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ABSTRACT

This paper contrasts the *conventional* balance sheet approach to the analysis of economic disturbances in emerging markets with the *alternative* balance sheet approach that applies and extends Minsky's Financial Instability Hypothesis to (open) emerging market economies. Earlier balance sheet studies are flawed because of a failure to disaggregate firms' balance sheets. Examination of such balance sheets in Thailand, Malaysia, Indonesia, Singapore and Hong Kong, suggests that firms in the three crisis countries shared common causes of financial fragility, but the level of financial development and the particular domestic economic and political situation also affected their situation.

INTRODUCTION

The Southeast Asian twin financial and currency crisis[1] of 1997 -1998 has provided fertile soil for new theories and models on the causes of financial fragility and on the dynamics of twin crises in emerging markets. Among its effects has been a growing recognition that financial crises cannot be properly analysed, or anticipated in the future, without serious examination of financial and non-financial corporate balance sheets (for instance Krugman [1999], Mishkin [2001], Eichengreen et al [2003; 2005], Kregel [1998] and Arestis and Glickman [2002], amongst others). This approach, investigates the impact of disturbances on the assets, liabilities and net worth of households, firms, governments and the economy as a whole and on the consequent implications for growth and stability [Eichengreen

et al, 2005, 1]. Hence, this approach looks at the economy as a system of balance sheets of all its agents and examines stocks of assets and liabilities at a certain period of time [Allen et al, 2002].

Within this approach, there is a broad spectrum of views. At one end, the *conventional balance sheet approach to twin crises* puts forward different models and theories to explain the dynamics of emerging markets' twin crisis and financial fragility. However, ultimately it argues that problems in the financial markets are the key source of fragility and twin crises (For instance Krugman [1999], Mishkin [2001], Eichengreen et al [2003; 2005]). Krugman [1999] explains the Southeast Asian twin crisis in terms of a flight of capital from an economy that was not fundamentally unsound. He models emerging market crises by arguing that emerging market economies are characterised by highly leveraged firms with a lot of foreign currency denominated debts. This implies the existence of severe currency mismatches[2] in their balance sheets. A capital outflow due to, for example, investors' pessimism, would lead to a currency depreciation which would further weaken firms' balance sheets, reduce, if not destroy, the net worth of firms, and would put the country into a full blown financial crisis [Krugman, 1999]. The dynamics of this type of crisis are explained using a model characterized by multiple equilibria in which a loss of confidence can produce a financial collapse that *ex-post* validates investors' pessimism [Krugman, 1999, 11]. This model is similar in spirit to the Chang and Velasco bank-run models[3] [Krugman, 2001, 8], but it differs slightly because a loss of confidence is held to lead to a transfer problem, that is a reversal of the country's current account [Krugman, 1999, 11]. To achieve this reversal 'the country must experience a large real depreciation; this, in turn, worsens the balance sheet of domestic firms, validating the loss of confidence' [Krugman, 1999, 11]. Therefore, 'in this model the currency crisis that leads to exchange rate movements and balance sheet effects is self-fulfilling: an expected depreciation leads to a currency run and collapse of a peg. Then,

the strong real depreciation wipes out the private sector's balance sheets and *ex post* validates the loss of confidence and the currency crush' [Allen et al, 2002, 11].

A similar view, exemplified by the work of Mishkin [2001] amongst others, focuses on the consequences of increased asymmetric information. A deterioration of both financial and non-financial sector balance sheets exacerbates asymmetric information problems, and when these problems increase the chances of a financial crisis occurring also increase. This is because asymmetric information generates both problems of adverse selection and moral hazard[4] [Mishkin, 2001]. Therefore, a financial crisis is 'a disruption to financial markets in which adverse selection and moral hazard have become worse, so that the financial markets are unable to efficiently channel funds to those who have the most productive investment opportunities' and this 'ultimately leads to a sharp contraction in economic activity' [Mishkin, 2001, 2]. Mishkin's analysis of the dynamics of twin crises focuses on the pervasiveness of the domestic effects of financial liberation policies, and in particular on the rapid and wrong pace of financial liberalization [Nissanke and Stein, 2003, 293]. In Southeast Asia, financial liberalization combined with interest rate differentials and policies that kept the domestic currencies pegged (or quasi-pegged) to the US dollar, led to a huge influx of capital. This created imbalances, in the form of currency mismatches, which then weakened firms' balance sheets [Mishkin, 2001, 12]. Once these weaknesses became apparent investors started to sell the domestic currencies, thus creating a further incentive for speculative attacks. These attacks, when they came, caused currency depreciations which exacerbated the debt burden for domestic firms' and led to a refusal by foreign lenders to roll over short-term lines of credits to domestic banks [Corsetti et al, 1999, 341].

In a series of papers, Eichengreen, Hausmann, and Panizza present a variation of this view[5]. They suggest that the origins of weak and deteriorating balance sheets in emerging market economies lie in the inability of these economies to borrow abroad in their own

(domestic) currencies [Goldstein and Turner, 2004, 5]. This inability, dubbed by these analysts as *Original Sin*, suggests that the innate weakness of emerging markets is not due to past behaviour but rather to the reluctance of international investors to hold debt securities denominated in emerging-market currencies. Countries that cannot issue securities abroad in their own currencies will inevitably have currency mismatches and maturity mismatches (short-term debt to finance fixed assets) on their national balance sheets [Hausmann and Panizza, 2003, 1]. Eichengreen, Hausmann and Panizza also investigate the dynamics of twin crisis and argue that in the presence of currency and maturity mismatches, if a real exchange rate depreciation occurs, the purchasing power of domestic output over foreign claims will be reduced, and this will make it more difficult for an emerging market to service debt. Furthermore, foreign agents, knowing that shocks affecting the real exchange rate can disrupt the country's ability to service its debt, may be less willing to lend [Eichengreen et al, 2005]. This reluctance further weakens the balance sheets of households, firms and the economy, and ultimately brings the country into a financial crisis.

The *alternative balance sheet approach* applies and extends Minsky's Financial Instability Hypothesis (FIH) to twin crises in (open) emerging market economies (For instance Kregel [1998], Arestis and Glickman [2002], Cruz et al [2005]). This alternative approach is based on the Minskyian idea that a financial crisis is the result of a macroeconomic phenomenon rooted in non-financial firms' balance sheets, and spreads from there to the financial system. However, whilst the extension of this theory to an open (emerging market) economy seems promising, it nonetheless remains limited to the investigation of financial liberalization policies as a factor that could trigger a crisis *à la* Minsky.

Section I of this paper puts forward a more rigorous Minskyan hypothesis rooted in firms' balance sheets, and the evolution of capitalist firms from companies deriving their

liquidity from *sales* of their outputs, to companies maintaining their liquidity by more general *balance sheet operations*. The latter make companies dependent on a day-to-day basis on the liquidity of banking and financial markets, rather than just dependent on those markets for capital project finance, as mainstream corporate finance theory suggests. Section II illustrates this by showing the movements in the accounting ratios, and in assets and liabilities for Thailand, Indonesia, Malaysia, Singapore and Hong Kong during the period 1996-2004 (the full results of this research can be found in appendix 1). Section III states the theoretical implications of this research on the existing literature on the causes of financial fragility and dynamics of twin crises in emerging markets, with particular reference to the balance sheet approach. The final section concludes and summarises our analysis.

I FINANCIAL CRISIS AS A FEATURE OF THE MINSKYAN FIRM

Minsky, drawing from the Keynesian concept of risk and uncertainty[6], Schumpeter's view of finance[7], Fisher's *Debt Deflation Theory[8]* and Kalecki's profit theory, (in which profits are determined by capitalists' expenditure, principally on investment[9] [Toporowski, 2006]), develops a balance sheet approach to the relationship between the financial markets and business [Toporowski, 2005, 143]. According to Minsky, the systemic fragility[10] of a closed, developed capitalist economy depends on the various mixes of yield, carrying cost and liquidity in asset portfolios; the extent to which the ongoing investment is debt finance; and the mix of hedge, speculative and Ponzi finance[11] in the economy [Nissanke and Stein, 2003, 296]. For Minsky, transactions in the financial markets involve commitments to future payments (liabilities) or to future receipts (assets) [Toporowski, 2005, 144]. The funds that are needed to acquire assets are obtained by a variety of financial instruments and each of these instrument is created by exchanging money today for commitments to pay money later [Minsky, 1982]. As a result, three financial postures for households, firms, and government

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units can be identified by their relation to their liabilities and cash flows: hedge, speculative and Ponzi finance. As the proportion of hedge financing decreases in favour of speculative and Ponzi finance, the financial structure migrates towards fragility [Minsky, 1982]. Hence, it can be argued that Minsky's analysis of financial crises differs from the conventional approach in viewing the crisis as a macroeconomic phenomenon rooted in non-financial firms' balance sheets, which then spreads from these balance sheets to the financial system, and not as strictly a problem with the financial markets.

Minsky also focuses his attention on the dynamics of financial crises and, at the beginning of the 1970s, he claims that the events that lead up to a crisis start with a displacement, sometimes exogenous, to the macroeconomic system [Kindleberger, 2000]. The nature of this shock varies from crisis to crisis and could be, for instance, the result of a widespread adoption of an invention with a pervasive effect, or some other political event, or surprising financial success, or a debt conversion that lowers interest rates [Kindleberger, 2000]. However, after the first half of the 1970s, Minsky adopts Kalecki's profit theory, which then allows him to make financial fragility endogenous [Toporowski, 2006, 8]. The adoption of a Kaleckian business cycle has the advantage of showing how profits fluctuate with investment over the course of the cycle [Toporowski, 2005, 145]. In this cycle the cash flow of the corporate sector declines as investment falls off after the investment boom peaks. The reduced cash flow then makes it more difficult for firms to settle their financial commitments, thus causing a crisis of over indebtedness[12] [Toporowski, 2006, 8].

However, Toporowski [2006] argues that 'Minsky's adoption of Kalecki's profit theory is problematic because it ignores crucial monetary and credit aspects of that theory. Minsky continued, through his publications, to insist that an investment boom must entail rising company indebtedness. But Kalecki's profits theory shows how expenditure on investment adds to the net cash flow of the corporate sector: investment expenditure, even if

financed by credit, is received as income by capital goods producing firms that, on delivery of the goods, have no further financial or business liabilities arising out of the transaction. Thus, even if rising investment entails rising indebtedness, it also entails raising liquidity and bank deposits held by companies. Therefore, the corporate sector balance sheet expands on both the asset and liability side, with the asset side becoming more, not less, liquid as investments proceed' [Toporowski, 2006, 8-9].

A number of commentators have attempted to apply and extend Minsky's FIH to (open) emerging market economies, especially to the Southeast Asian crisis (for instance Kregel [1998], Arestis and Glickman [2002], Schroeder [2002], Cruz et al [2005][13]). These studies show that international financial liberalization and capital inflows can generate a fragile, foreign debt-dependent, speculative growth pattern [Onaran, 2006, 6] which can push an emerging market economy towards financial fragility and towards a full blown financial crisis. Arestis and Glickman [2002], for instance, argue that the sequencing of financial liberalization-induced-reforms spreads a layer of illusion over business attitudes in the emerging market economy, weakening inhibitions against speculation and reinforcing a tendency towards euphoria, which ultimately is a source of financial fragility (*à la* Minsky)[Arestis and Glickman, 2002, 245]. Therefore, financial liberalization is one of the key determinants of the transition of an emerging market economy from stability to fragility and crisis. The analysis of the dynamics of the twin crisis in Southeast Asia provided by these researchers focuses on the negative consequences of currency depreciations in presence of a huge influx of capital, which entered the region as a result of financial liberalization policies. As capital inflows invite speculative growth in a country, euphoric expectations, conventional wisdom, and competitive international pressures lead to further capital inflows, which in turn cause the appreciation of the local currency and foreign trade deficit [Onaran, 2006, 6]. As currency depreciation increases beyond a certain point, to avoid capital outflows the interest

rate starts increasing to justify higher risk perceptions regarding expected depreciations, and this intensifies the problem. At this stage pessimism starts to evolve endogenously, and a shock triggers a full blow financial crisis, leading to a reversal of capital flows. As speculators start liquidating holdings of domestic assets, the price of these assets will fall and the balance sheet position of domestic borrowers and lenders will deteriorate [Arestis and Glickman, 2002, 244]. Therefore, an expected depreciation ends up becoming self-fulfilling and the debt problem is magnified by economic recession and depreciation [Onaran, 2006, 7].

Nissanke and Stein [2003, 299] argue that the majority of alternative policy proposals dealing with problems of financial instability in emerging-market countries tend to focus on issues of sequencing of financial liberalization or the need for more regulatory authorities. Grabel [2003], for instance, argues that trip wires and speed bumps, Tobin-type taxes on transactions, and convertibility restrictions could have reduced vulnerability to particular risks (such as currency, flight, fragility, contagion and sovereignty risks), in Southeast Asia, while maintaining access to private capital flows. Arestis and Glickman [2002, 256] assert that under current conditions of a globalized drive towards financial innovation, the most readily available tool to keep financial stability seems to be capital controls. For Kregel [1998, 12], the obvious and direct way to solve cases of extended insolvencies and financial crises would be to underpin cash flows to firms by supporting domestic demand and by reducing their financing costs, either through debt standstills or reductions in interest rates. Nissanke and Stein [2003, 300] argue that such policy recommendations 'are preventative or reactive rather than constructive in building the institutional foundations of a financial system that is developmental'. What is needed instead is a 'reorientation toward the transformation of new norms, incentives, regulations, organizations and capacities', which implies that 'policies must be contextual and arise as a result of a careful evaluation of existing financial systems' [Nissanke and Stein, 2003, 302].

We would argue that all of these approaches are clearly inspired by the work of Minsky, and incorporate important parts of his analysis. However, they miss out a crucial emphasis in his work on the modern non-financial corporation experiencing crisis because of positions that it has taken in the financial markets. This is not argued explicitly in his work, but may be inferred from his early work ([Minsky 1954; 2004, Ch. 4] and the early essays in Minsky [1982]), and from the remarks that he made on policy towards large corporations in the final pages of his most systematic exposition of his views in *Stabilizing an Unstable Economy* [Minsky, 1986]. Minsky neglected the question of how the structure of capitalist firms changes with the evolution of the financial system, in favour of an analysis that emphasised structural features of that evolution and how it affect capitalist firms *in general*. His followers have been content to follow this line of analysis, focusing on the evolution of financial systems towards more fragile structures (see, for example, the contributors to Bellofiore & Ferri [2001], and the authors cited above), rather than on the evolution of non-financial business activity and financing as financial systems develop.

We argue that the neglect of developments within the non-financial business sector leaves authors following a Minskyan line of analysis dependent on one of two rather dubious assumptions. Either the whole non-financial corporate sector in an economy is treated as effectively one giant firm, so that sectoral analysis of income and financial flows represents structural relationships, rather than (statistical) reduced form relationships. In this case all firms together make the output and investment decisions that transmit developments in the financial markets into financial instability in the economy at large. Alternatively, the non-financial corporate sector is made up of 'representative firms' all responding in a similar way to developments in banking and financial markets, so that the aggregate income, output and expenditure flows of the sector, and their financing, are the same as those of any of the firms in the sector multiplied by the number of firms in the sector. In both cases, it follows that

there is a homologous relationship between developments in the financial markets and output and expenditure decisions in the non-financial corporate sector.

The first possibility, of the non-financial corporate sector acting as one agent, may be easily dismissed. Non-financial firms do not as a matter of routine act together and, even when colluding, they co-operate in individual markets rather than in the economy as a whole. Even in cases where the scope of collusion has at its greatest in recent times, for example in the politically-coordinated investment boom of China in recent years, collusion has been by industry rather than encompassing the economy as a whole. Indeed, assuming that the sector makes output and expenditure decisions as one firm, has the paradoxical effect that, since these decisions are crucial for the transmission of financial instability into the economy at large, non-financial firms could simply jointly act to avoid such instability by maintaining output and investment. (In a slightly different context, Kalecki [1967, 152] had argued '… capitalists do many things as a class, but they certainly do not invest as a class. And if that *were* the case, they might do it just' so as to avoid an investment crisis.) If China avoids a financial crisis in the future it will be because its government's coordination of industrial activity is more effective than its increasing reliance on market mechanisms.

The second possible argument for ignoring the structure of the non-financial business sector is the Marshallian notion of the 'representative firm'. There is some evidence in Minsky's early work [Minsky 1954; 2004] to indicate that he was influenced by Marshal's industrial analysis, and he may have had this notion in mind as the short cut that it was for Marshall through the complex task of aggregating heterogeneous business activity, in particular in firm financing and investment. It is not appropriate here to enter into a comprehensive critique of the idea of the representative firm. This was done many years ago by Joseph Steindl [Steindl, 1945]. However, in applying Minskyan analysis to emerging market crisis, two critical considerations need to be exposed. First of all there is the

heterogeneity of production units [Toporowski, 2001]. In a closed advanced capitalist economy, this heterogeneity is easily reduced to two broad categories: small and medium-sized firms using largely bank finance; and corporations using bank finance but largely financing themselves through the issue of securities. The first category of firms is of crucial importance for employment in a market capitalist economy, but the second, by the investment decisions taken by large businesses, may be argued to determine the dynamics of such an economy. It was in that second category of firms that Minsky located his financial instability hypothesis. For example, his taxonomy of cash flows into income, balance sheet, and portfolio cash flows [Minsky 1986, 200-206] shows how firms maintain their liquidity by 'taking positions' in financial markets. Small and medium-sized firms use finance, and may depend upon an accommodating banking system. But they do not, with extreme speculative exceptions, take positions in financial markets in order to obtain recurrent income, as big corporations do through their treasury operations. Delli et al [2001] introduce an assumption of heterogeneity into the Minskyan analysis, but their heterogeneity is limited to asymmetric information and differential equity bases for firms.

In open emerging markets the structure of production units is even more varied. It ranges from household subsistence farms, through casual trade and self-employment, to formally-organised medium and large firms, many of them wholly or largely engaged in foreign trade, and all of them dwarfed by transnational corporations. This structure is of crucial importance for any Minskyan analysis of financial fragility and crisis, because of the different financing structures prevailing in the different kinds of firms. If we exclude the subsistence sector, which in any case provides most of labour entering the casual trade and self-employment sector, there is a large casual sector effectively excluded from formal finance. Medium and many large firms in an emerging market, operate in the textbook fashion, raising finance for production purposes but with minimal routine recourse to the

financial markets. At the other extreme are transnational corporations, whose routine access to a variety of financial markets in more than one country allows them effectively to hedge their financial risks.

Because of the combination of limited use of finance, with 'hedged' use of finance, this kind of structure of the non-financial business sector is financially relatively stable. The financial crises that befell developing countries, before they became emerging markets, were typically crises of government borrowing, rather than business financing failures. The application of Minsky's analysis to emerging markets depends crucially on the emergence of 'Minskyan' firms in those countries, that is production units that not only use finance but also 'take positions' in those markets to maintain their cash flows, i.e., obtain income from balance sheet operations, including the issue of foreign currency liabilities vulnerable to exchange risk. Financial development and capital account liberalisation, that are the essential characteristics of emerging markets, cause such firms to emerge. They then become the transmission mechanism of financial crisis from the financial markets to the real economy. However, as we show, the shift from financial fragility to financial crisis depends on a failure in the financial markets, so that firms are left with financial exposures that they cannot refinance, except at a loss. As we show, in the two emerging markets examined, where the financial system did not fail, namely Singapore and Hong Kong, financial disturbances did not lead into crises.

It should also be pointed out that the criticisms made in this section of the over-enthusiastic application of Minsky's analysis to emerging markets, apply *a fortiori* to mainstream analysis of emerging market crises. Because of the crucial role of firms' balance sheets in the Minskyan analysis, the inconsistencies of applying balance sheet analysis to countries, where the vast bulk of production units do not have anything approaching a balance sheet, are perhaps most apparent. But, by and large, even less consideration is given to the

structure of business activity in developing countries in mainstream analysis of emerging market crises.

The remaining sections of this paper focus on the crucial business sector in emerging markets of balance sheet operating firms through which Minskyan crisis may be transmitted.

II BALANCE SHEET STRUCTURES IN SELECTED EAST ASIAN COUNTRIES

This section of the paper examines the extent to which balance sheets of financial and non financial institutions have deteriorated in Thailand, Indonesia and Malaysia during the twin crisis of 1997–1998. To this end, the following sectoral and aggregate balance-sheet-based ratios for the period 1996–2004, have been constructed[14]:

- *Gearing ratio (ratio of total debt to total capital)* – non-financial sector analysis;

- *Debt ratio (ratio of total debt to total assets)* – non-financial sector analysis;

- *Ratio of current assets to total debt* – non financial sector analysis;

- *Current ratio (ratio of current assets to current liabilities[15])* – non financial sector analysis;

- *Ratio of loans nets to deposits* – financial sector (Banks) (constructed from 1996 to 2003) – data already at aggregate level.

The non-financial sector ratios have been calculated for each non-financial (listed) company and then the average ratio for all the non-financial companies in the sample has been computed, this aggregate value has been used a proxy value for the entire economy. The data has then been stratified by sector in order to identify the average non-financial sector ratios by sector, so as to enable an estimation of the extent to which each sector of the economy has contributed to rendering the economy of Thailand, Malaysia and Indonesia fragile and crisis-prone. The sectors that have been created for this research are:

- Chemical;

- Construction and Materials;

- Electronics, IT and Industrial Engineering;

- General Industrial and Industrial Metals;

- Personal Goods;

- Real estate;

- Financial – Banks.

In order to have a better understanding of how the changes in sectoral and aggregate balance sheets have undermined the stability of Thailand, Malaysia and Indonesia the ratio analysis has been extended to the two Southeast Asian non-crisis countries of Singapore and Hong Kong. A comparative analysis of crisis and non-crisis countries should reveal whether the balance sheet dynamics of these two groups were different prior, during and after the twin crises of 1997-1998 (Appendix 1 reports in full the result of this research).

II.1 Gearing ratio – Ratio of Total Debt to Total Capital

This ratio gives an indication of how easily a firm can repay debts from selling assets, since total capital (or shareholders fund) measures net assets [Pike and Neale, 1999, 588]. The gearing ratio provides an indication of financial risk, which can be defined as the additional systematic risk borne by equity-holders of a geared (or leveraged) company - that is a company that has debt in its capital structure [Lumby, 1994, 461]. At high levels of gearing there is an increased probability of the firms (sector or economy) not only of failing to make a return to equity holders, but also failing to meet interest cost obligations, and thus raising the likelihood of insolvency[16] [Arnold, 2002, 18] and increasing the probabilities of shifting a firm, sector, economy from financial stability to fragility and even to a financial crisis.

Figure 1 shows the movement in the aggregate gearing ratio for Thailand, Indonesia, Malaysia, Singapore and Hong Kong from 1996 to 2004 (tables 1 to 7, appendix 1, report the aggregate and sectoral results of the gearing ratio for the selected countries).

(Figure 1)

Both Thailand and Indonesia experienced a sharp increase in the gearing ratio during the period 1996 -1998. The ratio for Thailand increased from 44.83 per cent in 1996 to 54.70 in 1997 and remained at this level in 1998, whereas the ratio for Indonesia increased from 39.73 per cent of 1996 to 53.26 and 65.78 per cent in 1997 and 1998 respectively. A comparison of these two trends with the two non-crisis countries of Hong Kong and Singapore reveals that Thailand and Indonesia recorded a sharp increase in gearing, and hence in financial risk, whereas the gearing ratio for Singapore and Hong Kong remained fairly stable throughout the crisis period at approximately 26 per cent each.

Furthermore, the 1996 gearing levels for Thailand and Indonesia were already the two highest of the group of countries under investigation, thus suggesting that financial risk and leverage were already fairly high in the period when the peg of the Thai Baht and the quasi-peg of the Indonesian Rupiah held against the dollar. From 1999, the gearing ratios for both these two countries began to decline towards 1996 levels. The sectoral gearing analysis for Thailand and Indonesia reveals that sharp increases in the gearing ratio were adverted in all sectors of the economy during the period 1996–1998, and that the most significant increases in both countries were recorded in the construction and material sector (this increased by 46.21 per cent from 1996 to 1997 in Thailand and by 45 per cent in Indonesia during the same period). From 2000 onwards, the majority of the sectors witnessed a slow downward trend of the gearing ratio towards pre-crisis levels.

In Malaysia, during the period 1996–1999, the aggregate gearing ratio increased by approximately 18 per cent. However, the country never reached the high levels of gearing, and hence of financial risk, of Thailand and Indonesia. The absence of extremely high levels of gearing, as in Thailand and Indonesia, is the consequence of lower pre-crisis gearing levels. In 1996, the period in which the Ringgit was *de facto* pegged to the dollar, the gearing ratio for Malaysia (29.42 per cent) was in fact fairly close to the ratios of Singapore and Hong Kong (26.5 and 27.13 respectively). From 2001, the gearing ratio for Malaysia started its decline toward 1996 levels. Furthermore, the sectoral analysis of the gearing ratio in Malaysia reveals that not all sectors of the economy witnessed a sharp increase in the gearing ratio. Two of the sectors who showed the most increase in the ratio were the construction and materials, and the real estate (23 and 32 per cent respectively between 1996 and 1997). This might suggest that the Malaysian economy had problems of financial risk mostly in the non-tradable sectors and that the other sectors of the economy were in a better position.

This is an interesting result, because one would expect the tradable sector to be the sector most vulnerable to competition, and hence the sector which would have experienced a heavier decrease in revenue and, as a result, be the sector most affected by the twin crisis. The better performance of this sector can be attributed to a number of factors, one of which was the relocation of some manufacturing factories from Thailand to Malaysia. Booth [2001, 22] argues that a severe shortage of skilled labour in Thailand, due in turn to government neglect of post-primary education system, induced many manufacturers to relocate their plants to other part of the regions where skilled workers were more readily available (Malaysia, Hong Kong and Singapore).

II.2 The Debt ratio – Ratio of Total Debt to Total Assets

This ratio gives an indication on how much the company relies on debt to finance its assets, as it shows the percentage of total funds obtained from creditors [Shim and Siegel, 1998, 25]. It thus gives an indication of solvency, financial and credit risk[17], and hence of financial fragility, of a firm, a sector or the economy as whole. The lower the reliance on debt for asset formation, the less risky the company (sector or economy) is, since with a low ratio there is a greater cushion for creditor losses in case of insolvency [Shim and Siegel, 1998, 25].

Figure 2 shows the movements in the aggregate debt ratio for the five selected countries from 1996 to 2004 (tables 8 to 14, appendix 1, report the aggregate and sectoral results of the debt ratio for the selected countries).

(Figure 2)

Both Thailand and Indonesia experienced a sharp increase in debt ratio during the period 1996 -2000. The ratio for Thailand increased from 0.48 in 1996 to 0.62 in 2000, whereas the ratio for Indonesia increased from 0.43 in 1996 to 0.73 in 1998, and then declined by 0.1 in 1999, but subsequently increased again to 0.74 in 2000. The comparison of these two trends with the trends for Singapore and Hong Kong reveals that the ratio for the two non-crisis countries remained fairly stable throughout the period under investigation. These movements suggest that companies in the two crisis countries of Thailand and Indonesia increased their reliance on debt to finance their assets, and that ultimately solvency, financial and credit risks were much higher than the same risks in the two non-crisis countries. Furthermore, in 1996 the debt ratios of Thailand and Indonesia were already the two highest of the group of countries under investigation, thus suggesting that the risks mentioned above

were already high in the period when the peg of the Baht and the Rupiah held against the dollar. Once again, the sectoral analysis of the debt ratio for both Thailand and Indonesia reveals that all sectors witnessed a sharp increase in the debt ratio during the period 1996 - 2000 and a subsequent downward trend from 2000 onwards.

During the period 1996–1998 Malaysia also experienced an increase in the aggregate debt ratio, this increased from 0.28 in 1996 to 0.33 in 1998. However, the increase for this country was lower than in Thailand and Indonesia. The debt ratio in Malaysia increased by approximately 15 per cent from 1996 to 1998 whereas the ratio of Indonesia and Thailand increased by approximately 40 and 20 per cent respectively. Moreover, the debt ratio of Malaysia in 1996 was fairly close to the ratio of the two non-crisis countries of Singapore and Hong Kong (0.25 for both countries) and never reached the extreme high levels of Thailand and Indonesia. Furthermore, the sectoral analysis of Malaysia reveals that during the twin crisis, the sectors that saw the main increase in this ratio were the construction and materials, and the real estate sectors (these increased by 39 and 20 per cent from 1996 to 1997 respectively). After the crisis, the debt ratio for all sectors started to improve and began to decline to pre-1997 levels.

II.3 The Ratio of Current Assets to Total Debt

This ratio is used to estimate the liquidity and solvency of the company (sector or economy) by showing that the company can pay its creditors with its current assets if the company's assets had to be liquidated [Shim and Siegel, 1998]. The higher the ratio the higher is the ability to satisfy debt obligations using current assets. When the ratio is lower than 1, current assets are not sufficient to cover total debts, and so the company, sector or the economy might run into liquidity and solvency problems and so could become financially

fragile. As 1 represents the point at which current assets equals total debts, in the graphs of

figure 3 the x-axis are crossed with the y-axis at (0,1) rather than (0,0).

Figure 3 shows the movements in the aggregate ratio of current assets to total debt for

the five countries under investigation from 1996 to 2004[18] (tables 15 to 21, appendix 1, report

the aggregate and sectoral results of the ratio of current assets to total debt for the selected

countries).

(Figure 3)

Both Thailand and Indonesia exhibited a sharp decrease in the aggregate ratio of

current assets to total debt. During the financial crisis of 1997–1998 the ratio of these two

countries plummeted below 1 (Indonesia 0.86 in 1997 and 0.78 in 1998; Thailand 0.95 both in

1997 and 1998). This indicates that during this period, at aggregate level, the current assets of

Thai and Indonesian businesses were not sufficient to cover total debt; thus suggesting serious

problems of liquidity and solvency. From 1999 the ratio for both countries started its upward

trend. However, the ratio for Indonesia remained fairly closed to 1 (1.29 and 1.39 in 2003

and 2004 respectively), whereas in Thailand since 2002 the ratio took values above 2 (2.5 and

2.68 in 2003 and 2004). A comparison with Singapore and Hong Kong reveals that these two

non-crisis countries had plenty of current assets to cover total debt throughout the period

under investigation. Furthermore, in 1996 Thailand and Indonesia recorded the lowest current

assets to total debt ratio, suggesting, once again, the presence of problems of long-term

solvency and financial risk prior the twin financial and currency crisis of 1997–1998. In

Thailand and Indonesia, at sectoral level, all the sectors under investigation witnessed a

decline in the current assets to total debt ratio.

During the period 1996–1998, Malaysia also experienced a decline in the ratio of current assets to total debt (in 1996 the ratio for Malaysia was 1.91; it then subsequently declined to 1.54 in 1997 and to 1.42 in 1998). Therefore, it could be argued that all the three crisis countries witnessed a sharp decline in the ratio. However, the main difference between Malaysia and the other two crisis countries was that during the crisis period Indonesia and Thailand ended with a ratio below 1, whereas in Malaysia even during the crisis-period current assets were still sufficient to cover total debt. This difference is due to the lower level of current assets to total debt in 1996 for both Thailand and Indonesia, which suggests, once again, the presence of liquidity problems also when the peg and quasi peg held against the dollar. The sectoral analysis of Malaysia reveals that the two sectors with the sharpest decrease during the financial crisis were the construction and materials and the personal goods sector (the former declined from 1.99 in 1996 to 1.31 in 1998, whereas the latter decreased from 3.76 in 1996 to 1.81).

II.4 Current ratio – Ratio of Current Assets to Current Liabilities

The current ratio measures the ability of a firm, sector or the economy, to meet its current liabilities out of current assets[19] [Shim and Siegel, 1998, 23]. A high ratio is needed when the firm (sector or the economy) has difficulties borrowing on short notice. The higher the ratio the higher is the ability to satisfy short-term debt obligations using current assets. When the ratio is lower than 1, current assets are not sufficient to cover current liabilities, and so the company, sector or the economy, is illiquid and could become financially fragile. As 1 represents the point at which current assets equals current liabilities, in the graphs of figure 4 the x-axis are crossed with the y-axis at (0,1) rather than (0,0).

Figure 4 shows the movements in the aggregate current ratio for Thailand, Indonesia, Malaysia, Singapore and Hong Kong for 1996 to 2004 (tables 22 to 28, appendix 1, report the aggregate and sectoral results of the current ratio for the selected countries).

(Figure 4)

During 1996–1998, Thailand and Indonesia exhibited a sharp decrease in the aggregate current ratios. In this period, the current ratio for these two countries plummeted below 1, indicating that current assets were not sufficient to cover current liabilities. This signals the presence of serious short-term liquidity problems for both these two crisis countries. From 1999 the current ratio for both countries started to improve, thus an increase in liquidity and a decrease in financial fragility was adverted in these two countries. A comparison with the non-crisis countries of Singapore and Hong Kong shows that these two non-crisis countries maintained high levels of current ratio throughout the period, thus suggesting that these countries did not suffer from short-term liquidity problems. Furthermore, in 1996 the current ratios for both Thailand and Indonesia were fairly positive (1.4 and 1.6 respectively), which indicates that these two countries did not have major short-term liquidity problems in the pre-crisis period. The sectoral analysis of both Thailand and Indonesia reveals that almost all sectors witnessed a decline in the current ratio[20].

From 1996 to 1998 the aggregate current ratio for Malaysia also declined. However, this decline was not as sharp as the decline for Thailand and Indonesia. Malaysia witnessed a decrease in the ratio of 15 per cent during 1996 – 1998 whereas the ratio for Thailand and Indonesia declined, on average, by 54 and 92 per cent in the same period. Furthermore, the current ratio for Malaysia did not decline below 1, as in Thailand and Indonesia. This might suggest that Malaysia suffered the least from short-term liquidity problems and from reversal

of short-term flows. The sectoral analysis of the current ratio for Malaysia shows that despite all sectors witnessing a slight decline in the current ratio, they all recorded a ratio above 1.

II.5 Movements in Assets and Liabilities

A major limitation of ratio analysis is that the results of a ratio do not describe the movement and the quality of its components. However, movements in assets and liabilities are important in order to identify the theoretical implications of these findings. One of the main aims of this comparison is to identify whether the deterioration of balance sheets is the result of an increase in the liability side or the result of an overall balance sheet expansion (that is both assets and liabilities increase). Figure 5 shows the movements in the aggregate total assets and total debt (liabilities) for Thailand, Indonesia, Malaysia, Singapore and Hong Kong from 1996 to 2004.

(Figure 5)

During the crisis period (1997-1998), the two crisis countries of Thailand and Indonesia experienced a sharp increase in both total assets and total liabilities. The graphs for Thailand and Indonesia show that there was a co-movement between assets and liabilities. This might suggest that increases in assets were mostly the consequence of increases in liabilities[21]. Ultimately, this indicates that the increase in assets was mainly the result of increases in total debt rather than increases in revenue (or equity)[22]. Malaysia also exhibited an increase in both assets and liabilities. However, the increase in total assets was greater than the increase in total debt. This suggests that assets expansion was not only driven by an expansion in total debt but also by an increase in revenue (or equity). Finally, the two non-crisis countries of Hong Kong and Singapore had a fairly stable level of total debt whereas

total assets were subject to more fluctuations. This, once again, suggests that movements in total assets were mainly the result of movements in revenue (or equity).

The graphs of figure 5 also shows that the margin between total assets and total debt was much narrower for the two crisis countries of Thailand and Indonesia than the crisis country of Malaysia and the two non-crisis-countries of Singapore and Hong Kong. For instance, in 1997 total assets in Thailand and Indonesia were 1.44 and 1.56 times bigger that total debt respectively, whereas in Malaysia, Singapore and Hong Kong in 1997 assets were 3.18, 5 and 3.7 times bigger than total debt respectively. The margin for Thailand and Indonesia started to improve from 2001 and reached its widest point in 2004.

II.6 Financial sector analysis: Banks' liquidity

This ratio measures the banks' liquidity exposure. A high ratio of loans net to deposits indicates that the bank relies heavily on the short-term money market rather than on core deposits to fund loans. This could mean future liquidity problems if the bank is near its borrowing limits in the purchased fund market [Saunders and Cornett, 2006, 476]. Figure 6 shows the aggregate movements of the ratio of loans net to deposits (banks) for Thailand, Indonesia, Malaysia, Singapore and Hong Kong, for the period 1996 – 2003 (table 29, appendix 1, reports the results of the ratio of loans net to deposits).

(Figure 6)

During 1996–1999, Thailand and Indonesia exhibited the highest ratios of loans net to deposits. This suggests that these two crisis-countries had the highest reliance on the short-term money market as compared to the other countries in the sample. Therefore, these two countries had the highest risk of incurring liquidity problems. Furthermore, the ratio for these two countries also exhibited the highest increase during the crisis period (the ratio for

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Indonesia increased by 11 per cent from 1996 to 1997 and by 23 per cent from 1997 to 1998; in Thailand the ratio increased by 12 per cent from 1996 to 1997 but then decreased by 6 per cent from 1997 to 1998). After the years of the crisis while the ratio for Thailand decreased towards levels similar to the non-crisis countries and Malaysia, the ratio for Indonesia remained extremely volatile and started increasing once again from 2001. This suggests that in the period 2001–2003 banks in Indonesia might still have had liquidity problems. Finally, the ratio for Malaysia was fairly in line with the two non-crisis countries of Singapore and Hong Kong. This might suggest that Malaysia did not rely as heavily on short-term money market both prior and during the twin crisis as did Thailand and Indonesia.

III THEORETICAL IMPLICATIONS

This research reveals that the dynamics that move an emerging market economy from stability to fragility and to twin crisis are complex and influenced by different factors. Both the conventional and the alternative approach to twin crises fail to appreciate this, because of a tendency to make just one factor the main cause of fragility and twin crisis. It is questionable that only one factor, be it investors' panic, wrong domestic policies or the inability of the emerging market economy to borrow abroad in its local currency, has dramatically altered financial, solvency and credit risk, and has affected the liquidity and solvency of financial and non-financial institutions of Thailand, Indonesia, and to a certain extent Malaysia.

Furthermore, the review of the existing literature also reveals that a great number of analysts, both in the conventional and in the alternative approach to twin crises (for instance Mishkin [2001], Eichengreen et al [2003; 2005], Arestis and Glickman [2002]), analyse the events taking place in different Southeast Asian countries at the end of the 1990s as one single phenomenon: the Southeast Asian crisis. However, the comparative analysis of the three

Southeast Asian crisis countries of Thailand, Malaysia and Indonesia, conducted in this research, shows that the deterioration of balance sheets of financial and non-financial institutions has not been homogenous. This indicates that many country-specific factors, as well as factors common to more than one country, shifted these three countries from stability to fragility and crisis, and not just one factor as alleged by many analysts. Therefore, the analysis of the causes and dynamics of twin crises in Southeast Asia should take into account both the economic differences and the level of economic and financial development of each country. As Willet et al [2005, 2] stress 'the focus on the events in Southeast Asia in 1997 should be on the "crises" rather than the crisis'. Therefore, the remaining sections attempt to analyse the result of this research taking into account the specific economic problems that the three crisis countries faced during the 1990s.

III.1 Thailand and Indonesia

The ratio analysis for Thailand and Indonesia partially validates the existing literature on the dynamics of twin crises: the peg of Thailand and quasi-peg of Indonesia led to a huge influx of (short-term) capital to finance domestic activities, and this influx increased financial, credit and solvency risks in the two crisis countries, created a fragile and crisis-prone environment and increased liquidity problems in the both the financial and non-financial sectors of the economies of Thailand and Indonesia. This is confirmed by both the negative aggregate and sectoral trends of all the ratios for the two crises countries (including the ratio of loan nets to deposits), and by the poor initial ratio levels (1996) which were not in line with the two non-crisis countries of Singapore and Hong Kong. This is further validated by the existing macroeconomic data which indicates that external debt in Thailand more than tripled from US dollar 29 billion in 1990 to US dollar 94 billion in the middle of 1997 [Vajragupta

and Vichyanond in Masuyama et al, 1999], while in Indonesia in 1996 foreign debt was also high in absolute levels at US dollar 135 billion [McLeod, in McLeod and Garnaut, 1998].

However, it is also important to stress that both the conventional and the alternative balance sheet approach to twin crises in emerging markets have ultimately provided only a partial analysis of the causes of financial fragility and on the dynamics of twin crises. This is because these two approaches have focused merely on the liability side of the balance sheet and have disregarded the asset side. When the movements of assets and liabilities are compared (section II) it becomes apparent that balance sheets in Thailand and Indonesia expanded, meaning that both assets and liabilities played a role in creating fragility and leading the countries towards a fully-fledged twin crisis.

This implies that the investigation of the dynamics of twin crises and of the causes of financial fragility should not be limited to the analysis of changes in the liability side of the balance sheet but it should look at the co-movement between assets and liabilities. In the case of Thailand and Indonesia assets and liabilities grew at a similar pace, and this indicates that the increases in assets were mainly the result of increases in liabilities and not due to increases in either revenue or equity. Ultimately, this signals that another possible cause of financial fragility and crisis might be that firms in the crisis countries of Thailand and Indonesia witnessed a huge decrease in revenue prior to and during the twin crisis. Warr, for instance, reports that by 1996 Thailand started to experience a severe slowdown in export growth, especially in manufactured exports from labour-intensive industries [in McLeod and Garnaut, 1998], and when export growth slows down firms' revenue is also negatively affected. This slowdown was due to several factors, including: the appreciation of the Baht against the dollar; the sharp increase in real wages [Warr, in McLeod and Garnaut, 1998]; the severe shortage of skilled and semi-skilled labour workers which encouraged manufacturers to relocate their plants to countries such as China and Vietnam where unskilled labour was

cheaper, and to Malaysia, Hong Kong and Singapore where skilled labour was more readily available [Booth, 2001]; and to increased competition from China, which started taking the lead in regional exports. Indonesia also shared with Thailand some of these key vulnerabilities, with the addition of political problems which, through rent-seeking behaviour and cronyism, also led to a loss of confidence of both domestic and international investors [McLeod, in McLeod and Garnaut, 1998]. Ultimately, the countries of Hong Kong and Singapore were not affected by either increases in (short-term) debt or by deterioration of (export) revenue. Due to the more advanced level of financial development these two countries had plenty of liquidity to fence a speculative attack on the currency, and so they were able to avoid a fully-fledged financial crisis.

III.2 Malaysia

The analysis of the results for Malaysia (section II) reveals a fairly different trend as compared to Thailand and Indonesia. This is not to say that this country did not suffer from financial fragility and crisis, but it indicates that the dynamics affecting this country were different from those of Thailand and Indonesia. Malaysia witnessed an increase in financial, solvency and credit risks during the period 1997-1999. However, the increase in these risks was lower than the other two crisis countries for two main reasons. First, Malaysia was less dependent on short-term capital than Thailand and Indonesia. The majority of capital inflow entered the country in the form of Foreign Direct investment (FDI), and so during 1986-1996 Malaysia's foreign debt remained at 20-30 per cent of GDP [Athukorala, 2000] (This can also be seen in this research by the ratio of loans net to deposits which was fairly in line with the two non-crisis countries of Hong Kong and Singapore).

Second, the deterioration of the accounting ratios was the result of problems mostly in the non-tradable sector (construction and materials and real estate sector) which could perhaps

suggest the presence of a bubble in the property markets (also experienced by Thailand and Indonesia). Ultimately, it is important to stress that export revenue was not affected to the same extent as Thailand and Indonesia. Athukorala [2000] reports that the Malaysian economy experienced virtually full employment for the six years prior the crisis and modest inflation (4.5%), the country's foreign currency sovereign credit rating was an A+, in the same league as Hong Kong. In terms of political stability and policy continuity, Malaysia appeared much better off than Thailand and Indonesia [Athukorala, 2000]. Furthermore, it can be argued that the tradable sector also benefited from the relocation of manufacturing firms from Thailand and hence this particular sector suffered the least from the twin crisis.

The differences between Thailand, Indonesia and Malaysia also suggest that it is not possible to lump all these countries together and talk about a single Southeast Asian crisis. Furthermore, it seems that the dynamics of the Malaysian twin crisis cannot be explained by just looking at the balance sheets of financial and non-financial organizations, as the changes in the accounting ratios here reported, especially the gearing ratio, the ratio of current assets to total debt, and the ratio of loans net to deposits, were not so dramatic to suggest that the country could incur a fully-fledged financial crisis.

Athukorala [2000] suggests that Malaysia, despite keeping prudent regulation for banks, became a depository for a substantial volume of volatile equity capital, in particular portfolio investments. The economy was experiencing an equity market bubble in which foreign investors and domestic banks played crucial roles. In this context, there was a strong probability of a reversal of capital inflows to generate economic collapse through wealth contraction and banking sector instability. Therefore, the combination of a slight deterioration of balance sheets, the property bubble and problems in the stock markets, such as the inability of domestic firms to hedge against currency risk, might have played a key role in shifting Malaysia from stability to fragility and into a twin financial and currency crisis.

Once again, Singapore and Hong Kong did not suffer from a similar crisis because of the more advanced degree of financial and economic development. In these two countries for instance the equity markets were more advanced and domestic firms had a higher ability to hedge against risk. As a result some firms were more able to protect themselves in the event of capital flight.

IV CONCLUSION

This study shows that in order to understand the dynamics of twin crises and the causes of financial fragility in emerging markets it is important to undertake a country specific and comparative analysis of individual, sectoral and aggregate balance sheets of financial and non-financial institutions. The originality of this research lies in having taken balance sheet data of crisis and non-crisis Southeast Asian countries and used it to compare theories, whereas most proponents put forward theories and then find data to fit their theories. This analysis has brought to light that in Thailand, Indonesia and Malaysia the causes of fragility and the dynamics of twin crises were diverse and often country specific. The results suggest that the view of many analysts, both in the conventional and in the alternative approach to twin crises (for instance Krugman [1999], Mishkin [2001], Arestis and Glickman [2002], Kregel [1998], amongst others), is too narrow in attributing to just one cause the fragility and twin crises in emerging markets, and lumping together countries with different levels of financial development, economic and political histories.

Section III presents a range of evidence in support of these arguments. The comparison of the ratios for Thailand and Indonesia with the two non-crisis countries of Singapore and Hong Kong reveals that financial and non-financial companies in the two crisis countries were already experiencing high levels of financial, solvency and credit risk, and

problems of long term liquidity in 1996, the year before the crisis, when the central banks of these two countries were able to maintain the peg against the US dollar. In Malaysia, however, in 1996 the majority of the sectoral and aggregate ratios were closer to the values of Hong Kong and Singapore, rather than to the two other crisis-countries. Therefore, it is possible to speculate that the three crisis countries arrived at the eve of the twin crisis of 1997-1998 with different economic situations and different levels of financial and economic development. One might then conclude that this influenced the behaviour of these economies during and after the twin financial and currency crisis. Furthermore, the evidence that the crisis countries were at different stages of financial and economic development should deter analysts from talking about a Southeast Asian crisis, and propel them to recognise instead that in Southeast Asia in 1997-1998 there were several different twin crises with their own characteristics and dynamics.

Moreover, the analysis of the movements in the sectoral and aggregate ratios between 1997 and 1999 also reveals that Thailand and Indonesia witnessed extremely negative trends, whereas the trends for Malaysia, despite being negative, were closer to the values of the two non-crisis countries of Singapore and Hong Kong. Therefore, it is possible to conclude that Malaysia did experience financial fragility and a twin crisis, but this crisis did not have the same impact on balance sheets of financial and non-financial institutions as in the case of Thailand and Indonesia. This rests on the recognition that in Malaysia not all sectors of the economy were badly affected by the twin crisis; for instance, as section II highlights, two sectors of the economies which witnessed the worst deterioration of balance sheets during the twin crisis were the construction and materials and the real estate sector, whereas the general industrial and industrial metals and the chemical sectors saw less deterioration.

The findings indicate that the main problems of the Malaysian economy were to be found in the non-tradable sector, and this is confirmed by the existing literature which

highlights that one of the main problems of this country was the presence of an asset bubble. Furthermore, another difference with the other two crisis countries was that Malaysia also experienced an equity market bubble which might have not directly affected balance sheets but which has serious implications for financial stability. Therefore, it is possible to speculate that the crisis in Malaysia had its own dynamic and it might be misleading to discuss a unique explanation for the events taking place in Thailand, Indonesia and Malaysia during the late 1990s.

The analysis of the movements in assets and liabilities of non-financial sector balance sheets reveals that problems in the liability side of the balance sheet, that is problems of over indebtedness, were only one of the many factors which weakened balance sheets, increased financial fragility and triggered a twin crisis. The discussions in Section III illustrates how if assets and liabilities move on a similar fashion (that is if the balance sheet expands), as in the case of Thailand and Indonesia, increases in assets are mainly the results of increase in liabilities (or indebtedness) and hence the sector (or the whole economy) might also be experiencing revenue problems. On the other hand, if assets increase at a greater rate than liabilities this might indicate that the country is experiencing an increase in indebtedness but perhaps not experiencing serious revenue problems (as in the case of Malaysia). Many analysts, adhering to either the conventional or the alternative approach to twin crises, have mainly focused on the liability side of the balance sheet and thus have seen the Southeast Asian twin crisis as a direct result of over indebtedness. However, as highlighted in section III, this is only partially true, as countries like Thailand and Indonesia also experienced problems of declining export growth both prior and during the twin crisis.

Finally, we emphasise again the need, in the analysis of emerging market crises, to examine more carefully how the financing of firms in different sectors and different-sized firms in the same sector, is affected by developments in the financial system. This, as our

study shows, is absolutely critical for a proper understanding of the origins and mechanisms

of financial crises in emerging markets.

NOTES

[1] A twin crisis is a type of crisis in which banking and currency crises are closely entangled [Kaminsky and Reinhart, 1999].

[2] Currency mismatches are defined as the difference in the values of the foreign currency denominated assets and liabilities on the balance sheets of households, firms, the government as a whole [Eichengreen et al, 2005]

[3] For further information on the Chang and Velasco ban-run models see Chang and Velasco [1998].

[4] Adverse selection occurs before the financial transaction takes place, when potential bad credit risks are the ones who most actively seek out loans [Mishkin, 2001, 1]. Moral hazard arises after the transaction takes place owing to the borrower having incentives to invest in projects with high risk in which the borrower does well if the project succeeds, but the lender bears the brunt of the loss if the project fails [Mishkin, 2001, 2]

[5] For example Eichengreen and Hausmann [1999], Eichengreen et al [2003; 2005], Eichengreen [2004], Hausmann and Panizza [2003].

[6] Keynes' understanding of uncertainty and risk originates from a recognition that financial transactions are underpinned by intertemporal contractual commitments made on agents' expectations that are subject to extremely volatile, continuous revisions overtime as unforeseen changes take place [Nissanke and Stein, 2003, 295]. According to Keynes, business investment in inventory and durable capitalist assets require external financing from banks or other financial institutions. This need for external finance imposes a negotiating process between bankers and businessman on the investment process [Minsky, 1996]. This process forces agents to acknowledge that ignorance and conjecture enter decisions to create and finance capital assets, whose value depends upon the markets view of their prospective returns over a long time horizon [Minsky, 1996]. The uncertainty that permeates the economics of Keynes is due to unsureness about the validity of the model of the economy that enters in the decision process [Minsky, 1996]. Keynes also asserts that in an uncertain environment the decisions of economic agents about the future depend only in part on rational calculation; rather they are based on other "non rational" motives, such as habits, instinct, preference, desire, will and "passions" [Marchiorati, 1999].

[7] Schumpeter views finance as the engine that allows firms to appropriate the resources necessary to introduce new technological innovation. Finance is "the handmaiden of the creative destruction that allows industry to produce technological advances and economic development" [Nissanke and Stein, 2003, 295]. However, technological innovation needs to be financed by the issue of liabilities that can be honoured only if this innovation is successful. As a result financial transactions involve very high uncertainty and risks which create systemic instability [Nissanke and Stein, 2003, 295]. This instability manifests itself in continuous fluctuations in economic activities accompanied by unemployment, bankruptcies and structural transformation. Schumpeter view of uncertainty and risks is an ancestor of Keynesian macroeconomics [Nissanke and Stein, 2003, 295].

[8] In 1993 Fisher points out that serious over-speculations and crises are caused by the interaction between debt and the purchasing power of the monetary unit. This analysis of two

crucial monetary and financial variables and the destabilizing effects on an economy has been developed in the 1970s by Hyman P. Minsky in his Financial Instability Hypothesis (FIH) [Toporowski, 2005, 76]. Fisher argues that debt deflation is set off by over-indebtedness. This, in turn, was set off by overborrowing, due to low interest rates raising the temptation to borrow, and invest or speculate with borrowed money [Toporowski, 2005, 77]. Once over borrowing takes place, borrowers try to reduce their debt by increasing sales of their assets. This causes prices to fall. Falling prices in turn raise the value of money and the value of debts denominated in nominal terms [Toporowski, 2005: 77]. Then 'we have the great paradox which I submit is the chief secret of most if not all great depressions: the more debtors pay, the more they owe. The more the economic boat tips, the more it tends to tip. It is not enough tending to right itself, but is capsizing' [Fisher, 1993, 344]. 'The result is a process whereby debt reduces the velocity of circulation of banks deposits, causing a fall in the level of prices, falling profits and bankruptcies. Falling output and employment in turn lead to pessimism and hoarding which further slows down the velocity of circulation' [Toporowski, 2005: 77].

[9] For an analytical explanation of Kalecki view on profit and finance see Toporowski [2005, Ch. 11] *The principle of increasing risk III: Michal Kalecki and Josef Steindl on profits and Finance*.

[10] The systemic (or structural) instability of a certain unit refers to the likelihood that a certain structure persists unchanged, notwithstanding the effects of a small perturbation. This type of instability is opposed to dynamic instability in which the observed unstable processes are interpreted as either temporary deviations from equilibrium that do not affect the basic equilibrium trends of the economy, or as disequilibrium paths in proximity of a stable equilibrium which may exert an influence on the quantitative features of equilibrium but not on their qualitative characteristics [Vercelli, 2000]. Since the mid-1970s, new classical economists have focused on dynamic instability: cyclical movements are not seen as disequilibrium movements around, or in proximity of, equilibrium but as cyclical fluctuations of the equilibrium itself which is allegedly always assured. Therefore, for this school of thought cycles are by definition purely endogenous [Vercelli, 1999].

[11] Hedge financing units are those who can fulfil all their contractual payment obligations by their cash flows, while speculative units are those units that can meet their payment commitments on "income account" on their liabilities, even as they cannot repay the principle out of income cash flow. These units need to roll-over their liabilities. Finally, a Ponzi unit is characterised by the lack of cash flow from operation to fulfil either the repayment of principle or the interest due on outstanding debt. These units can sell or borrow in order to fulfil the outstanding commitments [Minsky, 1982, 7].

[12] Minsky's cycle is based on the tendency of investment to increase whenever the financial structure of the economy is solid and the fears raised by the last financial crisis are sufficiently distant in the past. The acceleration of the investment gradually deteriorates the financial solidity of the economy, and eventually after sustained boom the financial structure of the economy becomes so fragile that a small shock may be sufficient to trigger a financial crisis which severely reduces investment. Only after a sufficiently long period of depression the financial structure becomes sufficiently solid again to allow a new upturn of investment [Vercelli, 1999, 13].

[13] Cruz et al, [2005] focus on the Mexican Peso crisis adapting the analysis that Arestis and Glickman [2002] have put forward for Southeast Asia.

[14] Balance sheet data used to calculate the ratios for non-financial institutions (listed companies) has been obtained from DataStream Data while data for financial institutions

(banks) has been collected, already at aggregate level, from the central banks of each Southeast Asian country, and this has been used to compute the ratio of loans net to deposits.

[15] Current liabilities include the current portion of long-term debt.

[16] Solvency is defined as the company's ability to meet its long-term obligations as they become due [Shim and Siegel, 1998]. Ratios which measure solvency often take into account what is classified as long-term liabilities in the balance sheet. However, many firms rely on overdrafts facilities and other short-term borrowing, for example commercial bills, as a long-term source of funds [Arnold, 2002, 805]. Furthermore, if we are concerned about the potential distress, then we must recognise that the inability to repay an overdraft can be just as serious as an inability to service a long-term bond [Arnold, 2005, 805]. In this research the ratios measuring solvency will take into account both long- and short-term debt.

[17] Credit risk is defined as the risk that a counterpart to a financial transaction will fail to fulfil their obligations [Arnold, 2002, 1041].

[18] Unfortunately, the ratio has not been calculated for the real estate sector as the balance sheet report from DataStream did neither report the total current assets nor all the individual current asses for this sector. Therefore, the analysis of this ratio, at aggregate level is influenced by these missing values.

[19] This ratio has two limitations: first, this ratio may rise just prior to financial distress because the company might improve its cash position by, for example, selling fixed asset [Shim and Siegel, 1998, 23]. Ideally, this research should have focused on analysing balance sheets from the early 1990s so that this phenomenon could have been investigated. However, due to lack of data and time constraint this was not possible. Second, the ratio has not been calculated for the real estate sector as the balance sheet report from DataStream did not report the total current assets (and current liabilities) or all the individual current asses (and current liabilities)for this sector. Therefore, the analysis of this ratio, at aggregate level is influenced by these missing values.

[20] The worst affected sectors in both countries are the construction and materials (In Indonesia the ratio for this sector decreases from 2.37 in 1996 to 0.51 in 1998, in Thailand the ratio for this sector decreases from 2.14 in 1996 to 0.4 in 1998), and the general industrial and industrial metals (in Indonesia the ratio for this sector decreases from 1.54 in 1996 to 0.77 in 1999 whereas in Thailand it decreases from 1.11 to 0.88 in the same period). This suggests that some sectors of the Thai and Indonesian economies have witnessed a dramatic reversal of short-term capital from 1996 to 1998.

[21] this is a double entry bookkeeping effect: an increase in the liability leads to an increase in current assets – such as cash or bank

[22] A steeper line for total assets, on the other hand, would indicate that increases in current assets are the consequence of both increases in revenue (or equity) and liabilities (if total debt increases), or just revenue (or equity) (if total debt is constant).

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Annexes

Figure 1 *Gearing ratio*: Thailand, Indonesia, Malaysia, Singapore and Hong Kong 1996 –
2004

Gearing ratios

Thailand — Indonesia — Malaysia — Singapore — Hong Kong

$$Gearing = \frac{TD}{TD + TC}$$

TD = Total Debt (long- and short-term debt)
TC = Total Capital

*Source: Calculations by the authors, original data from
DataStream*

*Sample Size: Hong Kong 65 firms, Malaysia 84 firms, Singapore 49
firms, Thailand 55 firms, Indonesia 50 firms*
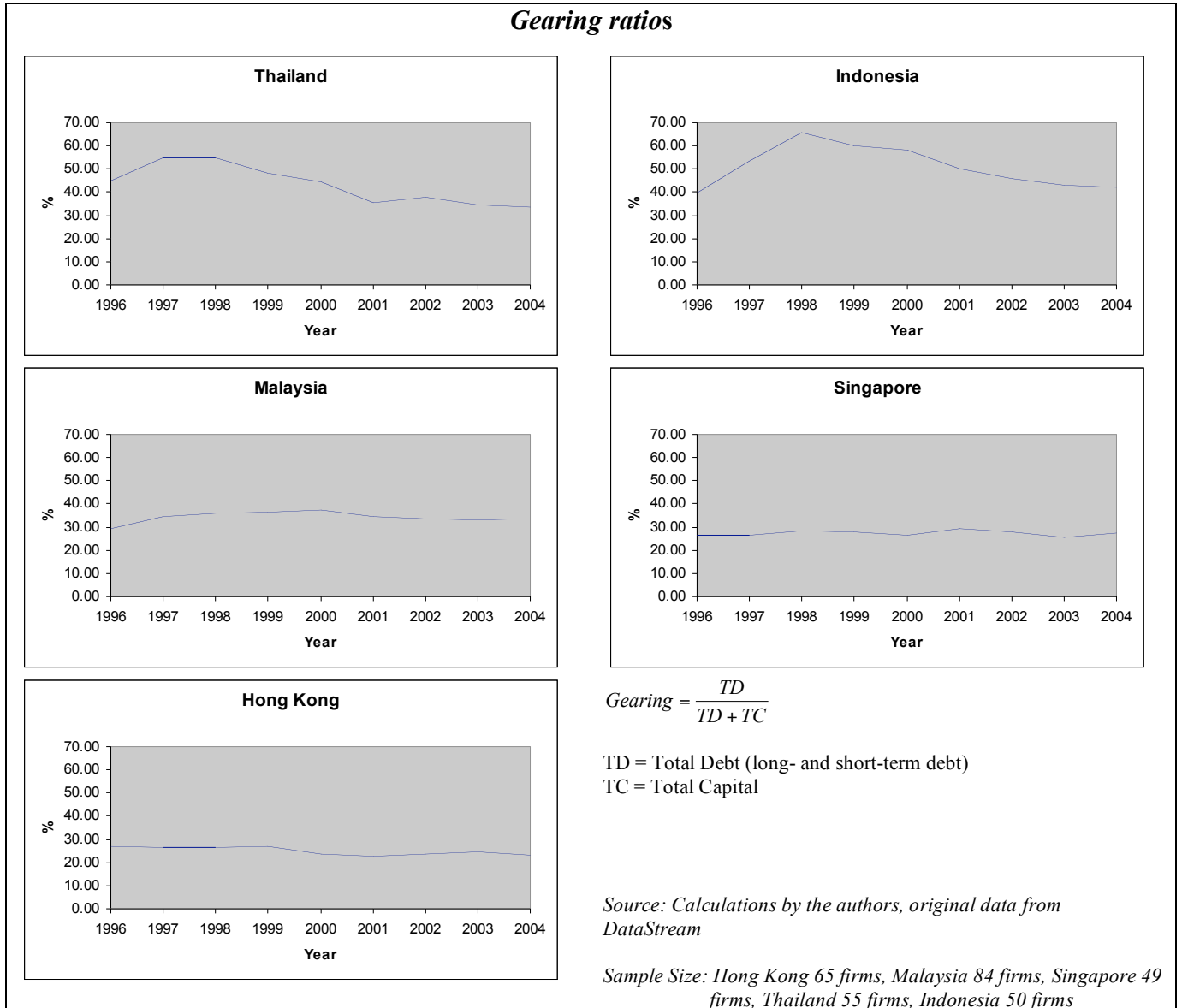
Figure 2 *Debt Ratio*: Thailand, Indonesia, Malaysia, Singapore and Hong Kong 1996 – 2004

Debt ratios

Thailand

Indonesia

Malaysia

Singapore

Hong Kong

$$DR = \frac{TD}{TA}$$

DR = *Debt ratio*
TD = Total Debt (long- and short-term debt)
TA = Total Assets

Source: Calculations by the authors, original data from DataStream

Sample Size: Hong Kong 65 firms, Malaysia 84 firms, Singapore 49 firms, Thailand 55 firms, Indonesia 50 firms

42
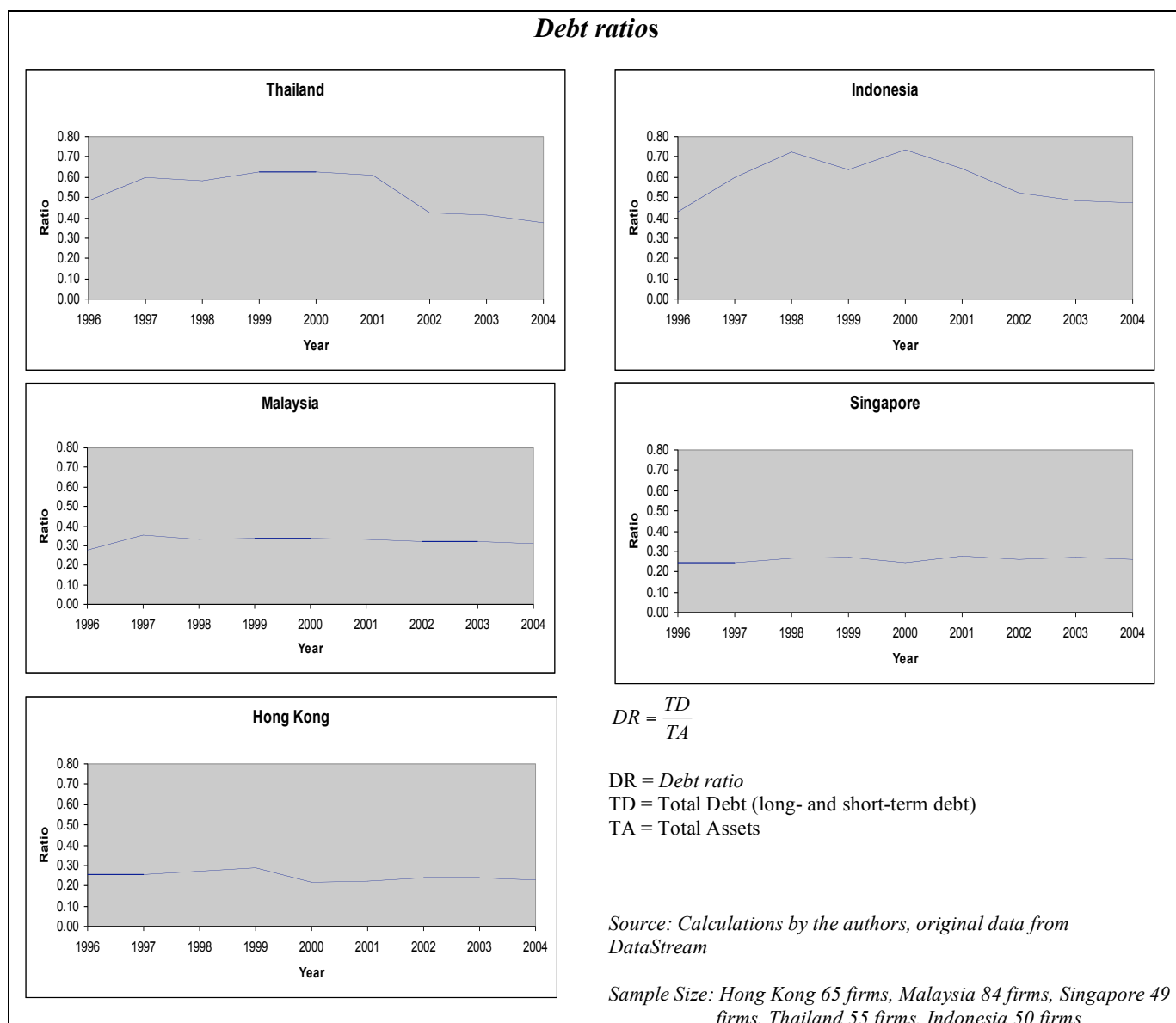
Figure 3 *Ratio of current assets to total debt*: Thailand, Indonesia, Malaysia, Singapore and Hong Kong 1996 - 2004
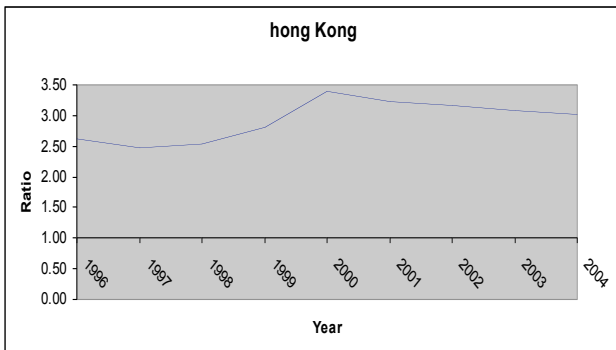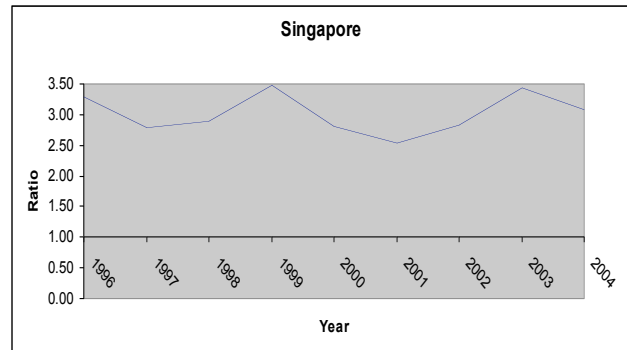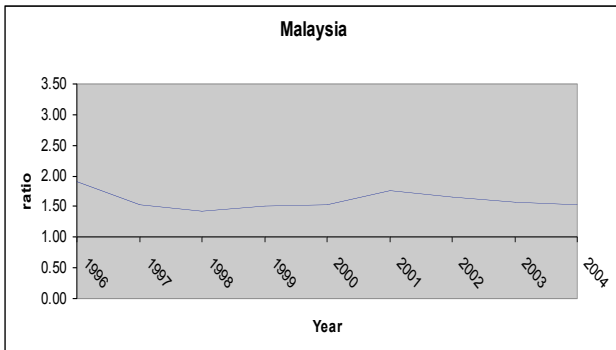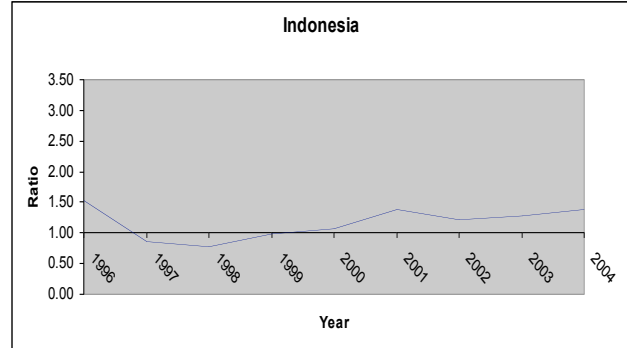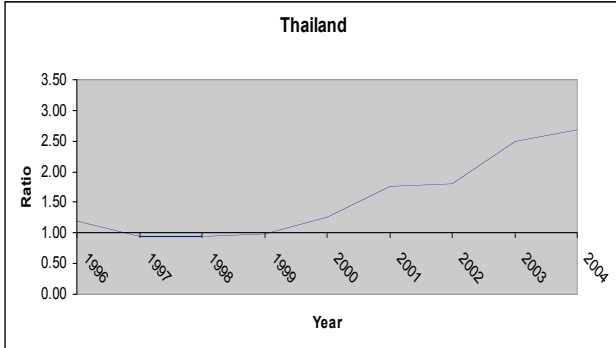
$$CATD = \frac{CA}{TD}$$

CATD = *Ratio of current assets to total debt*
TD = Total Debt (long- and short-term debt)
CA = Current Assets

Source: Calculations by the authors, original data from DataStream

Sample Size: Hong Kong 65 firms, Malaysia 84 firms, Singapore 49 firms, Thailand 55 firms, Indonesia 50 firms

***Missing Values**: The Balance Sheet Report in DataStream does not show the total value of current assets for companies in the real estate sector. Hence the ratio for this sector has not been calculated.*

Figure 4 Current Ratio: Thailand, Indonesia, Malaysia, Singapore and Hong Kong 1996 - 2004

Current Ratios

$$CR = \frac{CA}{CL}$$

CR= Current Ratio
CA = Current Assets
CL = Current liabilities (including current portion of long term debt)

Source: Calculations by the author, original data from DataStream

Sample Size: Hong Kong 65 firms, Malaysia 84 firms, Singapore 49 firms, Thailand 55 firms, Indonesia 50 firms

Missing Values*: The Balance Sheet Report in DataStream does not show the total value of current assets and current liabilities for companies in the real estate sector. Hence the ratio for this sector has not been calculated.*

Figure 5 Aggregate movement of total assets and total debt: Thailand, Indonesia, Malaysia, Singapore and Hong Kong 1996 – 2004

Source: Calculations by the authors, original data from DataStream

Sample Size: Hong Kong 65 firms, Malaysia 84 firms, Singapore 49 firms, Thailand 55 firms, Indonesia 50 firms
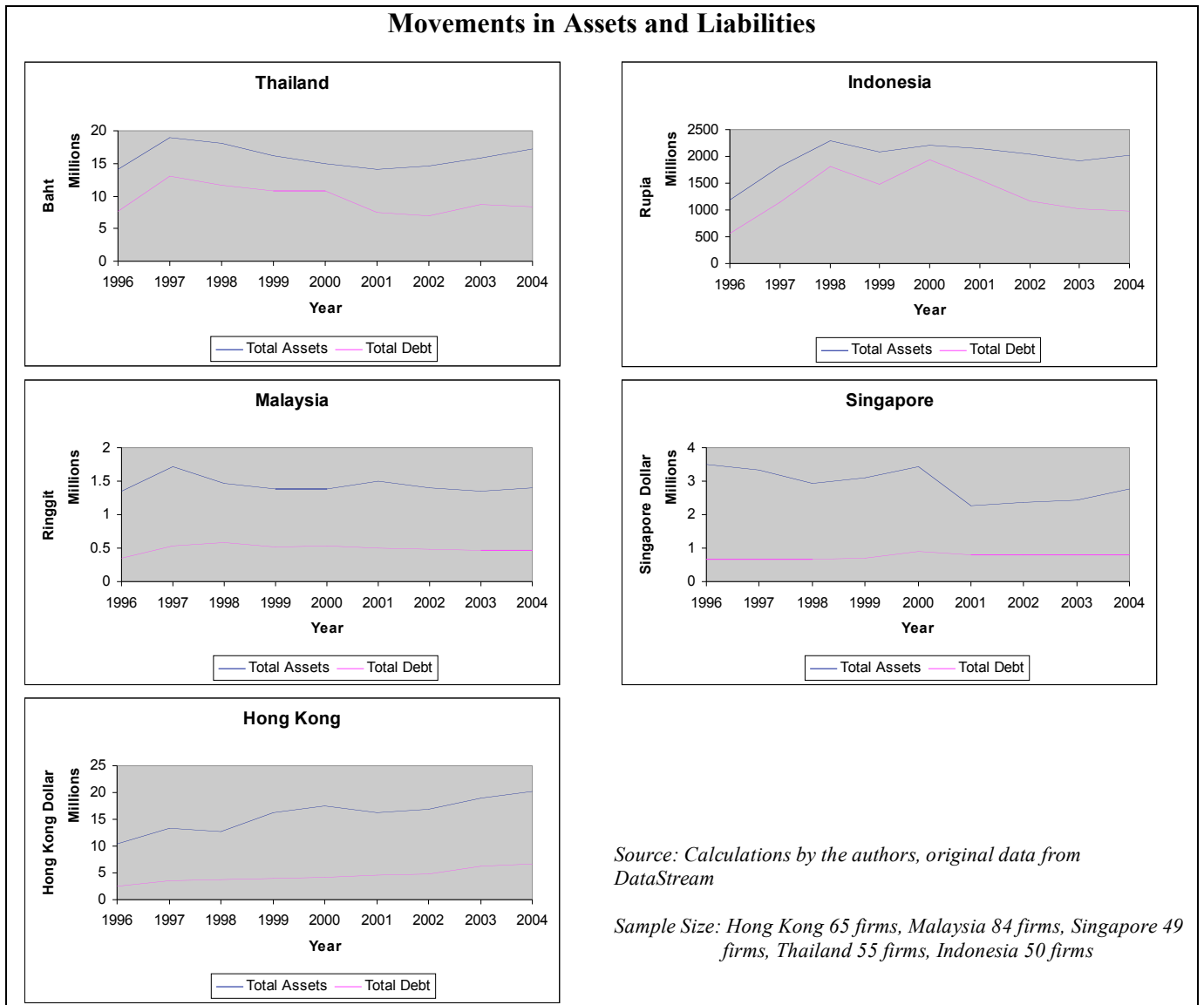
Figure 6 Ratio of Loans Net to Deposits – Banks -: Thailand, Indonesia, Malaysia, Singapore and Hong Kong 1996 - 2003

Ratio of Loans Net to Deposits
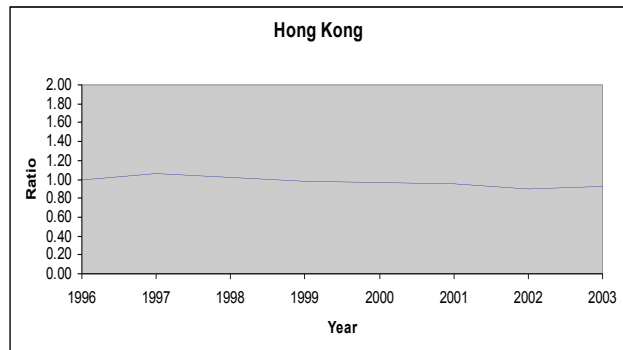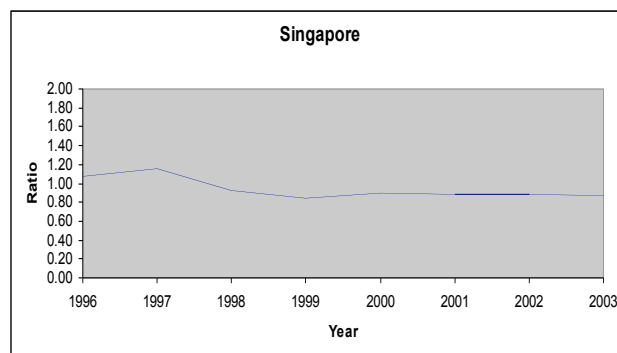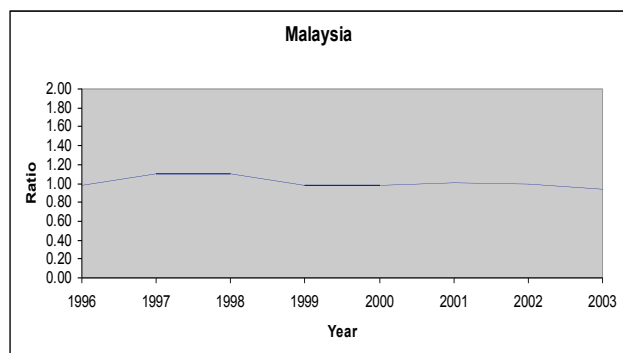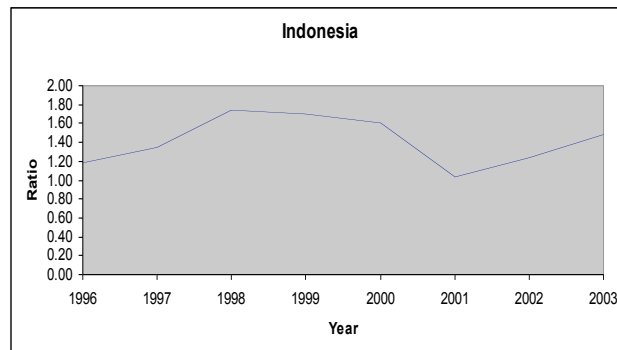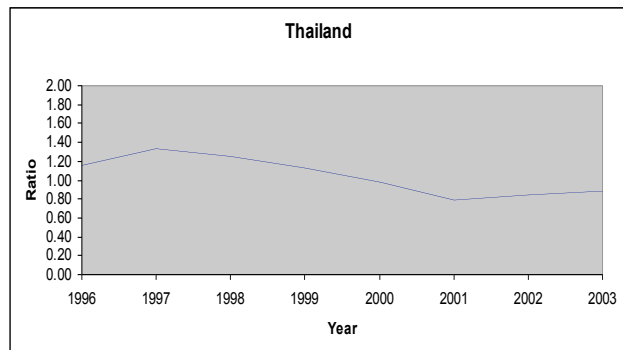
$$BL = \frac{LN}{DEPOSITS}$$

BL= ratio of loan nets to deposits
LN = loans net

SOURCES:
Thailand: Bank of Thailand
Indonesia: Bank Indonesia
Malaysia: Bank Negara Malaysia
Singapore: Monetary Authority of Singapore
Hong Kong: monetary Authority of Hong Kong

APPENDIX 1: RESULTS OF RATIO ANALYSIS

1. Financial Leverage and long-term solvency: *Gearing ratio*- ratio of Total Debt to Total Capital

Table 1 *Aggregate Gearing ratio*: Hong Kong, Indonesia, Malaysia, Singapore and Thailand for the years 1996 – 2004

COUNTRY	1996 %	1997 %	1998 %	1999 %	2000 %	2001 %	2002 %	2003 %	2004 %
Hong Kong	27.13	26.29	26.61	26.90	23.73	22.93	23.82	24.46	23.31
Indonesia	39.73	53.26	65.78	60.12	58.28	50.20	45.83	43.22	42.19
Malaysia	29.42	34.75	35.83	36.38	37.19	34.31	33.44	33.17	33.62
Singapore	26.50	26.42	28.34	28.11	26.58	29.26	27.96	25.77	27.40
Thailand	44.83	54.72	54.70	48.39	44.50	35.57	37.94	34.63	33.56

Source: calculations by the authors, data from DataStream

Table 2 *Gearing ratio*: additional descriptive statistics for each country for the years 1996 to 2004

Country		1996	1997	1998	1999	2000	2001	2002	2003	2004
Hong Kong	(Se)Mean	1.45	1.52	1.57	2.19	1.54	1.55	1.63	1.73	1.66
	Median (%)	24.75	25.77	25.66	22.88	23.46	22.14	22.91	24.16	24.18
	St.Dev.	11.66	12.25	12.56	17.53	12.40	12.50	13.11	13.87	13.06
Indonesia	(Se)Mean	1.69	1.92	2.83	3.06	3.75	3.16	2.42	2.55	2.58
	Median (%)	39.74	52.36	65.47	59.99	56.09	49.98	43.99	40.35	38.10
	St.Dev.	11.94	13.60	19.59	20.98	23.74	19.24	15.12	16.50	16.54
Malaysia	(Se)Mean	1.65	1.80	1.82	2.12	2.20	2.29	2.35	2.07	1.89
	Median (%)	30.94	34.05	34.82	35.41	35.33	33.11	31.63	32.44	31.05
	St.Dev.	15.12	16.51	16.46	19.28	19.84	20.58	20.85	18.64	16.72
Singapore	(Se)Mean	1.98	2.04	2.43	2.44	2.32	2.74	2.69	2.28	3.07
	Median (%)	27.59	29.58	29.03	30.11	26.82	28.18	26.65	25.19	25.58
	St.Dev.	13.26	14.17	16.85	16.71	16.09	19.19	18.44	15.27	20.37
Thailand	(Se)Mean	1.58	2.37	3.20	3.20	3.27	2.53	3.06	3.02	2.91
	Median (%)	44.02	54.90	52.87	46.81	45.47	37.83	41.30	36.99	33.70
	St.Dev.	11.75	17.58	22.83	21.95	22.88	17.72	21.63	21.16	20.16

Source: calculations by the authors, data from DataStream

Table 3 *Gearing ratio*: Hong Kong – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical (%)	30.79	27.37	25.97	17.12	17.76	21.20	15.30	22.39	30.66
Construction and Materials (%)	32.21	30.76	34.46	29.46	29.02	26.14	25.68	27.95	26.76
Electronics, IT and Industrial Engineering (%)	27.89	19.69	22.01	24.53	17.72	19.09	19.10	20.08	19.41
General Industrial and Industrial Metals (%)	30.25	31.83	27.88	23.55	24.99	24.78	27.94	32.13	30.70
Personal Goods (%)	22.66	29.35	28.93	37.48	27.10	20.13	18.74	20.33	17.85
Real Estate (%)	21.37	24.51	25.57	29.05	26.67	25.84	28.80	22.23	19.59

Source: calculations by the authors, data from DataStream

Table 4 *Gearing ratio*: Indonesia – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical (%)	38.82	57.40	69.00	59.01	62.30	46.38	40.13	38.85	37.49
Construction and Materials (%)	37.61	53.03	68.87	67.76	65.37	51.71	44.86	49.64	44.15
Electronics, IT and Industrial Engineering (%)	44.40	59.42	74.64	59.53	47.91	44.63	47.75	43.25	41.21
General Industrial and Industrial Metals (%)	33.76	54.88	73.07	65.21	63.76	46.49	45.51	42.01	45.93
Personal Goods (%)	44.24	51.40	53.96	59.61	55.88	55.14	50.07	47.53	49.78
Real Estate (%)	38.52	46.20	58.34	54.79	60.19	58.11	45.79	39.32	39.20

Source: calculations by the authors, data from DataStream

Table 5 *Gearing ratio*: Malaysia – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical (%)	21.98	24.46	24.72	21.57	27.89	22.67	22.84	25.96	29.89
Construction and Materials (%)	27.16	36.22	35.49	37.95	39.66	37.52	38.04	38.57	42.91
Electronics, IT and Industrial Engineering (%)	38.49	41.22	40.28	43.44	41.71	37.51	39.01	38.73	33.34
General Industrial and Industrial Metals (%)	32.91	36.86	37.80	37.29	38.06	33.53	32.05	31.77	34.16
Personal Goods (%)	18.56	27.70	33.32	30.98	28.79	33.40	40.94	34.08	38.16
Real Estate (%)	25.13	30.75	34.89	34.42	34.43	30.84	29.66	27.62	25.42

Source: calculations by the authors, data from DataStream

Table 6 *Gearing ratio*: Singapore – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical (%)*									
Construction and Materials (%)	28.37	27.86	32.54	29.39	24.69	28.47	27.58	23.91	25.27
Electronics, IT and Industrial Engineering (%)	22.74	20.00	20.98	18.26	22.02	28.80	29.94	28.22	32.79
General Industrial and Industrial Metals (%)	25.40	27.07	21.76	25.10	22.34	27.25	26.02	23.34	20.78
Personal Goods (%)*									
Real Estate (%)	26.25	26.44	31.40	33.14	32.26	28.23	28.17	29.00	30.30

* Results not reported due to lack of data (1 observation per strata)

Source: calculations by the authors, data from DataStream

Table 7 *Gearing ratio*: Thailand – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical (%)	45.39	58.38	52.11	47.01	42.73	36.00	37.49	33.58	31.56
Construction and Materials (%)	46.21	53.32	61.81	51.45	47.22	37.73	45.06	43.15	33.70
Electronics, IT and Industrial Engineering (%)	45.21	54.81	46.02	48.43	39.62	33.76	32.27	30.40	33.22
General Industrial and Industrial Metals (%)	38.46	51.50	53.06	43.03	36.98	26.94	28.53	20.20	25.39
Personal Goods (%)	47.70	54.63	55.25	55.45	42.54	37.11	36.95	30.31	25.45
Real Estate (%)	45.37	54.42	58.84	47.92	46.25	40.06	42.84	41.04	43.23

Source: calculations by the authors, data from DataStream

2. Financial Leverage and long-term solvency: *Debt ratio* - ratio of Total Debt to Total Assets

Table 8 *Aggregate Debt ratio*: Hong Kong, Indonesia, Malaysia, Singapore and Thailand for the years 1996 - 2004

COUNTRY	1996	1997	1998	1999	2000	2001	2002	2003	2004
Hong Kong	0.25	0.25	0.27	0.29	0.22	0.22	0.24	0.24	0.23
Indonesia	0.43	0.60	0.73	0.63	0.74	0.64	0.52	0.48	0.47
Malaysia	0.28	0.35	0.33	0.34	0.34	0.33	0.32	0.32	0.31
Singapore	0.25	0.24	0.27	0.27	0.24	0.28	0.26	0.27	0.26
Thailand	0.48	0.60	0.58	0.63	0.62	0.61	0.43	0.42	0.37

Source: calculations by the authors, data from DataStream

Table 9 *Debt ratio*: additional descriptive statistics for each country for the years 1996 to 2004

Country		1996	1997	1998	1999	2000	2001	2002	2003	2004
Hong Kong	(Se)Mean	0.01	0.02	0.02	0.04	0.02	0.02	0.02	0.02	0.02
	Median	0.25	0.24	0.25	0.24	0.21	0.21	0.20	0.22	0.24
	St.Dev.	0.11	0.13	0.19	0.30	0.13	0.15	0.16	0.14	0.14
Indonesia	(Se)Mean	0.02	0.02	0.04	0.03	0.05	0.05	0.04	0.04	0.04
	Median	0.45	0.63	0.70	0.63	0.69	0.61	0.45	0.43	0.41
	St.Dev.	0.15	0.15	0.25	0.22	0.34	0.35	0.28	0.28	0.27
Malaysia	(Se)Mean	0.02	0.03	0.07	0.02	0.02	0.03	0.05	0.06	0.07
	Median	0.28	0.34	0.33	0.33	0.32	0.31	0.32	0.32	0.30
	St.Dev.	0.16	0.31	0.68	0.19	0.20	0.24	0.43	0.51	0.62
Singapore	(Se)Mean	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.03
	Median	0.24	0.27	0.31	0.26	0.21	0.28	0.23	0.27	0.25
	St.Dev.	0.14	0.14	0.16	0.17	0.16	0.18	0.18	0.19	0.19
Thailand	(Se)Mean	0.02	0.03	0.03	0.06	0.10	0.15	0.06	0.05	0.03
	Median	0.49	0.59	0.62	0.58	0.47	0.40	0.38	0.40	0.36
	St.Dev.	0.14	0.22	0.24	0.41	0.75	1.07	0.39	0.36	0.22

Source: calculations by the authors, data from DataStream

Table 10 *Debt ratio*: Hong Kong – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	0.31	0.26	0.24	0.16	0.16	0.20	0.15	0.21	0.28
Construction and Materials	0.28	0.28	0.31	0.27	0.23	0.24	0.25	0.25	0.25
Electronics, IT and Industrial Engineering	0.25	0.18	0.20	0.22	0.16	0.17	0.17:1	0.17	0.18
General Industrial and Industrial Metals	0.28	0.29	0.26	0.22	0.23	0.23	0.26	0.31	0.30
Personal Goods	0.23	0.28	0.29	0.36	0.23	0.20	0.19	0.20	0.19
Real Estate	0.22	0.27	0.36	0.44	0.29	0.29	0.32	0.26	0.23

Source: calculations by the authors, data from DataStream

Table 11 *Debt ratio*: Indonesia – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	0.43	0.64	0.79	0.63	0.77	0.61	0.50	0.42	0.38
Construction and Materials	0.42	0.68	0.92	0.81	1.03	0.75	0.56	0.56	0.58
Electronics, IT and Industrial Engineering	0.41	0.59	0.71	0.61	0.63	0.57	0.43	0.38	0.36
General Industrial and Industrial Metals	0.34	0.54	0.64	0.54	0.57	0.38	0.37	0.37	0.40
Personal Goods	0.48	0.62	0.56	0.56	0.58	0.59	0.53	0.52	0.50
Real Estate	0.48	0.56	0.70	0.64	0.76	0.78	0.63	0.58	0.57

Source: calculations by the authors, data from DataStream

Table 12 *Debt ratio*: Malaysia – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	0.24	0.26	0.25	0.21	0.23	0.21	0.22	0.25	0.30
Construction and Materials	0.26	0.43	0.32	0.35	0.39	0.42	0.37	0.36	0.35
Electronics, IT and Industrial Engineering	0.34	0.38	0.36	0.38	0.35	0.37	0.41	0.36	0.33
General Industrial and Industrial Metals	0.30	0.35	0.37	0.36	0.36	0.32	0.31	0.33	0.35
Personal Goods	0.17	0.23	0.29	0.29	0.26	0.32	0.34	0.29	0.31
Real Estate	0.25	0.31	0.34	0.36	0.35	0.28	0.30	0.28	0.27

Source: calculations by the authors, data from DataStream

Table 13 *Debt ratio*: Singapore – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical*									
Construction and Materials	0.27	0.25	0.30	0.25	0.21	0.21	0.21	0.28	0.26
Electronics, IT and Industrial Engineering	0.21	0.21	0.22	0.21	0.21	0.28	0.25	0.25	0.23
General Industrial and Industrial Metals	0.21	0.22	0.17	0.20	0.17	0.26	0.24	0.23	0.19
Personal Goods*									
Real Estate	0.28	0.27	0.32	0.36	0.33	0.33	0.31	0.30	0.30

* Results not reported due to lack of data (1 observation per strata)

Source: calculations by the authors, data from DataStream

Table 14 *Debt ratio*: Thailand – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	0.51	0.70	0.57	0.57	0.53	0.42	0.35	0.43	0.36
Construction and Materials	0.50	0.61	0.67	0.77	1.03	1.15	0.65	0.58	0.36
Electronics, IT and Industrial Engineering	0.46	0.57	0.51	0.52	0.46	0.39	0.35	0.31	0.33
General Industrial and Industrial Metals	0.39	0.49	0.48	0.41	0.33	0.34	0.37	0.31	0.33
Personal Goods	0.45	0.51	0.50	0.53	0.46	0.39	0.37	0.30	0.25
Real Estate	0.52	0.63	0.67	0.79	0.73	0.72	0.44	0.43	0.47

Source: calculations by the authors, data from DataStream

3. Financial Leverage and long-term solvency: *ratio of current assets to total debt*

Table 15 *Aggregate ratio of current assets to total debt*: Hong Kong, Indonesia, Malaysia, Singapore and Thailand for the years 1996 - 2004

COUNTRY	1996	1997	1998	1999	2000	2001	2002	2003	2004
Hong Kong	2.62	2.47	2.54	2.81	3.39	3.23	3.15	3.08	3.01
Indonesia	1.54	0.86	0.78	0.99	1.06	1.39	1.21	1.29	1.39
Malaysia	1.91	1.54	1.42	1.51	1.54	1.77	1.66	1.56	1.52
Singapore	3.30	2.78	2.89	3.47	2.81	2.53	2.82	3.44	3.07
Thailand	1.19	0.95	0.95	0.98	1.25	1.77	1.80	2.50	2.68

Source: calculations by the authors, data from DataStream

Table 16 *Ratio of current assets to total debt*: additional descriptive statistics for each country for the years 1996 to 2004

Country		1996	1997	1998	1999	2000	2001	2002	2003	2004
Hong Kong	(Se)Mean	0.37	1.00	1.39	0.63	0.91	0.71	1.18	1.25	0.55
	Median	1.80	1.88	1.95	2.71	2.74	2.59	2.15	1.99	2.01
	St.Dev.	2.56	6.84	9.53	4.35	6.37	4.84	8.20	8.64	3.69
Indonesia	(Se)Mean	0.20	0.08	0.12	0.19	0.19	0.32	0.17	0.18	0.15
	Median	1.26	0.74	0.54	0.63	0.66	0.85	1.01	1.08	1.17
	St.Dev.	1.20	0.50	0.71	1.15	1.12	1.91	1.00	1.06	0.86
Malaysia	(Se)Mean	0.35	0.20	0.23	0.45	0.29	0.40	0.36	0.27	0.84
	Median	1.49	1.48	1.39	1.23	1.24	1.19	1.30	1.30	1.41
	St.Dev.	2.78	1.54	1.80	3.56	2.21	3.06	2.78	2.09	6.52
Singapore	(Se)Mean	1.04	0.94	1.13	1.55	2.36	0.96	1.11	1.27	0.83
	Median	2.24	2.01	1.83	1.81	2.80	1.47	1.47	1.87	1.63
	St.Dev.	5.71	5.21	6.28	8.50	12.95	5.17	5.97	6.72	4.38
Thailand	(Se)Mean	0.10	0.08	0.24	2.67	0.79	0.43	0.41	1.05	1.21
	Median	1.08	0.92	0.93	0.96	0.96	1.28	1.23	1.32	1.52
	St.Dev.	0.61	0.49	1.48	16.65	4.80	2.61	2.46	6.41	7.27

Source: calculations by the authors, data from DataStream

Table 17 *Ratio of current assets to total debt*: Hong Kong – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	2.30	2.80	2.60	5.80	5.19	4.55	8.56	3.99	2.61
Construction and Materials	2.26	2.30	2.32	2.78	2.62	2.43	2.28	2.34	3.26
Electronics, IT and Industrial Engineering	3.46	3.51	3.32	3.20	5.59	4.32	3.80	4.78	4.16
General Industrial and Industrial Metals	2.08	1.78	1.84	2.21	2.15	2.43	2.03	1.68	1.73
Personal Goods	1.88	1.78	2.30	1.71	3.48	2.47	2.43	2.11	2.56
Real Estate*									

* Ratio not calculated as data on total current assets is not reported for this sector.

Source: calculations by the authors, data from DataStream

Table 18 *Ratio of current assets to total debt*: Indonesia – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	1.44	0.80	0.68	1.37	1.16	1.07	1.12	1.29	1.40
Construction and Materials	1.18	0.48	0.38	0.42	0.35	0.72	1.08	1.22	1.10
Electronics, IT and Industrial Engineering	1.83	1.22	0.95	1.09	1.41	2.30	1.54	1.61	1.94
General Industrial and Industrial Metals	2.23	1.03	0.86	1.72	1.70	1.54	1.36	1.25	1.45
Personal Goods	0.90	0.68	1.12	1.09	1.24	1.28	0.98	0.85	0.96
Real Estate*									

* Ratio not calculated as data on total current assets is not reported for this sector.

Source: calculations by the authors, data from DataStream

Table 19 *Ratio of current assets to total debt*: Malaysia – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	2.03	1.94	1.90	2.57	2.48	2.97	3.20	2.81	1.88
Construction and Materials	1.99	1.44	1.31	1.36	1.30	1.23	1.22	1.28	1.45
Electronics, IT and Industrial Engineering	1.78	1.51	1.59	1.55	1.56	1.53	1.44	1.49	1.53
General Industrial and Industrial Metals	1.63	1.35	1.14	1.26	1.49	2.16	1.78	1.53	1.45
Personal Goods	3.76	2.62	1.81	1.55	1.48	1.14	1.47	1.80	2.02
Real Estate*									

* Ratio not calculated as data on total current assets is not reported for this sector.

Source: calculations by the authors, data from DataStream

Table 20 *Ratio of current assets to total debt*: Singapore – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical**									
Construction and Materials	4.48	2.89	1.71	2.33	2.50	2.91	3.95	5.66	1.61
Electronics, IT and Industrial Engineering	2.48	2.86	3.67	6.98	2.94	2.93	2.56	3.51	3.78
General Industrial and Industrial Metals	3.30	2.72	3.51	2.49	3.31	1.88	2.17	2.30	4.01
Personal Goods**									
Real Estate									

** Results not reported due to lack of data (1 observation per strata)
*   Ratio not calculated as data on total current assets is not reported for this sector.

Source: calculations by the authors, data from DataStream

Table 21 *Ratio of current assets to total debt*: Thailand – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	1.00	0.80	1.00	0.83	0.92	1.69	2.35	2.26	2.53
Construction and Materials	1.36	1.18	0.99	0.92	0.89	1.40	1.57	2.87	3.95
Electronics, IT and Industrial Engineering	0.87	0.82	0.65	0.80	1.08	1.38	1.84	2.70	1.50
General Industrial and Industrial Metals	1.34	0.85	0.85	1.11	2.14	2.75	1.17	1.64	1.26
Personal Goods	1.49	1.12	1.28	1.44	1.67	1.92	1.77	2.87	4.03
Real Estate*									

* Ratio not calculated as data on total current assets is not reported for this sector.

Source: calculations by the authors, data from DataStream

4. Liquidity and short-term solvency: *Current ratio* – Ratio of Current Assets to Current Liabilities

Table 22 *Current ratio*: Hong Kong, Indonesia, Malaysia, Singapore and Thailand for the years 1996 - 2004

COUNTRY	1996	1997	1998	1999	2000	2001	2002	2003	2004
Hong Kong	1.69	1.94	1.69	1.74	1.77	1.71	1.85	1.86	1.78
Indonesia	1.62	1.07	0.84	1.24	1.48	1.45	1.59	1.49	1.56
Malaysia	1.48	1.40	1.29	1.42	1.39	1.42	1.54	1.57	1.63
Singapore	1.71	1.63	1.59	1.81	1.59	1.96	1.92	1.93	2.15
Thailand	1.39	1.07	0.89	1.37	1.48	1.90	1.65	1.93	1.83

Source: calculations by the authors, data from DataStream

Table 23 *Current ratio*: additional descriptive statistics for each country for the years 1996 to 2004

COUNTRY		1996	1997	1998	1999	2000	2001	2002	2003	2004
Hong Kong	(Se)Mean	0.14	0.37	0.14	0.15	0.14	0.10	0.12	0.19	0.12
	Median	1.44	1.42	1.37	1.40	1.59	1.51	1.60	1.50	1.61
	St.Dev.	0.14	0.37	0.14	0.15	0.14	0.10	0.12	0.19	0.12
Indonesia	(Se)Mean	0.13	0.08	0.10	0.20	0.21	0.15	0.16	0.12	0.17
	Median	1.45	0.99	0.70	0.66	1.11	1.25	1.39	1.17	1.29
	St.Dev.	0.83	0.50	0.62	1.23	1.25	0.93	0.95	0.75	1.07
Malaysia	(Se)Mean	0.11	0.10	0.09	0.12	0.12	0.12	0.16	0.15	0.16
	Median	1.29	1.25	1.16	1.12	1.09	1.14	1.15	1.22	1.31
	St.Dev.	0.11	0.10	0.09	0.12	0.12	0.12	0.16	0.15	0.16
Singapore	(Se)Mean	0.13	0.13	0.14	0.20	0.12	0.47	0.34	0.27	0.37
	Median	1.44	1.41	1.37	1.39	1.45	1.19	1.28	1.45	1.41
	St.Dev.	0.79	0.78	0.84	1.17	0.72	2.81	2.01	1.57	2.19
Thailand	(Se)Mean	0.18	0.13	0.10	0.20	0.40	0.55	0.43	0.25	0.27
	Median	1.07	0.93	0.77	0.96	1.20	1.65	1.34	1.40	1.31
	St.Dev.	1.15	0.83	0.66	1.33	2.60	3.58	2.76	1.64	1.76

Source: calculations by the authors, data from DataStream

Table 24 *Current ratio*: Hong Kong – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	2.38	2.01	1.89	2.29	2.29	2.18	2.67	2.00	1.55
Construction and Materials	1.33	1.38	1.53	1.49	1.39	1.48	1.60	1.61	1.75
Electronics, IT and Industrial Engineering	1.82	2.84	1.96	2.02	2.17	1.86	2.07	2.22	1.98
General Industrial and Industrial Metals	1.72	1.34	1.67	1.74	1.59	1.65	1.54	1.59	1.51
Personal Goods	1.43	1.24	1.13	1.09	1.26	1.51	1.77	1.69	1.89
Real Estate*									

* Ratio not calculated as data on total current assets and total current liabilities is not reported for this sector.

Source: calculations by the authors, data from DataStream

Table 25 *Current ratio*: Indonesia – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	1.60	0.86	0.90	1.63	1.64	1.37	1.58	2.00	1.73
Construction and Materials	2.37	1.03	0.51	0.52	1.43	1.97	1.87	1.41	1.32
Electronics, IT and Industrial Engineering	1.56	1.18	0.99	1.48	1.66	1.50	1.81	1.46	1.62
General Industrial and Industrial Metals	1.54	0.96	0.77	0.89	0.96	1.02	1.25	1.26	1.69
Personal Goods	1.06	1.12	1.02	1.36	1.53	1.29	1.17	0.96	0.94
Real Estate*									

* Ratio not calculated as data on total current assets and total current liabilities is not reported for this sector.

Source: calculations by the authors, data from DataStream

Table 26 *Current ratio*: Malaysia – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	1.62	1.47	1.20	1.50	1.80	2.13	2.84	2.66	2.70
Construction and Materials	1.54	1.49	1.38	1.61	1.36	1.21	1.26	1.46	1.42
Electronics, IT and Industrial Engineering	1.41	1.35	1.33	1.27	1.24	1.43	1.61	1.31	1.51
General Industrial and Industrial Metals	1.32	1.31	1.24	1.35	1.38	1.36	1.39	1.49	1.50
Personal Goods	2.82	2.00	1.48	1.41	1.21	1.04	1.06	1.25	1.32
Real Estate*									

* Ratio not calculated as data on total current assets and total current liabilities is not reported for this sector.

Source: calculations by the authors, data from DataStream

Table 27 *Current ratio*: Singapore – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical°									
Construction and Materials	1.95	1.65	1.54	1.44	1.47	1.67	1.72	1.91	2.90
Electronics, IT and Industrial Engineering	1.50	1.88	1.80	2.16	1.54	1.57	1.68	1.74	1.88
General Industrial and Industrial Metals	1.73	1.18	1.34	1.71	1.82	3.05	2.71	2.40	1.73
Personal Goods									
Real Estate*									

° Results not reported due to lack of data (1 observation in this stratum).
* Ratio not calculated as data on total current assets and total current liabilities is not reported for this sector.

Source: calculations by the authors, data from DataStream

Table 28 *Current ratio*: Thailand – various sectors of the economy for the years 1996 to 2004

Sector	1996	1997	1998	1999	2000	2001	2002	2003	2004
Chemical	1.12	0.68	0.84	1.71	1.71	2.01	1.47	1.81	1.57
Construction and Materials	2.14	1.61	0.84	1.28	1.18	1.49	1.22	1.26	1.30
Electronics, IT and Industrial Engineering	1.19	1.10	0.95	1.20	1.30	1.83	1.57	1.80	1.58
General Industrial and Industrial Metals	1.11	0.86	0.88	1.48	2.05	2.40	2.27	2.90	2.30
Personal Goods	1.24	1.05	1.01	1.33	2.16	2.61	2.62	2.88	3.24

Real Estate*

* Ratio not calculated as data on total current assets and total current liabilities is not reported for this sector.

Source: calculations by the authors, data from DataStream

5. Liquidity and short-term solvency: Banking Sector – Ratio of Loans to Net Deposits

Table 29 *Ratio of Loans Net to Deposits*: Banks – Hong Kong, Indonesia, Malaysia, Singapore and Hong Kong for the years 1996 to 2004

COUNTRY	1996	1997	1998	1999	2000	2001	2002	2003
Hong Kong	1.00	1.06	1.02	0.98	0.97	0.95	0.90	0.93
Indonesia	1.19	1.34	1.75	1.70	1.60	1.04	1.24	1.48
Malaysia	0.98	1.10	1.10	0.98	0.98	1.01	0.99	0.94
Singapore	1.07	1.16	0.93	0.84	0.90	0.89	0.89	0.87
Thailand	1.16	1.33	1.25	1.12	0.97	0.79	0.84	0.88

Source: calculations by the authors, data from Thailand: Bank of Thailand, Indonesia: Bank Indonesia, Malaysia: Bank Negara Malaysia Singapore: Monetary Authority of Singapore, Hong Kong: Monetary Authority of Hong Kong