Journal of Management

Assumption University

Published by:
Assumption University
Hua Mak, Bangkok 10240, Thailand.
Tel: 66 (0) 2300 4543 - 53
Fax: 66 (0) 2300 4563
URL: http://www.au.edu

ISSN: 1686-0039
Vol 1, No 1
August, 2003

JOURNAL OF MANAGEMENT

Vol. 1 No. 1 **September 2003**

Message from the President Emeritus

I am very happy to learn that the Faculty of Business Administration is planning to bring out a publication to be called *The Journal of Management* in the name of Assumption University. As it is widely known here in Thailand and many parts of the world this University not only specialises in business disciplines, but also all our key programmes and processes are related to and focused on business subjects. It is therefore fitting that we have a journal of our own dealing with principles, policies, precepts as well as pragmatic aspects of problems and issues encountered and solutions and resolutions enunciated or hammered out in such matters.

Business administration which is synonymous with economic management IS a wide-ranging, all-encompassing field of study and theories, thoughts, discussions, operations, and activities connected therewith are of an endless, unceasing and inexhaustible nature. Those venturing into this vast and complex domain including publications such as the proposed Journal of Management are assured of a regular stream or flow of materials for writing, reviewing, cogitation and reflections and they need not worry at all about the drying up or paucity of issues and points to be indulged in or dealt with to exercise our minds or stoke our thoughts.

I most sincerely wish you success and satisfaction but allow me to remind you that you are taking on a huge task and that you must work very hard and hone your skills to be able to maintain high standards and meet the challenges that will surely come your way in the course of your duties.

P. M. Komolmas

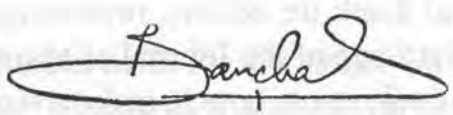
Prathip Martin Komolmas, FSG, Ph.D.
President Emeritus

Message from the President

Thailand as well as the rest of Southeast Asia, is in the process of recovering from the financial crisis of 1997. The problems that led to the crisis are complex and have required a great deal of planning, restructuring and development of new strategies to strengthen the foundations of business in the Asian region. Changing the way we have done business for generations is difficult, but necessary. As we ascend to our previous economic levels and beyond, this time we have to build for long-term security in our businesses and make certain our foundations can stand the test of time.

It is important to understand the part that business management plays in the overall success of an enterprise. In our search for understanding, the School of Management has inaugurated this first issue of the Journal of Management. In it we expect to disseminate lessons learned, strategies for better management and studies of the experiences of others in succeeding in business. We trust that the Journal of Management will serve the business community in its growth and strengthening for the future.

Special thanks are acknowledged to the School of Management team who has worked diligently to bring this journal to fruition. I congratulate the School of Management, its staff and students both for what they have already accomplished and for what will come in the future.



Rev. Bro Bancha Saenghiran, f.s.g., Ph.D.
President

Message from the Vice-President for Academic Affairs

I am proud to see that the School of Management is offering its first issue containing a wealth of researched information pertaining to various aspects of business management. In its varied topics it highlights the great variety of concerns shown within the modem academic world and provides readers glimpses of what is current in the field.

The twenty-first century brings with it a phenomenal transformation of the socio-economic structure of business. We are witnessing the full bloom of the knowledge-based society in which management and technology are recognized as the engines of economic growth. Research and development have gained increased prominence among all human endeavors. Through research and development, knowledge will be generated, disseminated and utilized to benefit society at a pace previously unimagined.

It is our University's objective to engage in the forefront of global research as well as in areas of significant relevance to Thailand, as a developing nation, in the knowledge-based economy. This journal is a coherent attempt to reaffirm our commitment to our mission as educators of future business leaders. We hope that this publication will serve as a useful reference to benchmark our progress toward this goal.

I congratulate and thank the editors, reviewers, and contributors of articles in this first issue of the Journal of Management. May I urge all of you to creatively contribute to make it worthy of AU. My best wishes are with you in all your endeavors.

Rev. Bro. Visith Srivichairatana, F.S.G., DM
Vice-President, Academic Affairs.

Statement from the Managing Editor

We are pleased to introduce the first issue of the Journal of Management. This journal, which will be published twice a year, brings about an exchange of ideas and opinions about business and provides an essential tool for management scholars. The journal is open to a variety of perspectives, including those that seek to improve the effectiveness of management and organizations.

Our first issue includes four working papers authored by full-time lecturers in the School of Management. Acharn Waranya's paper performs a comparative analysis on structures of demand for money before and after the financial crisis in four Asian countries. The second paper by Archarn Amonrat is an investigation of the mediating role of IT in the relationship between entrepreneurial intensity and new product success. Integrating cultural differences, she also presents a conceptual framework showing the relationship among the major constructs. Archarn Gour Saha's paper is an investigation into the financial structure of manufacturing sectors of Thailand before and after the financial crisis. His findings are important, particularly for financial analysts who are concerned with changes over time in the financial statement items. Finally, Archam Francis Lai's paper examines the current methods of valuation of property with natural resources. He urges valuers to evaluate the economics of environmental quality and become members of the emerging group of "green valuers".

We thank all who submitted articles for this issue. We hope you find them useful as well as informative and We urge you to send manuscripts in for our next issue. We express our thanks to the members of the Editorial Board and all the reviewers who have provided direction, support, expert guidance, and inspiration, the staff of the Information Centre, and Khun Narin Chomchinda, who helped in moving this idea from conception to production.

Patricia Arttachariya, Ph.D.
Managing Editor

JOURNAL OF MANAGEMENT

Volume 1, Number 1 (September-March, 2003)

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CHANGES IN STRUCTURE OF DEMAND FOR MONEY IN FOUR CRISIS AFFECTED ASIAN COUNTRIES[1]

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ABSTRACT

This paper performs a comparative analysis on structures of demand for money before and after the 1997 Asian Crisis by constructing cointegration and error-correction models, utilizing monthly observations under an open-economy framework. The findings postulate the differences in the nature of long-run relationships in periods before and after the Asian crisis, as well as speed of adjustment towards equilibrium among ASIA-4: Korea, Malaysia, the Philippines and Thailand. Interest rate policy interventions have no influence on short-run relationship of demand for money function.

Introduction

During the 1980s, remarkably successful economic performance in East Asian countries[2] used to be one of the contemporaneous economic issues. Monetary development was believed to be a factor of contribution (Dekle and Pradhan, 1997). However, the evidence from the 1997 Asian Crisis (hereafter, the Crisis) has shown that some defects in financial policies could result in vulnerabilities to a financial crisis and could turn an economy into a recession. When the onset of the crisis is too sudden and severe, it may cause dramatic structural changes. Demand for money is one of the issues that policy makers should pay attention to in order to select appropriate adjustment on monetary policy actions. However, in the five most severely affected countries, namely, Indonesia, Republic of Korea, Malaysia, the Philippines, and Thailand, the changes in structure of demand for money after the crisis have not yet been clearly investigated although they already have recovered during 1999 to 2000.

There are extensive empirical studies on modeling and estimating the demand for money in the five most affected countries before the Crisis.[3] One of widely employed approaches is the error-correction model (ECM), which allows investigation on long-run relationship and short-run adjustment among cointegrated nonstationary variables. However, due to insufficient quarterly data[4] available, similar attempts have not yet been made for an analysis of the period after the crisis.

Taking into consideration the changes in the structure of the long-run relationship and short-run adjustment of demand for money in four Asian countries, comprising Korea, Malaysia, the Philippines and Thailand (hereafter, ASIA-4)[5] after the Crisis, this paper tries to develop ECMs by applying monthly data, similar to the initiative of Sriram (1999b).

Literature Review

The standard functional form of long-run demand for money illustrates the relationship between demand for money and two main determinants: scale variable[6] and opportunity costs of holding money, which, basically, comprises the own-rate of money and rate of return on alternative assets. With the assumption of unity price elasticity of nominal money balances,[7] money is usually specified in real terms.

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[1]"This article is modification of a paper on "An Empirical Analysis of the Changes in Structure of Demand for Money after the 1997 Asian Crisis: Evidence from ECM Models," presented at the 3rd Special Study Meeting of Japan Society for International Development on 29 June 2002 in Japan.

[2]They were regarded as "High Performance East Asian: by World Bank (1993).

[3]Examples are Sriram (1999b), Dekle and Pradham (1997), Fukasaku and Martineau (1996), Hataiseree (1996).

[4]Particularly the GDP which are proxy variables for real sector.

[5]The analysis has to exclude the case of Indonesia due to lack of qualified monthly proxy variable for real sector.

[6]Scale variable is a proxy variable representing economic activity.

[7]This implies demand for money balance changes proportionally to the change in price level. See Sriram (1999a), pp. 28.

M/P = f(Scale Variable, Opportunity Costs of holding money) (1)

where M/P is real demand for money. This general function of demand for money allows the integration of money demand theories that were derived to explain basic functions of money. Following the quantity theory of money demand that assumes transactions velocity of circulation and volume of transaction are constant, the money demand is discussed in real terms. The relationship with scale variable reflects the medium-of-exchange function of money as recognized in classical theory. Cambridge economists focused more on the role of wealth and implicitly introduced the opportunity cost of holding money in terms of interest rate in determining the demand for money. Keynesian theory of liquidity preference, emphasizing on the store-of-value function, states the speculative motive in holding money or bonds. Other post-Keynesian theories suggest other sources of opportunity costs.

In the simplest form when data are not available, GDP (either real or nominal) and market rate are employed, omitting the own-rate with the assumption of narrow money.[8] However, for a stable demand function, inclusion and selection of variables is necessary in model specification.

According to the quantity theory of money demand, people hold money purely for transaction purpose. Demand for money, therefore, becomes a function of income. However, the idea becomes inapplicable when one considers the case of a highly developed economy in which financial intermediaries are active in issuing several forms of financial assets with a high degree of liquidity. More flexibility allows people to maximize their return on holding financial assets. This concept complies with the idea of Asset theories. For realistic determination of demand for money, transaction, speculative, and precautionary motives should also be incorporated.

When the economy is relatively closed, rate of return on foreign assets is normally neglected. The studies on data before the late 1980s tended to exclude the role of foreign assets.[9] Post-world war II when the fixed exchange rate regime under Brettonwoods gold standard system was abolished, the floating exchange regime brought about the re-examinations on demand for money models.[10] Particularly in small open countries, the influences of foreign assets have widely been included in the model specification of demand for money.[11] The evidence from the Crisis also suggests that ASIA-4 should be considered as small open economies in which return on foreign assets plays a significant role. Both foreign interest and expected rate of depreciation should be incorporated in the demand for money functions as elements of opportunity costs of holding money.

The long-run demand for money function can be changed, rather than stable as claimed by Ericsson (1998) that financial innovation and deregulation were the sources of changes in opportunity costs. Simmons (1992) also stated that policy shocks such as shift in exchange rate regimes possibly affected the structure of demand for money function in industrial countries.

3. Model Framework

Most of studies applied log-linear form to the standard function of the demand for money by introducing log operations to real money aggregate, scale variable and inflation rates, and maintaining interest rates as levels. The evidence of the Crisis implies the nature of small-open economy in which return on foreign assets has a significant influence on demand for real money. Therefore, the standard function of demand for money in open-economy to be applied to all sets of data will include proxies for return on foreign assets. The long-run demand for money is specified as follows:

$$M = \alpha_0 + {}_1SCALE + {}_2OWNR + {}_3YDA + {}_4INF + {}_5YFA + {}_6DPR + \epsilon \quad (2)$$

where M = ln(money aggregate/CPI), where CPI is consumer price index;

SCALE = ln (industrial production index or manufacturing index);

OWNR = interest rate representing own-rate;

YDA = annual yield on alternative domestic assets;

INF = annualized inflation rate;

YFA = annual yield on foreign alternative assets;

DPR = annualized rate of exchange rate depreciation; and

ϵ = error-term.

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[8]This is justified when the demand deposit does not provide interest, unavailable data or low variation in the long term.

[9]See Chow (1996), Friedman (1959), Judd and Scaddling (1982), Gupta and Moazzami (1989) and Miller (1991).

[10]See Arize (1994).

[4]Particularly the GDP which are proxy variables for real sector.

[11]See Arize (1991), Leventakis (1993), Darrat (1986), and Simmons (1992).

SCALE represents a scale variable, of which coefficient is expected to be positive to reflect the conventional theories concerning demand for money. Under open-economy framework, three types of assets are considered: domestic money, domestic assets, and foreign assets. Since OWNR is the own-rate, its sign of coefficient is expected to be positive. On the other hand, a movement of YDA, INF and YFA should be in an opposite direction with the demand for real money. The expected negative signs of their coefficients will reflect the substitution effects in portfolio of assets that may comprise choices of money, other domestic financial assets, domestic real assets, and foreign financial assets.

Dealing with nonstationary time series, cointegration technique is necessary. For multivariable analysis, the cointegration vector method developed by Johansen (1988), applying Vector Autoregressive (VAR) model is widely employed because it enables the analysis on the error structure of system, which regression estimates cannot.[12] However, since our study covers four countries with the main aim of comparing the overview of their structural changes, the depth of the analysis has to be curtailed. For such tradeoff, two-stage Engle and Granger (1987) (EG) approach[13] is selected.

Before performing the two-stage EG approach, stationarity property of individual time series is investigated. The Dickey-Fuller (DF) tests and Augmented Dickey-Fuller (ADF) tests on autoregressive (AR) models with constant and trend components are conducted. The first stage of the EG approach is to estimate long-run regression by Ordinary Least Square (OLS) technique. With such a static regression, long-run coefficients of explanatory variables in demand for money function are derived. The next stage is to test the stationarity of the error terms of the cointegration regressions to assure the long-run relationship among nonstationary time series. Both DF and ADF tests on AR models of the error time without constant and trend components are conducted.

After confirming long-run static relationship by the cointegration regression analysis, the nature of short-run dynamic adjustment can be investigated by constructing ECM models. As summarized by Miller (1991), the process is to regress the first difference of proxy variable of demand for money, M, onto lagged values of the first-difference of all the remaining variables plus the lagged value of the error-correction terms (or the error term from the cointegration regression) and include dummy variables. The standard ECM models to be applied to all sets of time series is:

$$\Delta M_t = \beta_0 + \sum_{i=1}^{n1} \beta_{1i}\Delta M_{t-i} + \sum_{i=0}^{n2} \beta_{2i}\Delta SCALE_{t-i} + \sum_{i=0}^{n3} \beta_{3i}\Delta OWNR_{t-i} + \sum_{i=0}^{n4} \beta_{4i}\Delta YDA_{t-i} + \sum_{i=0}^{n5} \beta_{5i}\Delta INF_{t-i} + \sum_{i=0}^{n6} \beta_{6i}\Delta YFA_{t-i} + \sum_{i=0}^{n7} \beta_{7i}\Delta DPR_{t-i} + \beta_8 EC_{t-1} + \beta_9 DLIB_t + \beta_{10} DINT_t + \beta_{11} DEX_t + \mu_t \quad (3)$$

where EC refers to error-correction term or in equation (2), D refers to first difference value and refers to stochastic term. Policy intervention dummy variables are classified into DLIB, indicating financial liberalization policy; DINT, indicating interest rate policy; and DEX, indicating exchange rate policy. The other variables are defined previously. The coefficients of the lagged value of the error-correction terms reveal the speed of adjustment towards equilibrium.

Data Issues and Variable Selection

To capture the changes in characteristics of demand for money before and after the crisis, monthly data is selected to allow enough number of observations. The time-series of each variable from January 1991 to the most currently available monthly data are divided into two periods, pre- and post-crisis. The beginning period of 1991 is chosen due to unavailability of data prior to that. The pre-crisis period is defined as the period from January 1991 to the month prior to the last month of authorities' intervention. It is widely recognized that the Crisis started from foreign exchange market. In case of non-free-floating exchange rate regimes, when the authority discontinued defending its domestic currency from severe speculations or capital flights, normally because of the depletion of international reserves, the deep depreciation caused severe impacts to an economy. Therefore, it is justified to define the month of abolition of currency defense as the beginning of the Crisis. The abolition happened in November 1997 for Korea, and in July 1997 for Malaysia, the Philippines and Thailand (Berg 1999)

For post-crisis period, since it is mutually accepted that from 1999 all ASIA-4 have already recovered, January 1999 is chosen as the beginning month of the

[12]See Johnansen (1988).

[13]See comparative analysis on the forecast accuracy between two-step and multi-step estimation in Engle and Yoo (1987).

post crisis.[14] The period of the onset of the Crisis is excluded from the analysis.

Money aggregate

Broad definition of money aggregate, M2,[15] is chosen in this analysis as a reflection of the financial innovation in ASIA-4 during the 1990s. All sets of time-series data, except for a case of Korea, are obtained from the summation of "Money" and "Quasi Money", line 34 and 35, in several issues of the *International Financial Statistics (IFS)*, IMF. The M2 of Korea is taken from the website of Bank of Korea.

Scale variable

Choices of scale variable are limited due to the unavailability of monthly-recorded data. In the case of Korea, Malaysia and Thailand, the only proxy variable for real sector available on a monthly basis is the industrial production index. For the Philippines, it is the manufacturing production index. All of the time-series, except for Thai industrial production index, are obtained from the *IFS* CD-ROM, IMF, together with several issues of its monthly review bulletins. The time-series of Thai industrial production index is obtained from the Bank of Thailand's website. The year1995 is the base year for all series.

Opportunity costs

Based on the *IFS*, the ratio of quasi-money to M2 in1995 ranged from 68% to 88% among ASIA-4 (Korea: 75%, Malaysia: 68%, the Philippines: 80%, and Thailand: 88%). This postulates the significance of deposits rate to be a proxy for own-rate of holding money.

As for the rate of return on alternative domestic assets, YDA, Treasury bill is usually selected as a proxy in specifying demand for money because of its high degree of liquidity and risk-free characteristics. However, the variable is not applicable in the cases of Korea and Thailand. In Korea, there is no issuance of Treasury bill. Between interest rate on commercial paper and the yield on Treasury bond, the former is preferable when degree of liquidity is the main concern. Moreover, since the Treasury bond was first issued in middle of the 1990s, the data is not applicable for the full analysis. Similar problem also exists in the case of Thailand. Due to consecutive budget surplus, Treasury bills and bonds had not been issued frequently. The trading volume had been small and resulted in stagnant yields.[16] Therefore, the yields on Treasure security become an unqualified proxy. Candidates for Thai YDA are interest rate on promissory notes issued by finance companies, and the market rate of return on stocks. The former is inappropriate, due to the fact that during the Crisis, 56 finance companies have collapsed. This drastically affected the share of its financial assets in the market. The market rate of return of stocks, therefore, becomes preferable. Its proxy is stock index at the end of each month announced by the Stock Exchange of Thailand (SET). The annualized rate of return on stocks is calculated by:

$$TYDA = [\ln (SETIND_t) - \ln (SETIND_{t-1})] \times 12 \quad (4)$$

where TYDA refers to the annualized yield on domestic alternative assets in Thailand, and SETIND refers to end-of-month stock index announced by SET.

Next, similarly implied rate of inflation is calculated by:

$$INF = [\ln (CPI_t) - \ln (CPI_{t-1})] \times 12 \quad (5)$$

where INF refers to annualized rate of inflation, and CPI refers to Consumer Price Index.

For a closed-economy, the proxy variables mentioned above may be sufficient for demand for money specification. However, for ASIA-4, an open-economy framework seems to be more appropriate when we consider the degree of international trade involvement and capital control. Residents are permitted to hold foreign deposits as well as to hold foreign currencies without approval. Their decision may be sensitive to the changes in deposit rates in industrial countries that are main trading partners. The proxy variable of yield on alternative foreign assets, YFA, therefore, is the weighted average of deposit rates in Canada, Germany, Japan; rate

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[14]There are different definitions for the recovery but none of them clearly stated the exact month of recovery. See more discussion in Hermandez and Montiel (2001), and Park and Lee (2001).

[15]Varying the definition of money aggregate may help improve the result of model specification. However, due to space limitation, the scope of the analysis covers only M 2.

[16]As suggested by Simmons (1992), including time-series of a stable interest rate will not improve the quality of model specification.

of 3-month certificate of deposit in the United States; and yield on Treasury bill in the United Kingdom.[17] The process starts from setting a base year, in this case 1995, then calculating weights w_j. Following the concept of Arize (1994), nominal GDP in terms of US dollar at 1995 of an individual country is divided by the summation of the figures of all countries as follows:

$$w_j = \frac{\text{GDP at 1995 of country j}}{\text{Sum of 5 industrial countries}} \quad (6)$$

Then,

$$YFA_t = w_j i_{j,t} \quad (7)$$

where $i_{j,t}$ represents deposit rate in each country at time t.

One more important item in an open-economy framework is the expected rate of depreciation of exchange rate. Its proxy is calculated by:

$$DPR = [\ln(e_t)-\ln(e_{t-1})]x12 \quad (8)$$

where e refers to exchange rate of domestic currency per US dollar.

Dummy Variables

In order to improve the result of model specification, three types of policy intervention dummy variables are deliberately constructed.[18] First, DLIB denotes dummy variable for policy regarding financial liberalization, covering all aspects except for interest rate and exchange rate regime. The examples are the Acceptance of obligations of Article 8 of the IMF, promulgation of any acts that encourage financial deepening, deregulation on financial institutions, liberalization on capital movement and liberalization of capital market. Starting from the month that the policy is announced, value of one is assigned in the time series of the dummy variable DLIB. On the other hand, any significant imposition of guideline, regulation or restriction in the opposite direction implies an interruption in the liberalization process. Examples are the imposition of ceiling on capital transfer, a rise in minimum risk-weighted capital ratio requirement and a request to commercial banks to stop selling domestic currency to nonresidents. Value of zero is assigned in the time series of DLIB when there is such an interruption. The figure remains the same unless countering policy emerges. Generally policies implemented in a particular period should comply with one another, announcement of a countering policy implies change in direction of intervention. Therefore, it is justified to treat all liberalization-oriented policies equally in constructing dummy variable. This is also to avoid redundant dummy variables in the models.

The second policy intervention dummy variable is DINT. It depicts the changes in the policy on interest rate. Assignment of figures in the time series is based on the same concept as that of DLIB. For instance, when there is an abolition of ceiling on interest rate, the value of one is assigned in the time series continuously until an interest-rate- oriented restriction is announced and the value becomes zero.

The last one is DEX, which represents a dummy variable for exchange rate regime. The value of one is assigned in the period of floating exchange rate regime (regardless of specific type of flotation), and zero otherwise.

It is worth noting that if there is no interruption in the time series of any dummy variable in a certain period of concern, the dummy is dropped out to avoid the zero-matrix error in the model estimation. For instance, DEX disappears from the models of pre-crisis and post-crisis periods because there is no change in the exchange rate regime in each period although the regimes are different in each period.

Empirical Analysis

The general framework towards obtaining the error-correction models involves three main steps. Firstly, the orders of integration for each of the variables has to be investigated in order to ascertain the stationary property. If variables are integrated at different levels, the next step is to apply two-stage EG cointegration technique to examine the characteristics of long-run relationship among variables. The last step is to construct the error-correction models that enable the analysis on the short-run dynamic adjustment behaviors of variable. Through the procedures towards obtaining ECMs, EViews program, version 3.0, is utilized.

Unit Root Tests

In this paper, both Dickey-Fuller and Augmented Dickey-Fuller (ADF) tests are conducted to examine the stationarity of individual time series. Seasonally adjusted data are used with the purpose of minimizing the number

[17]There is no deposit rate in the United States and the United Kingdom.

[18]However, due to limited space, the details cannot be presented here, but are available upon request.

of explanatory variables. In the ADF tests, the number of lags imposed in the test follows the Schwert's rule, which suggested that a longer lag was preferable to ensure white noise residuals in the fitted equation (Patterson, 2000), as follows

$$\text{Lag} = \text{Int}\,[(12/100^{1/4})T^{1/4}] \qquad (9)$$

where Lag refers to lag length suggested, Int refers to integer part of the product in the parenthesis without rounding, and T refers to numbers of months in the time series.

Tests for stationarity for the period from 1991:1 to 2001:10 were performed separately.[19] The DF tests show that all time series are either level stationary or trend stationary. However the ADF tests for proxy of scale variable of Malaysia and that of demand for money, M, of the Philippines and of Thailand do not suggest the same conclusion. The first difference probably induces stationarity if lag length is already appropriate. Over-differencing is detected when we perform the DF and ADF tests on second-differences of those variables. It is found that adjusting lag length by one period (i.e. plus or minus one month) can yield a compatible conclusion, except for the M of the Philippines. A further analysis is carried by changing the proxy of the demand for money in the Philippines to be M1. However, M1 was not found as a better variable in terms of stationarity and degree of coefficient of determination, R^2. Therefore we do not change or drop the variable from the model.

Cointegration Regressions

Since all variables are not I(0), cointegration technique should be conducted if the long-run relationship is to be investigated. As explained earlier, this study applies two-stage EG approach. Table 1 reports the results of cointegration regression estimation. At the end of the table, Adjusted R^2, Durbin-Watson (D-W), DF and ADF test statistics are also presented.

Although D-W statistics are low in some regression, the results of DF tests indicate that all cointegration regressions for periods are stationary in every country. However, the ADF tests fail to reject the null hypothesis in cases of Malaysia in post-crisis and the Philippines in both pre- and post-crisis periods. Even so, it is too pessimistic to deny the possibility of truly cointegrated relationships. Appropriate lag length is an assumption behind the power of the ADF test against DF test when serial correlation is suspected. The true lag length is actually unknown. Leaning on Schwert's rule, a uniform lag length is set for cases of the same period because the number of adjusted observations is not greatly different. It is worth noting that on case-by-case basis, varying the lag length for one period (plus and minus one lag) can result in a change in conclusion. The verification is carried on the nonstationary-by-ADF tests time series. The cointegration regression of Malaysia in post-crisis becomes stationary at the lag length of 7 and at the lag length of 9 for the Philippines in pre-crisis period. However, despite the adjustment of lag length, ADF tests on full period still fail to reject the null hypothesis of nonstationarity. This implies a high potential of spurious relationships among the variables.

The contradicting stationarity characteristics among the three periods of the same country and among the countries at particular periods are worth investigating. One purpose of presenting the full period in which the data during the onset of the Crisis is incorporated is to describe how seriously the impacts of the crisis cause a change in stationarity of the long-run demand for money function of each country. Moreover, it helps describe the compatibility of stage of macro economy and the demand for money. If the stage of the stationarity for the full period resembles that of the pre-crisis period, i.e. both are stationary, this means the shocks do not cause a breakdown in the time series of error term as severely as the case of contradict stages.

On the other hand, there may be a contradicting stage of stationarity in which stationarity is found in the time series of error time in the pre-crisis period, but not in the full period. This implies that the shocks may be so severe that it causes a structural break in the long run relationship.

For the scenario in which stationary cointegration regressions are found in full period and pre-crisis period, it may cause some doubts when post-crisis cointegration regression is nonstationary. Since the period of the onset of the crisis is already excluded from the post-crisis period, the stationarity is expected. The nonstationarity may arise from the change in nature of relationship among the variables due to abrupt policy changes, affecting the signs and coefficients of each independent variable, and the specification of the equation, as well as on the error term. The other possible reason is the inappropriateness of the beginning point of the post crisis period. If it is true, it implies that the perception of an economic

[19]The results are available upon request.

recovery in general cannot be a source of reference to determine the appropriate starting point of post-crisis period that allows that nature of the error correction term to resemble that of the full period. From Table 1, if the results of ADF tests are chosen as the source of reference and the lag lengths as well as the beginning point of post-crisis period are appropriate, the differences in the long-run relationship of demand for money in each country may be sources of policy implication. Focusing on post-crisis period, in Korea and Thailand, where the authorities adopted the flotation of their domestic currencies as the main strategy to cope with the Crisis, their adjustment in post-crisis period seems to attain an equilibrium. On the other hand in Malaysia, where fixed exchange rate regime was strictly adopted to stabilize domestic exchange rate since the Crisis, the adjustment in the post-period seems to be later, if not unreachable. However, the cointegration regressions of the full periods in these three countries are stationary. It supports the possibility that there exists the stationary long-run demand for money and it is interesting to note that while Malaysia pursued different extreme of adjustment policy after the Crisis, its long-run demand for money is still consistently stationary for the full period.

Table 1: ***Cointegration Regressions***

	Korea			Malaysia			Philippines			Thailand		
	1991:1	**1991:1**	**1991:1**	**1991:1**	**1991:1**	**1991:1**	**1991:1**	**1991:1**	**1991:1**	**1991:1**	**1991:1**	**1991:1**
Variable	-2001:10	-1997:11	-2001:10	-2001:10	-1997:6	-2001:10	-2001:10	-1997:6	-2001:6	-2001:10	-1997:6	-2001:10
Constnt	0.617	2.679	2.260	1.961	2.332	4.342	-2.800	-3.524	0.977	-2.356	-1.543	2.841
	(2.191)**	(15.202)***	(2.107)**	(11.901)***	(12.737)***	(5.467)***	(11.851)***	(10.801)***	(2.451)**	(-5.316)***	(-5.172)***	(7.751)***
SCALE	1.485	1.017	1.215	1.247	1.167	0.777	1.085	1.205	0.326	1.313	1.098	0.198
	(29.192)***	(29.427)***	(5.896)***	(42.130)***	(35.445)***	(5.189)***	(26.087)***	(18.971)***	(3.782)***	(15.011)***	(17.960)***	(2.589)**
OWNR	2.124	1.166	-2.034	1.335	0.252	0.005	1.351	2.658	0.738	-0902	0.251	-1.623
	(3.227)***	(2.302)***	(-0.641)***	(1.852)*	(0.228)	(0.001)	(1.800)*	(3.663)***	(0.720)	(-30.702)***	(0.681)	(-4.469)
YDA	-1.818	0.007	-2.321	-1.260	-1.215	-1.612	-0.062	-1.165	-0.759	-0.003	-0.005	-0.001
	(-3.165)***	(0.021)	(-1.553)	(1.572)***	(-1.304)	(-0.384)	(-0.092)	(-1.853)*	(-0.723)	(-0.483)	(-0.996)*	(-0.582)
INF	-0.222	-0.183	-0.064	0.131	-0.047	0.292	-0.070	-0.082	-0.164	-0.027	-0.057	-0.034
	(-1.178)	(-1.513)	(-0.325)	(0.878)	(-0.348)	(0.981)	(-0.431)	(-0.531)	(-0.845)	(-0.281)	(-0.594)	(-1727)*
DPR	-2.114	-5.721	0.735	-5923	-4.793	-5.916	-3.570	0.923	0.477	-3.118	-3435	0.278
	(-1.680)*	(-7.774)***	(0.190)	(-7.087)***	(-5.588)***	(-4.015)***	(-1.973)*	(0.520)	(0.182)	(-2.073)**	(-2.683)***	(0.573)
	0.017	0.055	0.039	-0.010	0.020		-0.004	0.156	-0.061	-0.005	0.094	-0.036
	(0.803)	(2.062)**	(0.975)	(-0.657)	(-0.623)		(-0.120)	(2.689)***	(-1.181)	(-0.227)	(-1.010)***	(-2.512)**
Observations	129	82	34	129	77	34	125	77	30	129	77	34
Adjusted R^2	0.954	0.97	0.889	0.978	0.98	0.739	0.916	0.903	0.345	0.864	0.953	0.69
D-W Stat.	0.388	1.411	0.661	0.982	1.452	2.109	0.601	0.955	1.565	0.224	1.153	0.81
DF test stat.	(-3.609)	(-6.657)***	(-2.574)**	(-6.714)***	(-6.781)***	(-6.322)***	(-4.538)***	(-4.822)***	(-4.246)***	(-2.706)***	(-5.918)***	(-2.850)***
ADF test stat.	(-2.036)**	(-2.000)**	(-3.234)***	(-2.069)**	(-2.318)**	(-1.363)	(-1.461)	(-1.121)	(-2.261)**	(-2.273)**	(-1.847)*	(-2.074)**
Lag length	12	10	8	12	10	8	12	10	8	12	10	8

Note: Values in the first line represents coeflicient, while in the second line represents t-value
This augmented Dickey-Fuller (ADF) test applies lag length calculated by Schwert's rule.
***, ** and * refer to rejection of Ho at I percent, 5 percent and 10 percent levels of significance, respectively

A controversy is found in the case of the Philippines. While the full and pre-crisis periods' cointegration regression are nonstationary, that of post-crisis period is stationary. If it is not because of spurious relationship between the proxy for demand for money and the set of explanatory variables, it is skeptical that the financial liberalization may contribute greatly to the long-run stationarity of the demand for money in the Philippines in the post-crisis period. Due to the fact that the Philippines just accepted the obligations of the Article 8, section 2, 3 and 4 of the International Monetary Fund in September 1995,[20] the openness of the economy truly began after that. The pattern of the demand for money could be greatly different in the prior period.

The next aspect of investigation on the long-run demand for money is the significance and the direction of independent variables. First, the constant terms are statistically significant in all sets of regression which implies the intrinsic function of money as a means to carry out transaction. Second, the industrial index or manufacturing index selected as scale variable, SCALE, shows strong relationships with the implied demand for money in the ASIA-4 in all periods. This effectiveness of the variable allows the possibility for future investigation in other aspects of scale and monetary relationship on a monthly basis. Third, own-rate, OWNR, is statistically significant in the full-period demand functions of ASIA-4. However, there are some controversies in sub periods. It is not significant in any post-crisis cointegration regression, except in the case of Thailand.[21] Possibly, after the Crisis, the demand for money become insensitive to change in saving rates. If it is true, it is advisable that policy .nakers not rely on the own-rate as a main tool to direct the demand for money when the economy has just recovered from a crisis.

Fourth, the yield on alternative domestic assets, YDA, in all cases is statistically insignificant, except for the case of Korea in full period and the Philippines in pre-crisis period. However, it is too soon to conclude that the demand for money in these countries is insensitive to the change in yield on alternative domestic assets, unless all types of the applicable yields are investigated.[22]

Fifth, the implied inflation rate, INF, is statistically significant only in the case of post-crisis period of Thailand. If the models are already well specified, it leads to a critical question on the appropriateness of adoption of inflation targeting of monetary policy framework. Korea and Thailand have already officially adopted, while the Philippines and Malaysia are in the preparatory stage.

Next is yield on foreign assets, YFA. The proxy variable is statistically significant for all countries in the full period. This clearly depicts the nature of an open economy. The signs of the coefficient in each country's equation are also correctly specified, ascertaining a negative relationship with the demand for money. When focusing on the pre-crisis period, the Philippines is the only country in which the variable is insignificant. Again, the relatively close stage of the economy in that period may be a reason for that. Apart from the stage of the economy, exchange rate regime might influence the decision to hold foreign assets. When exchange rate is relatively stable, it is less risky to hold foreign assets. After an abrupt change to floating exchange rate regime, the investor may become less willing to hold foreign assets. This can be a source of the difference in the significance of the YFA in pre- and post-periods in Korea and Thailand.

The last variable is depreciation rate, DPR. It is significant in the pre-crisis periods of Korea and of the Philippines, and post-crisis period of Thailand.

Error Correction Model

The OLS method is applied with the starting lag length of 2 to estimate equation (3). Insignificant variables are excluded and the model is reestimated. Table 2 reports the final selected ECM models, which minimizes Akaike's criteria. It should be noted that the values of adjusted R^2 are still low in many results of regression. This mirrors the possibility that the adjustment process may be influenced by past value of many periods earlier. Despite such possibility, the selected models are still useful in confirming the changes in the structure of dynamic demand for money function after the crisis, as well as the difference in such structures among the ASIA-4.

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[20]In the other countries, the event happened before the period of disscussion.

[21]the wrong signs in cointegration regression of full and post-crisis of Thailand may be a result of truly spurious relationship as can be noted from the relatively low D-W statistic.

[22]Due to limited access to the sources of data, this paper does not try to perform a test on other proxy variables. Morever, it is worth noting that the differences in types of the proxy vaiable for the YDA across countries makes it difficult for comparitive analysis due to different degree of risk premiums.

The lagged values of error correction terms, lagged ECs, are significant in the full and pre-crisis periods of Korea, Malaysia and the Philippines. In post-periods, lagged ECs are significant in cases of Malaysia, the Philippines and Thailand. For all cases of significant lagged ECs, their signs of coefficients, or so called error correction coefficients, are negative. This implies the reduction towards the equilibrium of the lagged ECs. Its absolute value represents the speed of such dynamic adjustments towards equilibrium.

	Korea			Malaysia			Philippines			Thailand		
	1991:1	1991:1	1999:1	1991:1	1991:1	1999:1	1991:1	1991:1	1999:1	1991:1	1991:1	1999:1
Variable	-2001:10	-1997:11	-2001:10	-2001:10	-1997:6	-2001:10	-2001:6	-1997:6	-2001:6	-2001:10	-1997:6	-2001:10
C	0.008	0.010	0.011	0.013	0.010		0.176			0.006	0.005	
	(4.384)***	(6.825)***	(2.922)***	(5.618)***	(6.085)***		(2.469)**			(5.297)***	(4.091)***	
M(-1)			0.345	-0.504				0.219	0.257	0.325	0.403	0.653
			(2.078)**	(-6.439)***				(1.948)*	(1.374)	(3.912)***	(3.662)***	(5.056)***
M(-2)				-0.166		0.030	-1.927	0.201	0.124			
				(-2.166)**		(0.241)	(-2.051)**	(1.708)*	(0.667)			
SCALE				0.130	0.127	0.148		0.219	-0.077			
				(2.146)**	(2.395)**	(0.796)		(2.113)**	(-0.766)			
SCALE(-1)												
SCALE(-2)												
OWNR	-1.265	-0.929	2.307									
	(-4.242)***	(-2.417**	(2.026)*									
OWNR(-1)												
OWNR(-2)												
YDA				-1.378	-0.740					0.001	0.002	
				(-2.836)***	(-1.514)					(3.021)***	(2.697)***	
YDA(-1)	0.291	0.789		-0.719						0.001		
	(2.107)**	(3.068)***		(-1.409)						(2.112)**		
YDA(-2)					-1.159							
					(-2.405)**							
INF	-0.064		-0.085							-0.071	-0.080	-0.070
	(-2.741)***		(-2.043)*							(-10.503)***	(-5.915)***	(-8.320)***
INF(-1)				-0.114				0.119		-0.043	-0.038	-0.216
				(-2.321)**				(1.762)*		(-5.655)***	(-2.915)***	(-2.754)**
INF(-2)				-0.105						-0.015		
				(-2.131)**						(-2.169)**		
YFA						-7.457						
						(-1.966)*						
YFA(-1)		2.152										
		(1.941)*										
YFA(-2)												
DPR			0.022	0.007						0.003		
			(2.589)**	(1.278)						92.092**		
DPR(-1)										0.003		
										(2.073)**		
DPR(-2)												
EC(-1)	-0.037	-0.136		-0.263	-0.211	-1.120	-1.075	-0.247	-0.624			-0.207
	(-2.106)**	(-3.314)***		(-6.269)***	(-3.752)***	(-6.643)***	(-2.527)**	(-3.325)***	(-3.486)***			(-2.096)**
DLIB							-0.170					
							(-1.918)*					
DINT												
DEX	0.007									-0.004		
	(2.175)**									(-2.777)***		
Observations	128	81	32	126	75	31	124	75	27	126	75	32
Adjusted R^2	0.153	0.217	0.334	0.421	0.192	0.578	0.089	0.132	0.361	0.554	0.355	0.721
D-W Statistic	1.996	2.152	2.056	2.125	2.236	2.342	1.071	2.069	1.620	2.193	2.186	2.321
Akaike info criterion	-5.519	-5.878	-5.639	-4.659	-5.652	-3.781	1.253	-3.514	-3.627	-6.989	-7.039	-6.867
F-Statistic	(5.584)***/	(6.532)***	(4.895)***	(11.118)***	(5.388)***	(14.687)***	(4.981)**	(3.819)***	(5.892)**	(18.228)***	(11.167)***	(27.691)***

Note. Values in the first line represents coefficient, while in the second line represents t-value.

***, ** and * refers to rejection of Ho at 1percent, 5 percent and 10 percent level of significance, respective respectively.

refers to value of first difference and (-1) refers to first lagged value

In the full period of Korea, the dynamic adjustment towards equilibrium of the demand for money also depends on the changes in OWNR, first lagged value of change in YDA, change in INF, and first lagged value of EC, as well as exchange rate policy intervention. In the pre-crisis period, the change in INF and the dummy variables are not significant. However the first lagged value of change in YFA seems to have significant influence. After the Crisis, the first lagged value of change in M, change in OWNR, change in INF, and change in DPR, are the significant explanatory variables.

In Malaysia, for the full period, first and second lagged values of change in M, change in SCALE and its first lagged value, change in YDA and its first lagged value, first and second lagged values of INF, and change in DPR are statistically significant in adjustment process, in addition to lagged EC. In the pre-crisis period, apart from the lagged EC, changes in SCALE, change in YDA and its second lagged value are statistically significant for the adjustment. In post-crisis period, although second lagged value of change in M and change in SCALE improve the model specification; they are not statistically significant. Only change in YFA and lagged EC are main factors.

For the Philippines, in full period, the significant variables are second lagged value of M and liberalization policy intervention dummy variable in addition to the lagged EC. The ECMs of its pre-crisis period contains the first and second lagged values of M, change in SCALE and its first lagged value, first lagged value of INF and the lagged EC. The post-crisis ECM also has similar structure although it excludes the first lagged value of change in INF and only lagged EC is statistically significant. It should be noted that since the available data series for the Philippines is relatively insufficient, compared to that of the other countries, the validity of the model might be inferior.

While significant variables in ECM of the all countries differ greatly in each period, Thailand is a case in which there is some consistency in the set of significant variables. Another unique characteristic is the insignificance of the lagged ECs in full and pre-crisis periods. The main contributors for the adjustment towards the equilibrium in all periods are first lagged value of M, INF and its lagged values. More specifically, in the full period, the other significant variables are change in YDA and its first lagged value, change in DPR and its first lagged value, and exchange rate policy intervention dummy variable. In the pre-crisis period, the additional significant variable is the change in YDA. In the post-crisis period, the lagged EC is the only additional variable.

Conclusion

This analysis applies two-stage EG approach and ECM to investigate the changes in the structure of demand for money in ASIA-4: Korea, Malaysia, the Philippines and Thailand after the Crisis. Time series of monthly industry production index or manufacturing index are employed to enable comparison analysis between pre-crisis and post-crisis periods. The standard cointegration models and the error-correction models mirror the nature of an open economy, in which rate of return on foreign assets and expected depreciation rates play significant roles. Policy intervention dummy variables are included in error-correction models.

The results of the augmented Dickey-Fuller test for cointegration show that despite severe impacts on the demand for money during of the Crisis, there exists long-run relationships between the demand for money and the set of explanatory variables in the full-period context of all ASIA-4, except for the Philippines. Similar conclusion can be drawn in the pre-crisis periods. However, when the analysis is conducted on the post-crisis periods, some controversies arise in the cases of Malaysia and the Philippines.

Focusing on dynamic adjustment in the demand for money function, the results of the ECMs postulate the differences among the structures of demand for money of ASIA-4 in terms of both agents and speed of adjustments towards equilibrium. This raises the question on whether they could apply the identical monetary policy framework while their monetary economies are quite unique. Regarding the inclusion of deliberately constructed policy intervention dummy variables, the results indicate that policy on interest rate liberalization is not significant in explaining the structure of short-run demand for money in any country.

Finally, the monthly industrial index/manufacturing index proves to be an efficient variable that allows a comparative analysis on a monthly basis.

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ENTREPRENEURIAL INTENSITY, NATIONAL CULTURE, AND THE SUCCESS OF NEW PRODUCT DEVELOPMENTS: THE MEDIATING ROLE OF INFORMATION TECHNOLOGY

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ABSTRACT

This paper synthesizes the literature on multiple disciplines, including marketing, entrepreneurship, information technology (IT), and international business. The investigation on the relationships among entrepreneurial intensity, IT, national culture, new product success, and performance is presented. It postulates the mediating role of IT in the relationship between entrepreneurial intensity and new product success, and it explores their indirect relationships with business performance. In addition, the conceptual framework encompasses the effects of cultural differences on the hypothesized relationship between entrepreneurial intensity and IT.

Since new product development[1] is at the heart of every business survival, extant research reveals the necessity to scrutinize the antecedents to and outcomes of new product development (NPD). Review of two articles assessing the research on new product development and management (i.e., Brown and Eisenhardt 1995, and Henard and Szymanski 2001) shows that this field focuses on both internal and external contexts of new product development as antecedents to new product success, which also can be viewed as intrinsic and extrinsic to an organization. While most research explores the effects of both organizational/ internal factors and external forces on new product success with a greater emphasis on the internal factors than the external issues (e.g., Gatignon and Xeureb 1997, Moorman and Slotegraaf 1999, and Sethi, Smith, and Park 2001), some focuses on only organizational factors as antecedents to new product success (e.g., Ayers, Dahlstrom and Skinner 1997, Griffin 1997, and Leonard-Barton 1992). In the same token, the present paper aims at exploring the relationships between two of the organizational factors (i.e., the entrepreneurial intensity and the role of information technology) and the success of new product development.

Previous literature shows that organizational factors affecting NPD success include organizational structure and control system (Ayers, Dahlstrom, and Skinner 1997, Brown and Eisenhardt 1995, Griffin 1997, Henard and Szymanski 2001, Wind and Mahajan 1997); strategic orientation (Gatignon and Xuereb 1997, Henard and Szymanski 2001, Moorman and Slotegraaf 1999, Wind and Mahajan 1997); and capabilities (Moorman and Slotegraaf 1999, Leonard-Barton 1992). Formalization (Ayers, Dahlstrom, and Skinner 1997, Griffin 1997), functional diversity or cross-functional team (Brown and Eisenhardt 1995, Griffin 1997, Sethi, Smith, and Park 2001), and inter-functional coordination and relations (Ayers, Dahlstrom, and Skinner 1997; Sethi, Smith, and Park 2001) are those elements of organizational structure and control system that have been extensively studied as antecedents to NPD success. Since the process of new product development usually involves teamwork, coordination and harmonization are also essential.

Furthermore, the firms' capabilities must be contingent upon the external market condition (e.g., external information) in order for new products to achieve higher success (Moorman and Slotegraaf 1999). As such, it is hypothesized that the use of IT[2] will provide an efficient flow of information in both intra-departmental

[1]Hereafter, new product development is referred to as NPD.

[2]Hereafter, information technology is referred to as IT.

and inter-departmental communications. This will finally enhance the success of NPD. According to Wind and Mahajan (1997), research in NPD with respect to changes in the business environment such as the globalization of business need to pay attention to cross-cultural contexts instead of one national context. Therefore, the present paper proposes a conceptual model and the hypothesized relationships to investigate the effect of national culture on the relationship between entrepreneurial intensity and the application of IT.

The investigation of NPD antecedents and outcomes is increasingly complicated given different units of analysis (i.e., projects, products, teams, and firm). The treatment of measurement of outcome also adds to the complication in interpreting the relationships among variables. Different studies indicate various proxies employed to evaluate new product success using both subjective and objective measures. Indicators of NPD outcomes can be further categorized as perceived firm-related success and perceived market success. For the purpose of this paper, the outcome of NPD is conceptualized as the perceived firm-related success, which includes both the product and process performances. In doing so, the paper attempts at clarifying the ambiguity in the conceptual and operational definitions of NPD success.

The objective of this paper is to propose a conceptual framework exploring the relationships among the four major constructs, namely the entrepreneurial intensity, the national culture, IT, and the new product success. For this reason, the research questions can be stated as: 1) Is the relationship between the entrepreneurial intensity and NPD success mediated through the application of IT? 2) Does new product success lead to business performance? and 3) How does national culture affect the relationship between the entrepreneurial intensity and the IT application?. In the subsequent sections, the literature review, the definitions of the constructs, and the proposed relationships are presented together with the conceptual model. Discussion and suggestions for further research are provided at the end of the paper.

Literature Review and Proposed Relationships

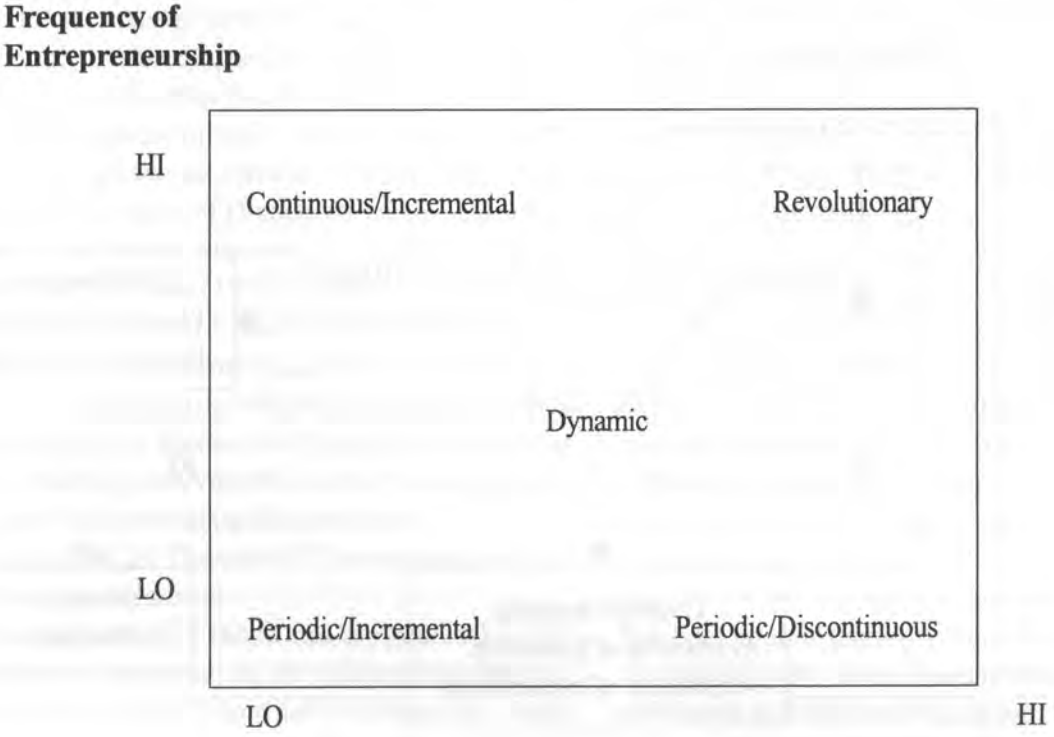
A review of extant research reveals that not only the entrepreneurial characteristics are highly yet implicitly implicated in the NPD research (c.f., Chandy and Tellis 1998; Ettlie, Bridges, and O'Keefe 1984), but also the role of information technology (c.f., Ayers, Dahlstrom, and Skinner 1997; Gatignon and Xuereb 1997; Moorman and Slotegraaf 1999). The notable entrepreneurial characteristics that are found pervasive in NPD research include all five dimensions of entrepreneurial orientation defined by Lumpkin and Dess (1996). These include innovativeness, proactiveness, risk taking, competitive aggressiveness, and autonomy. Regarding the issue of national culture influencing the entrepreneurship, a very thin volume of studies has been conducted (e.g., Mueller and Thomas 2000; Thomas and Mueller 2000). As such, it is interesting to integratively investigate the aforementioned important constructs in the fields of entrepreneurship and NPD in an international setting.

Entrepreneurial Intensity and Information Technology

Entrepreneurial Intensity. Although the concept of entrepreneurship has prevailed in business research for many decades, only lately has the conceptualization of the two related constructs, i.e. entrepreneurial orientation and entrepreneurial intensity, been clarified. Building on the previous literature in the field of management and entrepreneurship, Lumpkin and Dess (1996) conceptualize entrepreneurial orientation as "the process, practices, and decision-making activities that lead to new entry" (p. 136). Entrepreneurial orientation is composed of five major attitudinal and behavioral elements including innovativeness, proactiveness, risk taking, competitive aggressiveness, and autonomy. Among these five attributes, only the first three have been prominently recognized as key entrepreneurial characteristics (Antoncic and Hisrich, 2000; Lau and Chan 1994; Morris and Jones 1999). Based on the traditional way of decomposing entrepreneurship into these three major concepts, Morris and Sexton (1996) develop the notion of entrepreneurial intensity to capture the presence of these three entrepreneurial characteristics in an organization. As such, they define the entrepreneurial intensity as the degree and frequency of the practice of those activities characterized by their innovative, proactive, and risky nature.

In addition to conceptualizing and operationalizing the construct, Morris and Sexton (1996) also introduce the five categories of entrepreneurial intensity based on the two dimensions measuring the entrepreneurial intensity. These five categories are presented in Figure 1:

Figure 1: Five Categories of Entrepreneurial Intensity



This entrepreneurial grid is taken from Morris and Sexton (1996).

According to this entrepreneurial grid, the revolutionary type is high on both degree and frequency of entrepreneurship. This distinguishes those events that are highly innovative, proactive, and risky. The interpretation of the remaining cells is based on the two-dimensional measures (HI-LO degree and frequency) of entrepreneurial intensity.

Information Technology plays a crucial role in generating, processing, and transmitting information (Walsham 2001). These three processes are critical components of an organization, especially with regard to the implementation of market orientation, which places a high value on market intelligence (Kohli and Jaworski 1990; Jaworski and Kohli 1993). Since information is considered an invaluable asset of a firm, the appropriation of IT efficiently accelerates the acquisition, assembling, and dissemination of information between and within different departments in an organization (Court, Culley, and McMahon 1997; Grewal, Comer, and Mehta 2001). This finally enhances the coordination and harmonization in an organization. Such a situation is critical for the development of new products (Ayers, Dahlstrom, and Skinner 1997; Court, Culley, and McMahon 1997; Sethi, Smith, and Park 2001).

Regarding the relationship between the entrepreneurial intensity and the application of IT, there is still a lack of strong empirical support. The only study illustrating such relationship is that of Janson and Wrycza (1999). However, the study is considered an exploratory stage with it having no empirical evidence. From their case studies, Janson and Wrycza observe a tendency of firms characterized by high entrepreneurial intensity to employ IT in their organization. Moreover, past studies also indicate that a number of entrepreneurial firms are from high-tech industries (c.f., McAuley 1999). For this reason, it can be hypothesized that a firm with entrepreneurial intensity is likely to apply IT due to its innovative and proactive characteristics.

Figure 2: ***Proposed Conceptual Model***

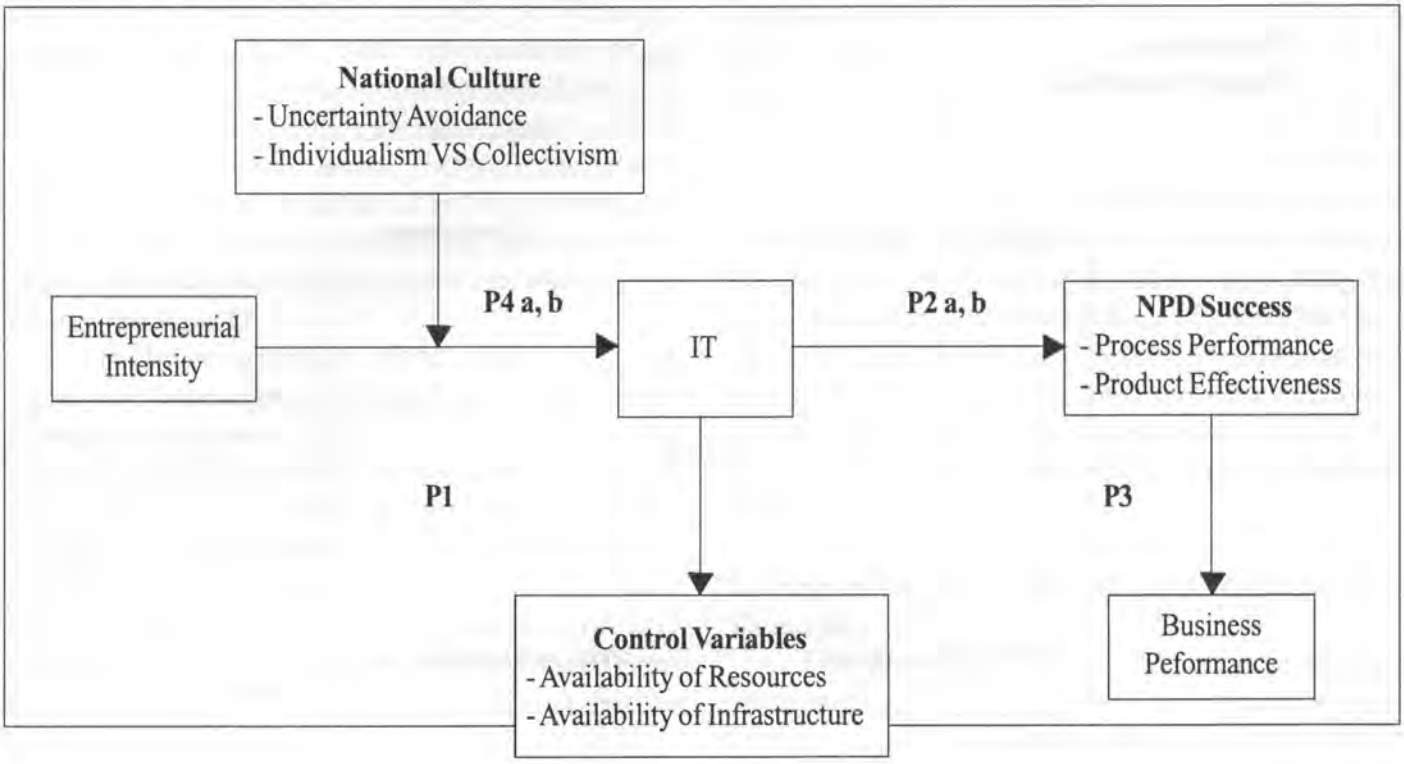


Figure 2 depicts such relationship between entrepreneurial intensity and the application of IT. From the aforementioned discussion on the relationship between entrepreneurial intensity and IT, the first proposed relationship could be stated as:

Proposition 1: The entrepreneurial intensity is positively associated with the application of IT.

Information Technology and New Product Success

New Product Success. Regardless of the search for success factors of new products, the unresolved issue of "what NPD success is," and "how to measure it" persists. There seems to be inconsistencies in both conceptual and operational definitions of NPD success. Some studies use new product characteristics such as innovativeness, managerial foresights, and customers' insights as proxies for success (e.g., Sethi, Smith, and Park 2001). Some equate effectiveness to success and measure it by speed and productivity (e.g., Griffin 1997, and Moorman and Slotegraaf 1999). Many treat NPD success as overall performance of a firm and measure it in terms of financial outcome (e.g., Henard and Szymanski 2001) or market acceptance (Urban, Weinberg and Hauser 1996).

Ayers, Dahlstrom, and Skinner (1997) define new product success as "the extent to which a project meets its commercial objectives" (p.111). This definition seems to be too ambiguous and implies only whether or not the objectives are achieved without considering other related outcomes such as process effectiveness/performance, and product effectiveness/performance. According to an assessment paper on NPD by Brown and Eisenhardt (1995), a success of NPD can be viewed as tripod, i.e. process performance, product concept effectiveness, and financial performance. Process performance refers to the speed of NPD while product effectiveness relates to the fit between the new products and other two factors, which include the market needs and a firm's competencies. These two types of NPD success ultimately lead to a general business performance, which can be operationalized as a firm's profit, sales revenues, and market share. Since the conceptualization of NPD success proposed by Brown and Eisenhardt (1995) reflects a complete picture of NPD performance, the NPD success in this paper refers to process performance, and product effectiveness.

As asserted by Janson and Wrycza (1999), "the use of IT critically determines the extent to which a firm's products and services can be called innovative" (p. 353). This notion indicates that IT leads to innovative product development. A number of past studies in the field of information technology show that IT enhances the process of NPD mainly because it facilitates the flow of information, promotes teamwork, shortens the processing

time, and reduces the operational costs in NPD (Court, Culley, and McMahon 1997; Corso and Paolucci, 2001; Drury and Farhoomand 1999; Ruffles 2000).

Not only has the impact of IT been recognized in IT field, but also in other disciplines. In a marketing context, the implication of IT is pervasive in NPD literature. For example, Grewal, Comer, and Mehta (2001) mention the role of IT capabilities in the study of business-to-business electronic markets. Ayers, Dahlstrom and Skinner (1997), Gatignon and Xuereb (1997), and Narver and Slater (1990) emphasize the importance of information exchange and inter-functional coordination in enhancing NPD success and the firm's performance per se. Hence, it is hypothesized that the use of IT should positively be related to the process performance by speeding up the cycle time.

Proposition 2a: The use of IT is positively related to the process performance.

Since the use of IT facilitates the generation and dissemination of information, the information obtained from the customers is taken into account by every department. This helps ensure that every department in a firm is working towards the same goal; thus, enabling the firm to better serve its customers by developing new products according to the customers' needs. This now leads to the next proposed relationship.

Proposition 2b: The use of IT is positively related to the product effectiveness.

Building on Brown and Eisenhardt's (1995) conceptual model of NPD success, both process performance and product effectiveness are proposed to be antecedents to business performance. For this reason, it is hypothesized that these two types of NPD success ultimately enhance the business performance.

Proposition 3: Both process success and product effectiveness are positively related to the business performance.

From the aforementioned discussion, propositions 1 and 2 (a, b), when taken together, stipulates the mediating role of IT. This paper proposes IT as a mediator between entrepreneurial intensity and NPD success because the result of the only study on entrepreneurial intensity-performance relationship (i.e., Janson and Wrycza 1999) indicates no relationship. When there is no direct relationship, it is possible to hypothesize that some links are missing. Therefore, IT is proposed as one of the missing links in this study.

The Moderating Role of National Culture

National Culture as defined by Raman and Watson (1997, p. 496) is "the common mental programming of a group of people who live or have lived in the same social environment." As noted by many researchers, culture shapes people's behaviors through the underlying value system (e.g., Hofstede 2000; Mueller and Thomas 2000). According to Hofstede (2000), the five dimensions of national culture are: 1) power distance, 2) uncertainty avoidance, 3) individualism VS collectivism, 4) masculinity VS femininity, and 5) long-term VS short-term orientation. Based on these five cultural dimensions, Mueller and Thomas (2000) have related two entrepreneurial traits with two of Hofstede's (1980) national cultural dimensions (i.e., individualism VS collectivism, and uncertainty avoidance). The entrepreneurial traits included in their study are innovativeness and internal locus of control. They find that both internal locus of control and innovativeness are associated with culture characterized by low uncertainty avoidance and high individualism.

Another related study by Thomas and Mueller (2000) extend their previous study by covering other two entrepreneurial traits —risk taking and energy level— in the study of entrepreneurship-culture relationship. Moreover, they also add power distance and masculinity VS femininity dimensions in the latter study. They find that while innovativeness seems to be indifferent given different culture distances, the other three, i.e. risk taking, locus of control, and energy level, are. Grounded on aforementioned studies, individualism VS collectivism and uncertainty avoidance are two cultural dimensions, which are found to be highly associated with the entrepreneurial traits, are included in the present paper.

Based on Hofstede (1980, 2000), uncertainty avoidance refers to the likelihood that a member of society will be risk-averse. Individualism emphasizes an individual member in a society to carry out an activity while collectivism focuses on group work. Since the previous study shows that a culture with low uncertainty avoidance and individualism is likely to drive entrepreneurial behaviors, it is hypothesized that such culture should make the relationship between entrepreneurial intensity and the application of IT more pronounced. On the contrary, a culture characterized by high uncertainty avoidance and collectivism will discourage entrepreneurial intensity, which in turn, hinders the application of IT. For this reason, the next two relationships are proposed in the conceptual framework:

Proposition 4a: In a culture where uncertainty avoidance is high, the relationship between entrepreneurial intensity and the application of IT will be stronger than that of the low uncertainty avoidance culture.

Proposition 4b: In an individualistic culture, the relationship between entrepreneurial intensity and the application of IT will be stronger than that of the collectivist culture.

The Control Variables

The availability of capital and infrastructure has been indicated to affect the full application of IT (Janson and Wrycza 1999). Therefore, these variables must be controlled in order to capture all relationships of interest and to avoid misinterpretation of results.

Discussion and Conclusion

This paper proposes a conceptual model that integrates constructs from multiple disciplines, namely marketing, entrepreneurship, information technology, and international business. Since NPD is an essential part of every business, it is of utmost importance to study its antecedents and outcomes. Moreover, the success of new products is also an integral part of the overall business' performance and survival. Hence, in addition to providing an alternative view of antecedents to the new product success, this paper also clarifies the construct of new product success by incorporating its key considerations, i.e. the process and the product per se. By doing so, the conceptualization of new product success in this paper provides a more complete picture of the construct than those of previous studies.

The incorporation of IT and cultural dimensions moves the study in the field of NPD forward to capture changes in business environment, i.e. globalization and global marketing as mentioned by Wind and Mahajan (1997). The paper also contributes to the research in international entrepreneurship by identifying the differences in the effects of different cultural dimensions on the relationship between entrepreneurial intensity and IT application. Finally, it is hoped that this paper contributes to the theoretical development in marketing, IT, entrepreneurship, and international business by synthesizing the constructs from different disciplines into one conceptual framework.

Regarding managerial contributions, firms can learn from the conceptual model the inherent relationships among factors contributing to the firms' performance, and develop and implement suitable strategies and structures accordingly. The significance of IT in generating and disseminating information, and the processes that enhance coordination among different departments in an organization, has been accentuated. This enables managers to appropriate IT in their organization to help coordinate all functions in order to better serve their customers, which ultimately results in superior business performance.

Implication and Directions for Future Research

An empirical study to test the propositions must be conducted so that the relationships gain strong empirical support. The study should be conducted in at least two national environments that have been proved to be culturally distant to ensure that it captures the effects of differences in national cultures. The present paper only focuses on some dimensions of culture, therefore, future research may consider the addition of other cultural dimensions to extend the model. Moreover, the incorporation of other two entrepreneurial dimensions, i.e., competitive aggressiveness, and autonomy, into the measure of entrepreneurial intensity will add contribution to the field.

This paper represents only an initial step towards the study of entrepreneurial intensity-IT relationships with the emphasis on the success of new products. Future research may consider other factors, e.g. the notion of strategic flexibility, the role of total market orientation, and appropriation of IT in different cultures, and include them into the study. Researchers may investigate how the total market orientation and IT application could affect strategic flexibility of a firm, how IT facilitates/ hinders the adoption of total market orientation as an organizational culture, and how firms, given their diverse cultural backgrounds, differ in their appropriation of both the total market orientation and IT. Since research in IT is still in the initial stage of development compared with other established disciplines, this proposition provides tremendous research opportunities for researchers in IT and related fields.

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FINANCIAL STRUCTURE OF THE MANUFACTURING CORPORATE SECTOR OF THAILAND AROUND THE ECONOMIC CRISIS: A DECOMPOSITION MEASURE BASED APPROACH

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ABSTRACT

This paper describes an investigation into the financial structure of the manufacturing corporate sector of Thailand before and after the economic crisis. The structure is important for financial statement analysts who are often concerned with changes over time in the relative shares of the financial statement items. Decomposition analysis has been used for measuring the relative shares. It is found that the decomposition measures are higher after the economic crisis. The total liabilities decomposition measure was found higher as compared to the total assets decomposition measure before the crisis and lower in many cases after the crisis. Industry variations do not provide any systematic explanations for this variation.

Introduction

Studies on the Thai economic crisis have tended to conclude that it was due to the inability of the economy to effectively handle the macro level variables such as financial policies adopted for the industry, level of current accounts, extent of solvency of the financial institutions and amount of money supply (Tower, 1997). Micro level variables are not considered in the context of the crisis in most of the prior studies. This paper investigates the financial statement information to evaluate the manufacturing corporate sector around the economic crisis.

Financial statements provide information reflecting the result of financing and investing decisions made by a company. They reflect the allocation of corporate resources and deployment of these resources. Due to flow of resources within the company itself and between the company and its stakeholders, there is a constant change in the elements of financial statements. External environmental factors including demand of the customers, number of suppliers, global technological change, economic condition, social development and the like are responsible for these changes in the company. These changes could be expected or unexpected. Internal decisions of the company such as adding or dropping product lines, expansion or contraction, vertical or horizontal integration, investment or divestments are all associated with the changes of the environmental factors. Decisions in this regard are reflected in the income statements and the balance sheet of a company.

The impact of decisions changes the various items in the statements. Increase in market demand and consequent decision to extend production capacity of the company could result in acquiring new property, plant and equipment, hiring employees, raising resources from owners and lenders, which are reflected as changes in the financial statements. This composition in turn is associated with business risks and financial risks. A given fixed asset implies an investment that can not be retraced immediately. Holding a large quantity of property, plant, and equipment or fixed assets increase production capacity that can support higher sales. But, on the other hand, there is always a possibility of not achieving the full capacity for various reasons, such as wrong forecasting, poor management or economic downturns, causing a serious business risk. The investment in fixed assets also carries the risk of losing value if the technology changes.

Composition of cash, inventory, and accounts receivables are also subject to business risk. The current assets are held with the motive of exchange or transformation and hence carry with it a direct risk of transaction loss. Cash or near cash assets, which is held

with the motive of liquidity carries the risk of loss of value due to inflation and time value. At the same time, the value represented by these assets also demands the generation of the cost of the funds. There is also a possibility of loss or gain through borrowing funds for short and long term. Due to capital market and purchasing power fluctuation, interest rate paid to the lender might be favorable or unfavorable for the business at any point of time.

Liabilities represent the claims on the business to be repaid at a certain date at a certain value and hence place a demand on the cash flow of the business. Current liabilities have short maturates and have larger demands for immediate cash flows. Long-term loans, on the other hand, needs periodic repayments of the principal and interest and match the cash flow. The lenders also want to be assured that the value represented by assets in relation to their claims is maintained by the business. Equity too demands the generation of certain cash flow to match the expectation of shareholders to keep up the value of their investment.

The demands for cash flows and maintenance of value is to be seen in terms of revenues earned by the firm and its division, among the costs of earning the same as well as those suppliers of finance. It is these multiple demands on the firm, which lead to a certain balance among the various elements of the financial statements. The environment in which the firms operate as well as its own characteristics will also influence this balance. These influences may be due to the size of the firms, industry in which the firms operate, the growth status of the firm, the cost structure of the firm and so on. The essence of this argument is that the firms tend to maintain a homeostatic equilibrium in the relationships among different elements of the financial statements.

Management's effort would always be to achieve a balanced structure, which meets the overall objectives of the firms in the short and long run taking into account the various risks as discussed above. Any change in the balance, whether planned or unplanned, signals and alerts the analysts. In this paper we try to examine the empirical evidence from Thailand relating to structural changes in the financial statements before, during and after the crisis.

The study covers the manufacturing corporate sector as it plays an important role in the performance of the real economy. It is also important for the stability conditions of the economy through its linkages with the banking system and financial markets. This paper reviews the structural changes of this sector and their relationship with the firm characteristics around the economic crisis.

Decomposition Measure

When a given total is separated into a number of components, one may want to determine how the total is divided between the various components and how these "divisions" are affected by changes over time. Decomposition measure provides an answer to these questions. Since this study investigates the structural changes of firms over time, our interest is directed to the answers to the second question.

Lev (1974) points out that the decomposition measure can be applied to financial statement analysis because (1) financial statements are divided into different components, such as, assets, liabilities, revenues and expenses; and (2) structural changes in the firm's resource allocation occurs due to managerial decisions or environmental pressures.

Decomposition measure is originally used in measuring entropy. Entropy is the measure of uncertainty in communication theory. It suggests that the amount of information conveyed is a declining function of level of certainty in occurrence of a definite message (Shanon and Weaver, 1948). Depending on the number of events and ambiguity of message, the amount of information expected is subject to revision of probabilities associated with the possible events. Lev (1969) summarized these information concepts, as shown in Table 1.

Table 1
Information Content

	Single Event (Information)	**Multiple Events** (Expected Information)
Definite (certain) Message	$-\log p$	$-\sum p_i \log p_i$
Non-definite Message (Inaccuracy)	$\log (q/p)$	$\sum q_i \log (q_i / p_i)$

The use of decomposition measure for financial statement analysis was also proposed by Theil (1969). The model was of the form $\sum q_i \log (q_i/p_i)$ where q_i and p_i are the proportions of the appropriate totals in the current and the preceding years respectively. The $\log (q_i/p_i)$ is a measure of the extent to which the proportional representation of category i has changed over a year Each of these elements is weighted by q_i – the proportion for category i in the most recent statement for the firm under consideration. Structural imbalance increases as the differences between p_i and the q_i increases. The maximum imbalances occurs when $q_i > 0$ for some event given that $p_i = 0$ for that element.

As the function is derived from communication theory, it is customary to use logarithms to the base 2. The unit of information is called *bit*. In other applications, especially in finance, natural logs have been used. A unit of information is called a *nit* when natural logarithms are used.

Exploring the structural relationships will help managers to understand and predict the behavior and status of the company and make appropriate financial decisions. It is important to note that the decomposition measure mentioned in this study only qualitatively evaluates the direction of deviation of the business. Understanding the movement of a business with stable operation towards unstable situation would probably be more useful for a manager as compared to that of a business moving from an unstable to a stable situation.

Application of Decomposition Measures in Financial Statement

Application of decomposition measures emerged in financial literature following extension of Beaver's (1966) and Altman's (1968) failure prediction studies. Beaver (1966) constructed histograms with his best failure-predicting ratio, cash flow to total debt, to examine the structural stability of failure and non-failure firms over time. He found that distribution of this ratio was relatively stable for non-failed firms at all years and unstable for the failed firms immediately prior to the failure. Altman's (1968) model included 22 financial ratios categorized into liquidity, profitability, leverage, solvency, and activity ratios. Using a multiple discriminant analysis, Altman identified a model including only five financial ratios, working capital/total assets, retained earning/total assets, earning before interest and taxes/ total assets, market value equity/book value of total debt, and sales/total assets. The study found that larger changes (instability) in these ratios were associated with a higher tendency of firm failure.

Later, researchers had attempted to improve the predictability of company failure by either combining or separately using decomposition measures. Lev (1969b) used Beaver's data and conducted a paired analysis with 37 failed and 37 non-failed firms. The pairing was made based on similar industrial classification and firm size. The study compared total asset decomposition measure (TADM), total liabilities decomposition measure (TLDM), and balance sheet decomposition measure (BSDM) between failed and non-failed firms over a five-year period prior to the corporate failure. The result showed that the decomposition measures for the failed firms were consistently larger than those of the non-failed firms. As compared to the Beaver's (1966) study, this study found that only Beaver's best ratio, cash flow/total debt, performed better than the decomposition measure in terms of prediction accuracy.

Moyer (1977) found that decomposition measures in combination with financial ratios explains the structural change better and predicts firm failure more accurately. He improved the predictive ability of Altman's (1968) model by replacing the original two ratios, market value of equity/book value of debt and sales/total asset, with Beaver's (1966) cash flow/debt ratio and Lev's (1969) balance sheet decomposition measure.

On a small, paired sample of failed and non-failed firms, Walker, et al, (1979) found that the decomposition measures for failed firms were generally larger than those of the non-failed firms. TLDM was found generally larger and better than the TADM in the prediction of failed firms. To avoid the industry effect, the study used single industry samples from among only retail and discount department stores. The decomposition measure was found to have the same bankruptcy prediction power as financial ratios.

In his first study, Booth (1983) used the decomposition measures as independent variables in a multiple discriminant analysis model to predict firm failure. He selected a sample of 35 matched pairs of failed and non-failed firms based on asset size and industry classification. With five balance sheet data for five years before failure, four periods of decomposition measures, their average and coefficient of variations were computed for each failed and non-failed firm. The individual and the average values were used for measuring the size of decomposition measure while the coefficient of variations was used for its stability measure. The results showed that four-year average BSDM, and the second, third and

fourth year BSDM for the failed firms were larger than those for the non-failed matched firms. The result also showed that the four-year average TADM, and the first and the fourth year TADM were larger for the failed firms. Regarding the equities decomposition measure, the average of all years prior to failure decomposition values were found larger for the failed firms as opposed to their non-failed counterparts. Finally, the study found that decomposition measures for failed firms were more unstable than those for the non-failed firms. However, the study was not successful in classifying non-failed firms based on computed decomposition measures.

In the above studies, researchers had an implicit presumption that change has a negative connotation indicating that large structural changes are bad and small changes are good. Hence, high financial decomposition measures were associated with corporate failure. However, Booth and Hutchinson (1989) argue that both failure and growth are likely to result in a large structural change in a firm. The purpose of their study was to empirically investigate if decomposition measure could distinguish between growing and failed firms. To enable comparison with 'failure', 'growth' was identified with a particular point in time. Thirty-three firms listed on the Australian stock exchange whose increase in total assets exceeded twice the rate of inflation for first five years after listing were classified as growth firms. The first five-year financial statement data of these growth firms were matched with data of thirty-three failed firms over the last five years before their failure. Although the asset and equity decomposition measures of growth firms were found less stable over time, the results suggested that there were no significant differences between the balance sheet decomposition measures of failed and growth firms. This means that a high value of decomposition measures alone is not enough to foreshadow the failure of a firm.

It is evident from the above discussions that higher decomposition measures provides a signal for both growth and failure. But for the failed firms, decomposition measures or the structural changes are always high. Hence decomposition measures could be used as symptoms of the problems of organizational financial health.

Data

The data for this study consists of annual financial statements of the companies listed on the stock Exchange of Thailand (SET). The study covers the period 1992 to 1999. This has been taken with a view to examine the financial structure of the firms before, during and after the financial crisis in the country. Only the manufacturing sector is included in the study. The sector covers agribusiness, building materials, food and beverages, household goods, machinery and equipment, packaging, pharmaceuticals, pulp and paper, textile and footwear, vehicles and parts, chemicals and plastics, electrical and electronic products, and others. The SET had 192 listed manufacturing firms in 1997. Accounting data including balance sheet and income statements for all these firms are available across 1992-1997. In 1998 and 1999 a few of these firms were delisted where in each case of missing data, the data values of 1997 are plugged in. Hence a balanced panel of 192 manufacturing firms listed on the SET forms the sample size in this study. Since the sample period is 1992 to 1999, the study obtains 1536 sample observations. The manufacturing corporate sector is chosen as it sustains stability condition in the real economy through its linkages with the banking system and financial markets. Table 2 shows the position of the manufacturing sector among all the quoted companies in Thailand during 1992-99.

Table 2
Thai corporate Sectors 1992-1999

Sectors	1999				1997				1992			
	Number of firms	Total Asset (M. Baht)	Total Revenue (M. Baht)	Mkt. Cap. (M. Baht)	Number of Firms	Total Asset (M. Baht)	Total Revenue (M. Baht)	Mkt. Cap. (M. Baht)	Number of Firms	Total Asset (M. Baht)	Total Revenue (M. Baht)	Mkt. Cap. (M. Baht)
Banking, Finance and Insurance	57	5,945,954 (68.8%)	423,013 (23.1%)	725,410 (31.1%)	65	6,719,755 (66.7%)	784,261 (36.6%)	288,741 (25.5%)	84	3,214,671 (75.8%)	353,966 (36.1%)	592.503 (39.9%)
Manufacturing	168	1,216,044 (14.1%)	740,628 (41.5%)	450,413 (20.5%)	192	1,183,437 (11.8%)	718,886 (33.3%)	257,022 (22.7%)	205	493,833 (11.6%)	334,594 (4.1%)	389,028 (26.2%)
Others	164	1,480,245 (17.1%)	619,940 (34.8%)	1,017,244 (46.4%)	168	2,168,050 (21.5%)	657,919 (30.4%)	587,581 (51.8%)	151	533,712 (12.6%)	292,675 (29.8%)	503,488 (33.9%)
All	389	8,642,254 (100%)	1,783,581 (100%)	2,193,067 (100%)	425	10,071,242 (100%)	2,161,066 (100%)	1,133,344 (100%)	440	4,242,216 (100%)	981,235 (100%)	1,485,019 (100%)

Note: Mkt. Cap = Market Capitalization

It is evident from the Table 2 that the banking, finance and insurance sector constitutes the largest share of the corporate economy of Thailand. This sector has relatively less number of companies with a large share of market capitalization. Excluding this sector, the manufacturing sector covered by the sample accounts for a significant part of the Thai corporate sector. Since some of the industries in manufacturing sector had only a few quoted companies they are combined as other industries. These groups of industries include household goods, machinery and equipment, pharmaceuticals, pulp and paper, and others. The decomposition measure (DM) is defined as follows:

$$DM = \sum q_i \ln (q_i / p_i)$$

Five decomposition measures have been computed from balance sheet. Each of these measures was calculated with q_i defined as the proportion of accounts included over the appropriate aggregate category in the current year and p_i as the same proportion for the preceding year. Table 3 indicates the financial statement aggregate categories and the accounts included in calculating the decomposition measures in this study.

The economic crisis in Thailand took place in 1997. Therefore the study period has been divided into two sub periods – pre-economic crisis (1992-1996) and post economic crisis (1997-1999). Since the decomposition measure with temporal pattern considers two periods at a time, the pre-crisis DM consists of 1992/93, 1993/94, 1994/95 and 1995/96. The post crisis DM includes 1996/97, 1997/98, and 1998/99. Each DM during these periods is averaged for the corresponding era. This procedure is done with a view to eliminating unusual circumstances of any particular year.

Table 3
Decomposition Measure Computation Categories

Decomposition Measures	Aggregate Category	Accounts Included
Current Assets Decomposition	Current Assets	Cash on hand and at banks and short term investment, trade accounts and notes receivables, inventories, other current assets
Current Liabilities Decomposition	Current Liabilities	Bank overdrafts and short term losna, trade accounts and notes payables, other current liabilities
Total Asset Decomposition	Total Asset	Total Current assets, total investment and loans, propeerty, plant and equipment, other assets
Total Liabilities and Equities Decomposition	Total Liabilities and Shareholders' Equities	Total Current liabilities, long-term liabilities, shareholders' equities
Balance Sheet Decomposition	Total Asset Plus Total Liabilities and Shareholders' Equities	Total Current assests, total investment and loans, property, plant and equipment, other assets, total current liabilities, long-term liabilities, shareholders' equities

Manufacturing Corporate Sector in Pre and Post Economic Crisis Era – A Profile Analysis

Summary statistics for the financial statement data are determined for the sample. Means are calculated for the balance sheet (Table 4) and income statement (Table 5) across the years in the pre and post crisis era separately. A positive change has been observed in all the elements of the balance sheet except cash and short-term investment. The total assets averaged during pre-crisis era for 192 companies were 638,637 million Baht and this value increased to 1,131,862 million after the crisis. Total liabilities have increased substantially, more than 2 times. It is mainly because the other current liabilities, and the bank overdraft have increased at a higher rate after the economic crisis. However, the differences between the total shareholders' equity before and after the crisis are not substantial. Negative shareholders' equity in many firms appeared after the crisis. Considering the income statement, it appears that cost structure was slightly higher compared to its revenue.

Table 4

Aggregate Balance Sheet – Quoted Manufacturing Sector Companies 1992-96 and 1997-99 (in Million Baht)

Account Categories	1992-1996		1997-1999		Percentage change in 1997-99 over 1992-96
Cash and Short-Term Investment	53,222	(8.3)	42,815	(3.8)	-19.6
Inventories	80,397	(12.6)	101,343	(9.0)	26.1
Accounts Receivables	67,511	(10.6)	96,158	(8.5)	42.4
Other Current Assets	47,056	(7.4)	113,564	(10.0)	141.3
Total Current Asset	248,1 86	(38.9)	353,880	(31.3)	42.6
Total Investment and Loans	85,199	(13.3)	185,159	(16.4)	117.3
Property, Plant and Equipment	283,641	(44.4)	555,634	(49.1)	95.9
Other Assets	21,611	(3.4)	37,189	(3.3)	72.1
Total Asset	638,637	(100.0)	1,131,862	(100.0)	77.2
Bank Overdrafts	125,803	(19.7)	257,608	(22.8)	104.8
Accounts Payables,	37,679	(5.9)	60,293	(5.3)	60.0
Other Current Liabilities	58,466	(9.2)	237,486	(21.0)	306.2
Total Current Liabilities	221,948	(34.8)	555,387	(49.1)	150.2
Long-term Liabilities,	154,312	(24.2)	304,322	(26.9)	97.2
Shareholders' Equities	262,377	(41.1)	272,153	(24.0)	3.7

Note: Assets, liabilities, and shareholders' equity averaged over 1992-96 and 1997-99 for 192 companies, Figures in parenthesis represent percentage of total assets

Table 5

Aggregate Income Statement – Quoted Manufacturing Sector Companies 1992-96 and 1997-99 (in Million Baht)

Account Categories	1992-1996		1997-1999		Percentage change in 1997-99 over 1992-96
Sales	419,478	(100.0)	608,282	(100.0)	45.0
Other Income	20,225	(4.8)	44,699	(7.3)	121.0
Total Revenue	439,703	(104.8)	652,981	(107.3)	48.5
Cost of Goods Sold	348,236	(83.0)	508,736	(83.6)	46.1
Selling and Administrative Exp.	40,389	(9.6)	83,708	(13.8)	107.3
Interest Expense	18,232	(4.3)	56,628	(9.3)	210.6
Income Tax Expense	7,421	(1.8)	3,884	(0.6)	-47.7
Income (Loss) after Income Tax	25,425	(6.1)	25	(.0)	-99.9
Net Income (Loss)	25,513	(6.1)	-74,787	(-12.3)	-393.1

Note: Items in the account catergories averaged over 1992-96 and 1997-99 for 192 companies. Figures in Parenthesis represent percentage of sales.

Total revenue of 192 firms has increased from 439,703 million Baht to 652,981 Baht. The total cost increased from 414,278 Baht to 652,956 Baht. There is a decrease in the profitability after the economic crisis. This is verified by the change of positive net income value in pre-crisis to a high negative value in the post crisis era.

Empirical Findings

The variability of the balance sheet decomposition measure for all the industries is fairly small during the period of 1992/93 to 1995/96 (See Figure 1). This has increased largely after the period of 1995/96. Similar pattern has been observed in the case of total asset decomposition and total liabilities decomposition measures. This indicates that deviation of total assets or liabilities or their average (balance sheet) from proportional change was lower for all industries before 1995/96 and higher thereafter. The higher level of deviation after the economic crisis reflects the impact of economic crisis on the industries.

On examining the components of decomposition measures, it is evident that the high values of BSDM after 1996 are mainly due to the substantial increase in the debt structure of the firms. In the Textile industry, there was a substantial increase in the total current liabilities in 1997. A large measure of CLDM in 1996/97 identifies a sharp increase in current liabilities. Bank overdrafts and short-term loans were very unstable – increasing before crisis and decreasing during and after crisis except in 1998/99. Long-term liabilities were also found very unstable throughout the period. The average amount of increase of long-term liabilities was much higher than that of current liabilities during pre and post economic crisis.

Agribusiness industry was found to be relatively unstable before crisis and stable after the crisis compared to the Textile industry. The higher instability of balance sheet items in 1996/97 was caused by increase in current liabilities and investment and loans to related parties. In other words, the industry went for more short-term loans from 1996 to 1997. During 1996/97 the industry experienced a sudden increase in accounts receivables while other current asset items such as cash, inventory, and other current assets were relatively more stable than other years. The large value of CLDM in 1996/97 is due to an increase in trade credit and bank overdraft.

The instability of balance sheet constituents of the food industry as indicated by the BSDM was higher than Textile except in the year of 1996/97. In fact, five out of twenty eight firms in Textile industry had negative shareholders' equity after 1996 causing a high value of BSDM in 1996/97. For food industry, this number is four out of twenty two. The average instability was found higher than Agribusiness industry during both pre and post-economic crisis. The industry had observed an increase in long-term liabilities from 1992 to 1993 creating higher instability for the industry. After that period, through proportionate reduction of long-term liabilities, these items became more stable until the crisis started. From 1996 to 1997, the proportion of long-term liabilities increased again. Proportion of current liabilities also became higher during this time. In the subsequent year, demand slump resulting from the crisis could be seen in a drop of sales and rise in the inventory.

The firms grouped, as 'others' were highly diverse. Some industries such as machinery and equipment, pulp and paper are very capital intensive. Proportion of cash reserve was very high during 1992 to 1994. Subsequently, the industry experienced build ups of inventory in 1994/95 and accounts receivables thereafter. It indicates that the industries were one of the earliest to be hit by the crisis. Balance sheet instability after economic crisis suggests that the firms had an increase in the proportion of current liabilities and long-term liabilities. Four out of twenty four firms reported negative equity after the economic crisis.

The degree of structural instability in the Packaging industry indicated by BSDM had a decreasing trend during 1992-1996. In 1997, five out of 16 firms reported negative equity. Proportion of current liabilities and long term liabilities was the highest compared to other years. The instability of the current asset items of the industry during 1996 and 1997 was mainly due to the increase in the inventory level. It is the reflection of dropping of sales encountered by many firms in the industry as a result of contract cancellation by many of their customers facing difficulty during the economic crisis. Analyzing the current liabilities decomposition measure reveals that accounts payable and other current liabilities are the factors that had the higher deviation from the proportional change during 1996 and 1997. Proportion of bank overdraft was lower in 1997 as compared to its previous year.

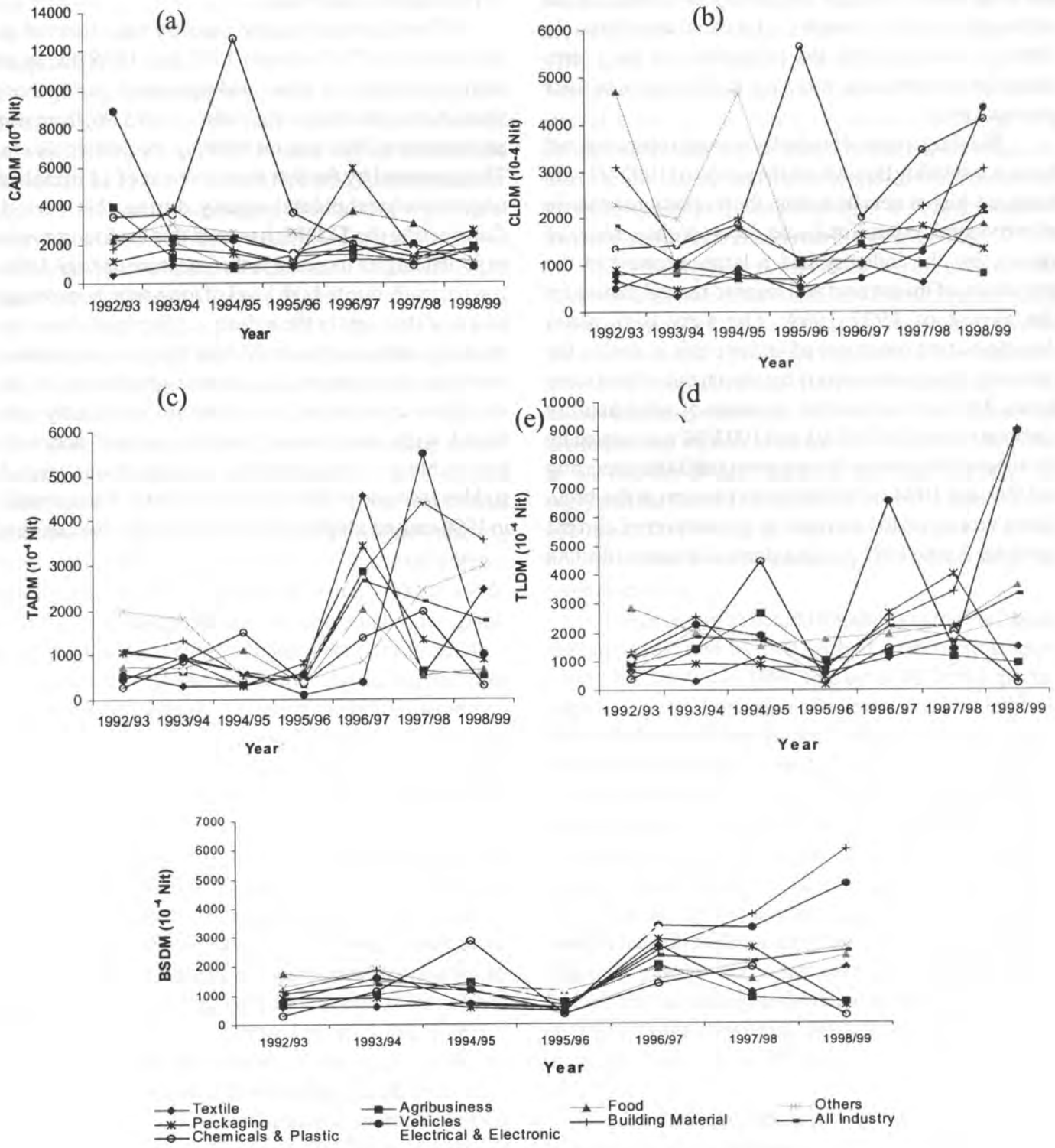
The vehicle industry showed a continuous decrease in the proportion of current assets during 1992-1998. The high instability of current assets from 1992 to 1993 is due to the increase in the proportion of accounts receivable. It is partly because of high unit value of the products in the industry. The industries large measure of TADM in 1993/94 was caused by the large changes in

investment and loans to related parties. The large total asset decomposition measure in 1997/98 was due to the reporting of negative shareholders' equity by two firms. The high instability of the total liabilities reflect the substantial changes that have occurred in both current and long term liabilities and equity as a result of the deterioration in the industry's financial condition. In 1996/97 and 1998/99, the proportion of long term liabilities in particular was very high relative to their previous year.

Building materials industry was also characterized by high instability throughout the period of 1992-99 with relatively higher deviation from the proportional change after economic crisis. Total asset decomposition measure shows that the industry had a large increase in the proportion of investment and loans to related parties for the period of 1992-1994. The very high asset decomposition measures after the crisis is due to the reporting of negative equity by eleven out of thirty one firms. The industry's large measure of total liability decomposition for 1992/93 and 1993/94 was caused by the substantial increase in long-term liabilities occurring in 1993 and 1994 reflecting an expansion at the time. There was a sudden increase in proportion of current liabilities during 1997 giving a signal of financial decline for the industry. In 1997 to 1999 the industry's high total liabilities decomposition measure confirms the fact. Current liabilities decomposition measure suggests that during pre crisis proportion of bank overdraft was relatively higher as compared to other two constituents of total current liabilities.

Chemicals and plastic industry had observed an increasing TADM between 1992 and 1995 due to an increase of property, plant, and equipment during those years. After a decline in this value in 1995-96, there was an increase of this measure during the post crisis era. This is caused by the fact that three out of 14 firms had negative shareholders' equity during this period. Considering the TLDM, it is seen that the industry was experiencing an increase in this measure up until 1995. It is basically due to high level of long-term borrowings by a few start-ups in the industry. After this period, the volatility started decreasing. All the elements constituting current assets are responsible for the high value of CADM during pre-crisis period. A few firms in the industry were found with exceptionally high cash and accounts receivable in 1995 compared to its previous year. A sudden increase in the trade accounts and notes payable in 1996 caused a higher value of CLDM for the industry.

Fig. 1 Decomposition measures classified by industries for the period of 1992-1999: (a) current asset decomposition measure, (b) current liabilities decomposition measure, (c) total asset decomposition measure, (d) total liabilities decomposition measure, and (e) balance sheet decomposition measure.



High investment and loans to related parties caused a high TADM of electrical and electronic industry in 1992-93. It is found that only three out of 18 firms had a very high proportionate increase in the investment and loans to related parties from 1992 to 1993. However, this value dropped in the subsequent years and remained relatively stable until the year of the economic crisis. In 1997, the TADM value rose drastically mainly due to the negative shareholders' equity experienced by six firms. TLDM had increased in the industry in earlier years of the study time frame due to few new companies experiencing disproportional changes in their financing and investment. With respect to CLDM, this industry did not have much variation throughout the 1992-99 time period.

Conclusion

Analysis suggests that the decomposition measures or the deviation from the proportional change does not show any systematic pattern for any industries before and after the economic crisis. Consequently, they do not provide any basis to relate the crisis occurring in 1997 arising out of changes happening in manufacturing sector. The total liabilities decomposition measures are found higher than their corresponding total asset decomposition measure for almost all industries in Thailand during pre economic crisis. It indicates that there were more unusual changes in the composition of total liabilities than total assets before 1997. The scenario changes in many cases after the crisis where total asset decomposition measure exceeds the total liabilities decomposition measure. The basic reason is the negative value of shareholders' equity as well as inventory and receivables accumulation as a result of the crisis. Followed by this problem are the long-term liabilities and current liabilities fluctuating throughout the period. Proportion of current liabilities to total liabilities was always found increasing from 1996 to 1997. This indicates the result of the crisis forcing firms to default their obligations. Moderate signals could be found in the current liabilities decomposition measure showing a structural change prior to the crisis. It reveals that there was a liquidity problem experienced by the firms even before 1995/96. This also indicates that manufacturing sector is perhaps a victim rather than a contributor to the economic crisis that occurred in 1997.

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THE VALUATION OF NATURAL RESOURCES

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ABSTRACT

Conservationists are frustrated with the deteriorating environment of today. Green pressure groups and pro-development advocates have both tended to pit economic growth in one corner against environmental concerns in the other. By asserting that there is a conflict between the objectives of economic growth and those of environmental protection, the protagonists have failed to see potential for mutual reinforcement.

Property Valuers of today can no longer afford to be mere by-standers when faced with the growing demands of the 'Greens'. It is for the Valuers to put forward the argument that, contrary to popular belief, economic growth, market systems and environmental improvements, can go hand in hand. As environmental resources become scarce, or less abundant, there is a greater need to use markets, prices and other devices from the Valuer's toolbox, since these are the proven mechanisms for dealing with the challenges of scarcity. In the context of Asean countries, Property Valuers have to play a bigger role in environmental matters mainly because of the fact that the environmental planning and legislation are still not as sophisticated as those in America or European countries. Issues such as the greenhouse effect and the problems cause by acid rain should now be the concern of present-day Property Valuers.

This paper aims to bring into focus the need for property valuers to be 'environmentally conscious'. It discusses the need for Valuers to place a value on the preservation of the natural environment. It examines the current methods of valuation of property with natural resources. It encourages valuers to evaluate the economics of environmental quality, to become a member of the emerging group of "green valuers."

Setting the Background

It was the former Prime Minister of England, Margaret Thatcher, who in 1988 said:

"No generation has a freehold on this earth. All we have is a life tenancy, with a full repairing lease."

This one statement turned the Iron lady into the Green Goddess.

If one is to reflect upon the statement, one will realize that, oft times, the present generation has acted selfishly in the use and development of land and property, with total disregard of the environment and thus created problems for future generations. There is now a noticeable shift of public opinion all over the world towards a greener and better environment for our future generations to enjoy.

The Kingdom of Thailand

In the Kingdom of Thailand, the Eighth National Plan (1997 - 2001) had focussed, inter-alia, on:

"encouraging the proper use and care of natural resources and the environment to support the sustainable development of the economy, society and the quality of life."[1]

The Plan states that the environmental resources will be protected by rehabilitating forests to ensure coverage of at least 25% of the national landmass, creating opportunities in natural agricultural opportunities, in natural agricultural occupations such as organic farming, integrated farming, and agro-forestry, and investing in the resuscitation of the environment to raise the quality of life in cities and the countryside.

The current Ninth National Plan (2002 – 2006) has been described as a deepening of, rather than a departure from, the goals expressed in the previous Eighth National Plan and encapsulates a people-centric vision

[1]"The Investment Environment in Thailand", June 1996, pp. 19, published by the Office of the Board of Investment, Office of The Prime Minister, Royal Thai Government.

of development for Thailand. This is meant to be complementary to the measures introduced to strengthen the economic and social foundations for long-term sustainable growth.

Whilst encapsulating a renewed vision of development promulgating increased participation and self-sufficiency, the Plan's priorities aim to alleviate many of the factors that have hindered an increase in the pace of economic recovery in 2000. The plan is explicit in the need for continued restructuring, particularly of the financial sector, and for improving the information technology knowledge base in Thailand to enable the country to assert its middle-income status.

A central pillar of the plan is good governance and the formulation strategy of the plan also reflects the importance of good governance and political reform. These issues are of equal concern to the Thai people as social and economic issues. Viewed crucially as an essential building block to sustainable development, the Ninth Plan emphasizes the growing significance of the role of civil society in the decision making process. Participatory planning approaches were widely applied during the formulation of the plan.

The Singapore Approach

Singapore's approach to environmental planning has been set within the framework of an urbanized society and the focus so far has been on

a. the protection of established natural reserves and water catchment areas;

b. the separation of industries from residential areas; and

c. the provision of 'clean and green' environment for the population.

The prospects of further urbanization and depletion of existing natural environment has given rise to concern of a need for more rigorous environmental planning procedures as there is no single co-ordinating body which deals comprehensively and authoritatively with environmental planning matters. In addition, there is no systematic collection and sharing of environmental data amongst the various planning and development agencies. There is also no definite set of procedures that require implementation agencies and developers in Singapore to adhere to processes that ensure a high degree of environmental sensitiveness when undertaking major developments such as housing and infrastructure construction.[2]

Defining Natural Resource

A natural resource is anything produced naturally that is needed by a group of organisms. Fertile soil upon which to grow is one resource that people need in their environment. Other natural resources include fresh water and fuel for washing and heating respectively. People also need metals and other minerals, building materials like granite and sand, fibres to make clothes and air space.

Natural resources can be classified as either non-renewable resources, which can become depleted in time and renewable which, at least in theory, can last forever. Metal, sand and clay are examples of non-renewable resources while fresh water, air, soil, trees, crops and other living organisms are examples of renewable resources.

This Paper's Aim

This paper deals first with the valuation of land with natural resources generally, be they granite, limestone or fresh water and later with the need to consider the value of renewable resources in order that we can achieve the goal of environmental science - that is to have a sustainable world, a world in which human populations can continue to exist indefinitely with a high standard of living and health.

"Sustainable" is the key

A sustainable world is one that can go on indefinitely. This does not mean an unchanging world; it means a world containing enough of the things that people need to support human life forever. In practice, in a sustainable world, we would produce enough food each year to feed the human population, while keeping the soil fertile so that agriculture could produce just as much food in every future year. We would supply clean water to everyone, while ensuring that we would have just as much to use next year, by cleaning polluted water before returning it to the water supply or by using no more water than nature purifies each year. We would use energy, building materials, and minerals no faster than they could be produced so that our supply of these things would last forever. And then we would dispose of our wastes in such a way that the air remains fit to breathe, and no one has to live next to a toxic dump or an unsightly pile of plastic garbage.

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[2]Conference paper entitled "Environmntal Planning" presented by Malone-Lee Lai Choo at the seminar on "Environmental Issues in Development and Conservation"

The Valuation of Land with Natural Resources

The Valuation of Land

Land valuation is a familiar subject to most valuers.

In the case of vacant land, traditional valuers have used an array of analysis of market data such as:

a. adjusted rates per square metre from asking prices;

b. adjusted rates per square metre of standard depth tables;

c. adjusted rates per metre frontage;

and so on, to provide evidence of market value within similar land usage zones. Where development of the land is envisaged, the traditional valuer will proceed to perform a residual analysis to justify the value of the land in spite of, or in addition to, market analysis.

These methods can produce fairly accurate estimates of land values so long as the environmental planning of the locality has been taken care of. In other words, the methods can only be used with certainty:

where the planning law has defined the land use for the area; and

where the environmental law has taken care of the possible ill-effects of soil erosion or of pollutants, and so on.

In the context of Thailand, however, the situation where proper land use planning and environmental control legislations are in place is at times absent, especially in property development projects outside the urban limits. Imagine a property valuer placing an opinion on the value of a piece of land next to a river only to find that the land disappears the very next month when the flooding period arrives.

Allowance for the Environment

Most valuers would allow discounting factors when faced with the valuation of a environmentally-sensitive property. Exactly how much of a discounting factor to allow has however not been subjected to any serious study. One can argue that the more a valuer allows for such a factor, the more he or she tends to be further from the "market" as it is basically the "unknowing" that determines "market values". This is where the 'Green Valuer' emerges. If the valuer can include an environmental impact study of the proposed development inside his or her report, the valuer would have no difficulty in justifying his or her valuation. An environmental impact study shows the expected impact of the development on the total environment including such issues as air quality, employment, energy consumption, noise levels, vegetation, vehicular traffic, wildlife conservation and population density.

Land with Natural Resources

The traditional method of valuation of a plot of land with natural resources such as land for the mining of minerals is that of the profits approach. Whether it is mineral sands, uranium, diamonds, coal, iron or gold, mining has the potential of transforming mineral resources into commodities of considerable value. As such, the profits approach works on the principle of estimating the total profit flows that can be derived from the operation and capitalizing of such flows into a capital value. The basic sequence of the profits approach is as follows:

1. Determine the extent of the quantity of mineral resources that can be mined out from the property and the time frame within which the quantity is to be extracted;

2. Convert the estimated quantity into potential earnings within the time frame as cash in-flows;

3. Estimate the expenses to be incurred in the extraction process (including any possible government royalties imposed by law) in the form of cash-outflows;

4. Calculate the estimated cash positions on a monthly or yearly basis;

5. Convert the estimated series of cash incomes into a capital value using the discounted cash flow technique.

The 'Green Valuer' would additionally have to consider the environmental concerns associated with the mining process. How much of the landscape would be scarred? How would rivers and other pre-existing systems be affected? And, more importantly, what is the extent of the reduction in the values of those nearby plots of land, which are used for purposes other than mining? The Green Valuer would have to use cost-benefit analysis to assess the overall environmental impact of the mining process. He or she would have to recommend steps for the rectification of the land because mining has a history of leaving behind a legacy of degradation and destruction on the land.

Land Degradation

Land degradation is the adverse effects which various uses of land by man have on current and future services provided by land. It can be the consequence of mining as well as of farming. Decisions on grazing levels, on cropping practices, on irrigation and on clearing land, all designed to increase production and income, can result

in soil erosion, loss of soil fertility, salinity and other forms of land degradation.

The Green Valuer has to work out a framework for evaluating farm management decisions and government policies influencing land degradation. The emphasis should be on what should be done for the sustainable future and the cost of such actions allowed for in the present, as an expense of land development.

Cost-Benefit Analysis

Cost-benefit analysis is the systematic appraisal of all the benefits and all costs of a contemplated course of action in comparision with alternative courses of action. The central task in any cost-benefit study is to quantitatively estimate the costs and the benefits of various alternative actions to address a particular situation. This task is never easy when applied to environmental issues as it is difficult to place monetary values on items such as the degree of air pollution or the extent of failing health amongst the population. This area of valuation is relatively new to the green valuers who would have to, at least initially, rely on the works of environmental economists.[3]

The Cost of Pollution or The Value of Cleaner Air

The atmosphere is the life blanket of the earth, the essential ingredient for all living things. Air covers every part of the 200 million square miles of the earth's surface. In the course of a day, a single person breathes a large quantity of air in a constant automatic response to extract life-giving oxygen. The air is composed of 78 percent nitrogen, 21 percent oxygen and a small remaining 1 percent of various other gases such as argon, carbon dioxide, helium, hydrogen, krypton, neon and xenon.[4]

Pollution is the usual by-product of economic activity - whether it is acid rain, hazardous waste, oil-spilling tankers or a simply discarded beer bottle. Because of the fact that there is no global rubbish bin, it is normal to expect that the government of the day will make polluters pay for the waste or rubbish they dump. Green valuers will have to realize the benefit of say the separation of household refuse for recycling, not so much as to save raw materials but to avoid the high cost for somewhere to tip the refuse.

The consequences of deteriorating air quality

Some of the major identifiable economic effects of poor air quality are listed below so that green valuers can begin to think out ways of costing out possible remedies.

1. ***Human health effects.***

The health effects of poor air quality elude efforts to place dollar value estimates on their damages. Loss of efficiency on the job due to air-pollution-related health effects is obviously a difficult item to measure, although it has been established that the presence of carbon monoxide reduces response time of the nervous system.

Sickness induced by air pollution may not be recognized as responsible for work days lost or above-normal absenteeism. Some on-the-job injuries and industrial accidents also may be attributable to air pollution although they are not recorded as such. In addition, there may be significant human health effects of persistent exposure to what is now believed as safe levels of air pollutants. Ideally, all of these items should be included in any dollar measure of the cost of air quality deterioration. Therefore, present estimates of these costs, however large they seem, must be accepted as only a rough under-estimate of the true human costs of air pollution.

2. ***Agriculture and air quality.***

Agricultural damage to crops and livestock is a second major effect associated with poor air quality. There is considerable evidence to suggest that agricultural damage caused by air pollution is extensive. Ozone, for example, affects plant cells beneath the surface of the leaf and ultimately damages or destroys the plant. Studies have demonstrated that extensive ozone damage to agriculture crops exists. Sulphur dioxide in the atmosphere is taken into plants through the respiratory process and in combination with water naturally contained within the plant, becomes toxic to plant cells.

The harmful effects of air pollutants on agricultural activities cannot again be estimated accurately.

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[3]Refer to Arnold, Frank S.'s book on "Economic Analysis of Environmental Policy and Regulation" published by John Wiley & Sons, Inc. 1995, for examples of Cost-Benefit Analysis of some interesting environmentally related cases, such as the Asbestos Products Ban, Options for Enhancing Used-Oil Recycling, Restrictions on Formaldehyde Use in Textiles Manufacturing and the Cancellation of a Pesticide Registration.

[4]Seneca, Joseph J. and Youssig, Michael K. "Environmental Economics", Second Edition, 1979, pp. 158.

3. ***Property damages.***

Air pollutants are also responsible for extensive damages to property. The blackened facades of buildings in urban centres bear testimony to the presence of particulate, hydrocarbon and sulphur pollutants. This soiling causes cleaning expenditures considerably in excess of those that normally would be undertaken.

Air pollutants corrode, crack and weaken building materials. Ozone, for example cracks and breaks rubber and sulphur dioxide emssions can affect a wide variety of property from the hardest of materials such as iron and steel to domestic furniture, synthetic fabrics and clothing.

4. ***Safety and amenity effects of air pollution.***

Air pollutants can be responsible for a number of automobile, air and industrial accidents. Decreased visibility due to smog and smoke condition contributes to the frequency of highway accidents. The cost of these automobile accidents in terms of lives, injuries and property should be included as an additional cost of air pollution.

The Value in Trees

It is no coincidence that the Eighth National Plan for Thailand states that rehabilitating forests to ensure a coverage of at least 25 percent of the national landmass should protect the environment resources. A carefully planned and structured move towards a more market based forest industry could achieve an improved balance of environmental and economic goals. By allowing owners of forest resources to trade-off competing forest uses at prices, which reflect real market values, including values placed on environmental amenities, a country can have both a more efficient timber industry and more environmental benefits.

The green valuers should advocate that forest management be aimed at balancing competing forest uses by factoring community valuations of timber, leisure amenities and other needs into decisions. The costs of deforestation should be recognized. Uncontrolled and unmanaged deforestation can lead to diminished rainfall, unreliable water supplies, soil erosion, silting rivers and harming dams.

Reforestation

Natural forests provide us with numerous resources, such as new species and varieties of organisms, and absorption of carbon dioxide produced by burning fossil fuel. At the present time, tropical forest is being destroyed mainly to provide fuelwood and subsistence farms to support the rapidly growing population and cash crops for export. One of the most pressing problems in many developing countries is a fuel shortage caused by the unsustainable harvesting of wood that results from over-population. The depletion of wood supplies is the largest single cause of environmental degradation in most developing countries. It raises the cost of living and causes malnutrition and disease.

Conclusion

The value of all natural resources must surely increase as they become scarcer. The greater the public is aware of the importance of natural resources and the need for a sustainable environment, the more there is a need for property valuers to become 'green valuers'. The Royal Institution of Chartered Surveyors is promoting to its members the 'profession of the environment' and urging RICS members to consider how their work in the environmental arena can enhance the collective skills of the profession and its reputation for good practice. Caring for the environment has become the concern of Chartered Surveyors when they advise their clients on the life cycle of land, property and construction.[5]

This paper serves to highlight the need for property valuers to be conscious of the environmental concerns and to look into the need to consider the value of natural resources when performing their professional duties.

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[5]CSM (Chartered Surveyors Monthly) Vol. 5 No 11 September 1996. "The Environment Business: New RICS Strategy"

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The ABAC School of Management (ABAC), a Catholic institution administered by the Montfort Brothers of Saint Gabriel, was originally established in 1969 as an autonomous Higher Education Institution under the name of Assumption School of Business (ASB), with the primary aim of providing an opportunity for Assumption Commercial College students to further their studies at the baccalaureate level.

On June 16th 1972, the ASB received full accreditation from the MUA and changed its name to ABAC - Assumption Business Administration College. It was in May 1973 that ABAC went co-educational and moved to its present Hua Mak campus, with a student body totaling just 51.

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