errors.

* Indicates significance at the 99 per cent confidence interval.

Note that LLY and PRIVY are highly correlated while BANK and PRIVY are weakly correlated. Recall that LLY is a measure of overall liquidity in proportion to GDP; PRIVY is a measure of the private access to the international credit market; and BANK measures the degree of privatization of the domestic financial sector. The high correlation between LLY and PRIVY, therefore, suggests that the source of a greater volume of liquidity in APEC is greater private access to the international credit market due to FDI. A low correlation between BANK and PRIVY could suggest that the national and international sources of finance are possibly not complementary but competitive substitutes. It is important to note that BANK relates to the assets of domestic financial intermediaries. It neither includes funds directed overseas by domestic financial intermediaries nor that channelled into the domestic economy from overseas financial intermediaries. Since the portion of financial services provided by FDI is significant in East Asia, BANK stands out as the most distinctive financial indicator of the state of the domestic financial sector. Table 4 below shows how the financial and growth indicators are correlated.

Table 4. Correlation coefficients between financial and growth indicators

<i>Correlation coefficients</i>	<i>LLY</i>	<i>BANK</i>	<i>PRIVATE</i>	<i>PRIVY</i>
GYP	0.3018 (0.0064)*	-0.0245 (0.0071)*	0.4587 (0.0048)*	0.3756 (0.0087)*
GK	0.3196 (0.0118)*	0.2275 (0.0118)*	0.4476 (0.0079)*	0.4123 (0.0146)*
GTFP	0.1867 (0.0043)*	-0.2334 (0.0044)*	0.3234 (0.0033)*	0.2250 (0.0059)*
INV	0.3401 (0.0321)*	0.2952 (0.0295)*	0.4741 (0.0217)*	0.4917 (0.0449)*

Note: The values in parentheses are standard errors.

* Indicates significance at the 99 per cent confidence interval.

Note that BANK is negatively correlated to both the growth rate of per capita income (GYP) and the growth rate of total factor productivity (GTFFP). Government policies that protect the domestic sector from foreign competition may be responsible for offsetting the positive effects of the privatization process for generating such significantly negative correlations. Another contributing factor could be inflation that typically follows privatization.

The privatization process may indirectly push the government increasingly to rely on seigniorage or inflation tax that typically retards economic growth. We note from table 5 that the variable GL, which denotes the amount of loans channelled to the government as a percentage of GDP, actually decreases as BANK increases.

Table 5. Results from regression of government loan on BANK

$$GL = 0.38494 (0.1180)^* - 0.31629 (0.1360)^* BANK$$

$$\text{Adjusted } R^2 = 0.1499 \quad \text{F-statistics} = 5.410$$

Note: The values in parentheses are standard errors.

* Indicates significance at the 99 per cent confidence interval.

Table 6 offers further evidence that a higher value of BANK also accompanies a higher ratio of currency to GDP, which leads to inflation that negatively affects productivity growth.

Table 6. Results from regression of BANK on the currency to GDP ratio

$$M1 = -0.2645 (0.1049) + 0.4933 (0.1182) BANK, M1 = \text{Currency/GDP}$$

$$\text{Adjusted } R^2 = 0.3697 \quad \text{F-statistics} = 17.43$$

Note: The values in parentheses are standard errors.

* Indicates significance at the 99 per cent confidence interval.

To isolate the contribution of BANK and FDI, therefore, one needs to perform appropriate regressions only after controlling for various macroeconomic factors that may lead indirectly to possible correlations. Following King and Levine (1993b), the study controls for independent effects on growth that arises from a set of five economic factors: Z_i , $i = 1, \dots, 5$ such that $Z_1 = \text{TRADE}$, measuring degree of openness; $Z_2 = \text{GOV}$, measuring the share of government expenditure in GDP; $Z_3 = \text{INF}$, measuring the inflation rate; $Z_4 = \text{LYO}$, measuring the log of the per capita GDP level in the initial year; and $Z_5 = \text{LSCH}$, measuring the log of the

secondary enrolment rate in the initial year. TRADE captures the positive effect of specialization from international trade. GOV captures the negative effect of the average tax burden. INF controls for the adverse effect of inflation tax. LYO factors out the autonomous differences due to diminishing returns as functions of the level of economic development measured by the initial per capita income. LSCH captures the positive effect of labour quality due to country-specific schooling.

VI. EMPIRICAL METHODOLOGY AND DATA

The growth theoretical framework of King and Levine as described above serves as a guiding principle for organizing the relevant data and the empirical experiment for this study. Let Y denote the set of growth performance indicators {INV, GK, GTFP, GYP}, which are the dependent variables. Let X denote the set of financial development indicators {BANK, PRIVY, LLY, PRIVATE}, from which a unique independent variable is chosen. Let $i = 1, 2, \dots, N$ denote the index for countries, and $t = 1, 2, \dots, T$ denote the index for time intervals. The specific restrictions on the data, following King and Levine (1993b), are given by using the following formula:

$$(5) \quad Y_{it} = \text{Constant}_i + \beta_Y^X X_{it} + \sum_{j=1, \dots, 4} \theta_Y^j Z_{it}^j + u_{it}, \quad Y \in G, X \in FI,$$

where, u_{it} describes an *i.i.d.* error that is normally distributed with zero mean and a finite variance. All variables for the study turn out to be integrated of order zero or stationary. Consequently, the causality implied by the estimated coefficients would be meaningful.

Note that, by (1), (2) and (4), the model allows the possibility that a better financial system at home, measured by a higher value of BANK, would be sufficient for ensuring economic growth. In other words, holding the effect of PRIVY (or FDI) constant, the model does not restrict the partial effect of BANK on the economic growth indicators from becoming positive and significant. If the partial effects of BANK on the growth indicators exhibit more positive and significant effects than PRIVY (or FDI) only then a small country may seriously weigh the merits and demerits of a policy of limiting FDI to protect national financial intermediaries. Consequently, the above experiment would be quite relevant when FDI competes with the domestic financial sector.

King and Levine (1993b) use 30-year averages between 1960 and 1990 but for a large set of countries around the world. The APEC sample contains only 21 economies and imposes a tight constraint for any empirical analysis. Consequently, the study includes 10-year averages for the period 1964-1993 to expand the data set. The data set has been compiled from various sources.

Information on financial indicators has been collected from the International Financial Statistics database of the International Monetary Fund, except for Hong Kong, China; and Taiwan Province of China. The information on Taiwan Province of China has been collected from *The Statistical Yearbook of the Republic of China*, published by Administrative Yuan, whereas that for Hong Kong, China, has been obtained from *Hong Kong Statistics* published by its Census and Statistics Department. After adjusting for missing information, 37 data points were found in the sample consisting of 3 time periods and 17 out of the 21 members of APEC, since the relevant information from Brunei Darussalam is not available.

The issue arises that a division of data into three time periods could bias the estimated coefficients of equation (5) that exclude time-specific effects. A full panel data study would be ideal to identify those effects. Unfortunately, the small sample size implies that the degrees of freedom would be too small to perform a meaningful panel data exercise. However, a modification of equation (5) that allows for a time effect λ can be used to get unbiased estimates of the coefficients as follows:

$$(6) \quad Y_{it} = \text{Constant}_i + \lambda_t + \beta_Y^X X_{it} + \sum_{j=1, \dots, 4} \theta_Y^j Z_{it}^j + u_{it}, \quad Y \in G, X \in FI$$

Some manipulations of equation (6) yield a new equation, which is similar to equation (5) but does not have any constant and is given by using the following formula:

$$(7) \quad \tilde{Y}_{it} = \beta_Y^X \tilde{X}_{it} + \sum_{j=1, \dots, 4} \theta_Y^j \tilde{Z}_{it}^j + \tilde{u}_{it}, \quad \text{where, } \tilde{Y}_{it} = Y_{it} - \frac{1}{N} \sum_{i=1}^N Y_{it},$$

$$\tilde{X}_{it} = X_{it} - \frac{1}{N} \sum_{i=1}^N X_{it}, \quad \tilde{Z}_{it}^j = Z_{it}^j - \frac{1}{N} \sum_{i=1}^N Z_{it}^j, \quad j = 1, \dots, 5.$$

Appendix tables 1a to 3b present results from regressions using equations (5) and (7).

V. MAIN FINDINGS

Appendix tables 1a and 1b compare the relative contribution of all four financial development indicators to economic growth that BANK, the indicator of financial development through the domestic channel, stands out as unique in its weakly negative impact on the growth rate of per capita output. To discern this negative impact on economic growth in more detail we focus on the results presented in appendix tables 2a and 2b. The first columns of those tables contain the same information as the second column of appendix tables 1a and 1b. The

information presented in appendix tables 2a and 2b show that BANK has a weakly negative effect on the growth rate of per capita output GYP, but has a stronger negative effect on the growth rate of TFP (or efficiency) GTFP. It does have a strong and positive effect on the investment rate INV and a weakly negative effect on the growth rate of capital GK. These findings isolate BANK as the incorrect indicator for growth-promoting financial development in APEC. These results, therefore, stand out in sharp contrast to the findings of King and Levine (1993b) which report BANK to have a significantly positive impact on all aspects of economic growth. The financial indicator LLY measures the amount of all loans, but it includes the stock of domestic currency as well. The latter does not correspond to the volume of financial services. Moreover, if the government has a tendency to finance its expenditure by increasing money supply following privatization, as suggested in a previous discussion of tables 5 and 6, then LLY would overestimate the beneficial aspect of financial development on growth after privatization. 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, capture the size of the financial development. The indicator PRIVY, on the other hand, can be expressed as a combination of a size indicator such as LLY as well as an efficiency indicator such as PRIVATE. Moreover, by definition, PRIVY accounts for the loans received by private firms only and therefore excludes the currency part of the liquidity that is related to seigniorage, which is a factor harmful for growth. By definition, M1 is included in LLY whereas PRIVY excludes M1 from LLY and adjusts the difference by the efficiency factor defined by PRIVATE. Precisely, PRIVY can be expressed as follows:

$$(8) \quad \text{PRIVY} = \text{PRIVATE} * (\text{LLY} - \text{M1}), \quad \text{where, M1} = \text{Currency/GDP.}$$

M1 represents the part of liquidity measured by LLY that is primarily utilized by the government. It follows that PRIVY primarily measures the flow of multinational credit from abroad through an efficient channel. The most important channel in this context would be the flow of FDI, which also represents an efficient channel because of it is guided by the profit motive. In other words, the definition of PRIVY captures the effect of the flow of FDI both on capital accumulation and on the growth of TFP. Therefore, PRIVY constitutes a relevant proxy for FDI as far as financial sectors are concerned.

Empirical findings presented in appendix tables 3a and 3b show that PRIVY has a significant positive effect on all four growth indicators in the APEC economies. The effect is transmitted through three channels. They are a higher real per capita physical capital growth rate, improved efficiency in other production factors and a higher investment rate. In other words, unlike the privatization at home that has

only mobilized capital but has not increased efficiency or per capita output growth rates, the flow of FDI from abroad has contributed to economic growth in APEC through all three channels.

Theoretical models suggest that financial development can take two forms, improvement in efficiency and increase in size. The findings reported above suggest that the privatization of domestic financial intermediaries indicated by BANK possibly measure only the latter. On the other hand, PRIVY, the proxy for FDI, induces both a greater volume of financial services as well as a better efficiency of allocation.

VI. CONCLUDING REMARKS

Government-owned banks typically fail to allocate resources efficiently. The privatization of banks improves efficiency in mobilizing savings as well as in channelling them to potential investors. The regression results presented at the end of this paper highlight, however, that the contribution of financial development to growth in the APEC economies has come mainly from greater access to the global financial system via FDI rather than privatization.

The results also highlight that the greater privatization of domestic assets has led only to a higher rate of saving and a higher rate of accumulation of capital, while the flow of FDI into APEC contributed to the increase in the overall efficiency and the resulting growth in the total factor productivity. The increased access to multinational credit has presumably increased the participation of entrepreneurs who would otherwise be credit constrained in the economy.

In addition, evidence presented in this paper indicates that the growth of national financial institutions by itself has lowered TFP growth while the growth of FDI-led multinational credit by itself improved TFP growth. This result is noteworthy, since it implies that barriers to FDI inflows into financial services for the protection of the interests of the domestic financial intermediaries would be a bad economic policy to follow in small open economies. Such a policy may mobilize capital but would impede productivity growth.

Thus, the study of APEC reveals that the concern of nationalist governments against financial integration led by FDI is ill founded. Such policies would likely lower the efficiency of resource allocation and hinder growth. Unfortunately, however, East Asian members of APEC maintain significant entry barriers to foreign providers of financial services. Consequently, the credit ratings of the domestic banks in those countries 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 that a key to economic growth for these East Asian countries is the appropriate usage of FDI for efficient allocation of resources, facilitated by a freer access to the international credit market.

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APPENDIX TABLES

Appendix table 1a. Equation (5)
Results from regressions of growth rate on financial
development indicators

X \ Y	GYP	GYP	GYP	GYP
LLY (National-FDI mix)	0.022456 (0.012911)*			
BANK (National)		-0.020165 (0.009860)*		
PRIVATE (National-FDI mix)			0.002725 (0.008780)	
PRIVY (Primarily FDI)				0.025887 (0.012307)**
CONSTANT	0.083039 (0.028092)***	0.083627 (0.027621)***	0.076768 (0.029759)**	0.101541 (0.025775)***
INF	-0.105152 (0.064491)	-0.137447 (0.061922)**	-0.126163 (0.067028)*	-0.072238 (0.064906)
TRADE	0.006879 (0.004454)	0.008930 (0.004040)**	0.009593 (0.004470)**	0.009745 (0.004189)**
LYO	-0.015732 (0.004113)***	-0.012696 (0.004225)***	-0.015118 (0.004315)***	-0.009889 (0.002926)***
Adjusted R ²	0.37	0.39	0.31	0.33
F-Statistics	5.21	5.60	4.23	5.41

Note: "a" refers to regressions using equation (5) that omits time-specific effects and "b" refers to regressions using equation (7) that allows for time-specific effects. Standard errors are in parentheses below estimated coefficients.

* Coefficient is statistically significant at the 90 per cent confidence interval.

** Coefficient is statistically significant at the 95 per cent confidence interval.

*** Coefficient is statistically significant at the 99 per cent confidence interval.

Appendix table 1b. Equation (7)
Results from regressions of growth rate on financial development
indicators, with time dummies to control for paradigm shifts

X \ Y	GYP	GYP	GYP	GYP
LLY (National-FDI mix)	0.032698 (0.010527)***			
BANK (National)		-0.017589 (0.007505)**		
PRIVATE (National-FDI mix)			0.009412 (0.013502)	
PRIVY (Primarily FDI)				0.061933 (0.011048)***
TRADE	0.007119 (0.003515)*	0.008094 (0.004024)*	0.06854 (0.005817)***	0.007636 (0.003270)**
LYO	-0.019041 (0.003422)***	-0.005342 (0.002910)*	-0.018389 (0.004240)***	-0.012055 (0.002233)***
Adjusted R ²	0.57	0.46	0.45	0.61
F-Statistics	12.92	7.20	7.5617	19.88

Note: "a" refers to regressions using equation (5) that omits time-specific effects and "b" refers to regressions using equation (7) that allows for time-specific effects. Standard errors are in parentheses below estimated coefficients.

* Coefficient is statistically significant at the 90 per cent confidence interval.

** Coefficient is statistically significant at the 95 per cent confidence interval.

*** Coefficient is statistically significant at the 99 per cent confidence interval.

Appendix table 2a. Equation (5)
Results from regressions of growth indicators on BANK

X \ Y	GYP	GK	GTFP	INV
BANK	-0.020165 (0.009860)*	-0.035421 (0.018813)*	-0.073815 (0.027348)**	0.061932 (0.023805)**
TRADE	0.008930 (0.004040)**	0.026765 (0.008375)***		0.035862 (0.009755)***
GOV		-0.175421 (0.138738)		
INF	-0.137447 (0.061922)**	-0.213898 (0.119144)*	-0.086522 (0.048993)*	-0.256106 (0.149503)*
LYO	-0.012696 (0.004225)***	-0.030248 (0.008942)***		-0.025730 (0.010201)**
LSCH		0.061173 (0.020008)***		0.047513 (0.022475)**
CONSTANT	0.083627 (0.027621)***	0.027142 (0.060942)	0.082948 (0.025531)***	0.272953 (0.066686)***
Adjusted R ²	0.39	0.334965	0.327133	0.330882
F-Statistics	5.60	4.022078	6.834127	4.560434

Note: "a" refers to regressions using equation (5) that omits time-specific effects and "b" refers to regressions using equation (7) that allows for time-specific effects. Standard errors are in parentheses below estimated coefficients.

* Coefficient is statistically significant at the 90 per cent confidence interval.

** Coefficient is statistically significant at the 95 per cent confidence interval.

*** Coefficient is statistically significant at the 99 per cent confidence interval.

Appendix table 2b. Equation (7)
Results from regressions of growth indicators on BANK,
with time dummies to control for paradigm shifts

X \ Y	GYP	GK	GTFP	INV
BANK (health of domestic financial system)	-0.017589 (0.007505)**	0.021890 (0.013543)	-0.027133 (0.012538)**	0.024745 (0.013505)*
TRADE	0.008094 (0.004022)*	0.025287 (0.007843)***		0.035155 (0.008176)***
GOV		-0.244252 (0.180474)	-0.124582 (0.052934)**	-0.67468 (0.148108)***
INF		-0.189988 (0.108330)*	-0.063169 (0.041230)	-0.261001 (0.115225)**
LYO	-0.005342 (0.002910)*	-0.019226 (0.010624)*		
LSCH		0.030777 (0.022833)		
Adjusted R ²	0.46	0.49	0.26	0.62
F-Statistics	7.20	6.65	4.82	14.71

Note: "a" refers to regressions using equation (5) that omits time-specific effects and "b" refers to regressions using equation (7) that allows for time-specific effects. Standard errors are in parentheses below estimated coefficients.

* Coefficient is statistically significant at the 90 per cent confidence interval.

** Coefficient is statistically significant at the 95 per cent confidence interval.

*** Coefficient is statistically significant at the 99 per cent confidence interval.

Appendix table 3a. Equation (5)
Results from regressions of growth indicators on FDI indicator

Dependent	GYP	GK	GTFP	INV
Independent				
PRIVY	0.025887 (0.012307)**	0.073735 (0.020954)***	0.030512 (0.009021)***	0.100019 (0.023300)***
TRADE	0.009745 (0.004189)**	0.023573 (0.007119)***		0.034216 (0.008221)***
GOV			-0.106512 (0.047314)**	-0.169752 (0.128069)
INF	-0.072238 (0.064906)		-0.074161 (0.047059)	
LYO	-0.009889 (0.002926)***	-0.012353 (0.005006)**	-0.005304 (0.002174)**	-0.012245 (0.005673)**
CONSTANT	0.101541 (0.025775)***	0.106213 (0.040649)**	0.080976 (0.018849)***	0.322785 (0.046785)***
Adjusted R ²	0.33	0.39	0.21	0.53
F-Statistics	5.41	8.61	3.46	10.99

Note: Standard errors are in parentheses below estimated coefficients.

* Coefficient is statistically significant at the 90 per cent confidence interval.

** Coefficient is statistically significant at the 95 per cent confidence interval.

*** Coefficient is statistically significant at the 99 per cent confidence interval.

Appendix table 3b. Equation (7)
Results from regressions of growth indicators on FDI indicator,
with time dummies to control for paradigm shifts

Dependent	GYP	GK	GTFP	INV
Independent				
PRIVY	0.061933 (0.011048)***	0.097527 (0.025133)***	0.030338 (0.008648)***	0.122926 (0.028022)***
TRADE	0.007636 (0.003270)**	0.024981 (0.007443)***		0.035326 (0.008207)***
GOV			-0.054136 (0.040609)	-0.227891 (0.131393)*
LYO	-0.012055 (0.002233)***	-0.013461 (0.005079)**	-0.007496 (0.001758)***	-0.012953 (0.005688)**
Adjusted R ²	0.61	0.48	0.43	0.60
F-Statistics	19.88	11.73	9.90	14.67

Note: Standard errors are in parentheses below estimated coefficients.

* Coefficient is statistically significant at the 90 per cent confidence interval.

** Coefficient is statistically significant at the 95 per cent confidence interval.

*** Coefficient is statistically significant at the 99 per cent confidence interval.

Appendix table 4. Complete data set

COUNTRY	LLY*	BANK*	PRIVATE*	PRIVY*	GYP*	GK*	GTFF*	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	
TAIWAN PROVINCE OF CHINA I	0.4020		0.7183	0.3186	0.0638	0.1107	0.0306	0.2585	0.4930	0.2009	0.0453	7.1846	3.5978	
TAIWAN PROVINCE OF CHINA 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	
TAIWAN PROVINCE OF CHINA 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, CHINA 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, CHINA 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, CHINA 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
REPUBLIC OF 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
REPUBLIC OF KOREA II	0.3282	0.7623	0.8843	0.3843	0.0588	0.1001	0.0287	0.2978	0.6784	0.1355	0.1431	7.1981	4.0254	0.1083
REPUBLIC OF 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	-0.0034	0.0097	-0.0063	0.2130	0.3018	0.0851	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

Appendix table 4. (continued)

COUNTRY	LLY*	BANK*	PRIVATE*	PRIVY*	GYP*	GK*	GTFF*	INV*	TRADE*	GOV*	INF*	LYO*	LSCH*	M1/GDP
NEW ZEALAND II	0.2670	0.7994	0.6945	0.1723	0.0035	0.0245	-0.0038	0.2554	0.5696	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
PHILIPPINES 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	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	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	0.8488	0.0492	0.1607	0.0010	0.3921	3.4056	0.1131	0.0245	8.9977	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

Note: I indicates the period 1964-1973; II the period 1974-1983; and III the period 1984-1993.

* Data source: International Financial Statistics of International Monetary Fund.

+ Data source: World Data published by World Bank.

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

KEY FORMULAS:

LLY is calculated by dividing the sum of IFS line 34 and line 35 by the GDP for each year. Then, 10-year averages are calculated. For Taiwan Province of China and Hong Kong, China, LLY is calculated by dividing M2 by GDP.

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 10-year average. There is no information on BANK for China; Taiwan Province of China; Hong Kong, China; and Singapore.

PRIVATE is calculated by dividing IFS line 32d by the sum of IFS line 32a to 32d and 32f and 10-year averages are used to construct data points. There is no information on PRIVATE for Hong Kong, China; and Indonesia.

PRIVY is calculated by dividing IFS line 32d by GDP and 10-year averages are used as data points. There is not enough information to construct PRIVY for Hong Kong, China; and Indonesia.

Information on the five country-specific control factors comes from World Data.

TRADE is the calculated by dividing the total value of exports and imports by GDP and 10-year averages are used to construct data points.

GOV is the amount of government expenditure divided by GDP and 10-year averages are used.

INF is constructed by using the formula $[\ln(Dt+10) - \ln(Dt+1)]/10$

The information on growth indicators are collected from World Data published by the World Bank unless specified otherwise.

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

$GK = [\ln \text{ real per capita Capital Stock}_{t+10} - \ln \text{ real per capita Capital Stock}_{t+1}]/10$. The information on real per capita physical capital stock is from Nehru-Dhreshwar *Rivista de Analysis Economic* (1993) 108(1):37-59 <<http://www.worldbank.org/html/prdgm/grthweb/ddnehdha.htm>> for all economies except Taiwan Province of China; Hong Kong, China; and Papua New Guinea. For Taiwan Province of China, the information is from *The Statistical Yearbook for the Republic of China*. For Hong Kong, China; and Papua New Guinea, the information is collected from King-Levine *Capital Fundamentalism, Economic Development and Economic Growth*, Carnegie-Rochester Conference Series on Public Policy Vol. 40 (1994). <<http://www.worldbank.org/html/prdgm/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 those 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 thousands and so it is multiplied by 1,000 for adjustments.

GTFP is constructed by assuming $\alpha = 0.3$, following King-Levine (1993b), such that by (4) $GTFP = GYP - 0.3 GK$.

GL denotes the ratio of loans channelled to government to GDP.

TL denotes the ratio of total loans to GDP.

Note: GL = TL - PRIVY and TL = PRIVY/PRIVATE.