

PROPERTY BUBBLES AND THE FINANCIAL CRISIS IN THAILAND

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1.INTRODUCTION

The Thai baht lost 18% of its value on the morning of July the 2ND, 1997, when the central bank of Thailand announced its decision to abandon the 13-year old exchange rate mechanism, which virtually pegged the local currency at around 25-to-26 Baht to the dollar, and permitted the baht to float freely against the dollar. By the end of the day, the baht had fallen in value by over 20% against most major currencies. The foreign reserves at the Bank of Thailand had been reduced to a mere fraction of the healthy \$36.6 billion at the outset of the fiscal crisis after a series of unsuccessful defenses of the Thai baht earlier in the year.

Once described by the World Bank as 'a model for economic development', Thailand is now plagued by an economic crisis characterized by massive foreign debts, unemployment, inflation, and a currency that continues to depreciate. More than a decade of rampant economic growth and stability was over because the Thai government failed to recognise the impact of free capital flows on the country's basket peg exchange rate regime when it decided to liberalise the country's financial system. The Bangkok International Banking Facilities (BIBF) was set up in 1993 as the Thai government took a bold step towards the development and liberalisation of the Thai capital market. Local and foreign commercial banks in Thailand now have greater access to foreign funding through the facility. With a fixed exchange rate and the liberalisation of international capital flows, foreign money poured into the market between 1993 and 1996 to profit from interest rate spreads. At the same time, local banks, firms, and domestic borrowers began to rely on foreign finance as a cheap source of funding in the erroneous believe that fixed value of the baht eliminates any exchange rate risk. Unfortunately, these inflows fueled an asset price inflation that would eventually undermine the financial sector. A bubble had already begun to grow in the real sector as a significant percentage of the loans were channelled by banks and other financial intermediaries to property developers. Most of these loans were unhedged against currency fluctuations because of the confidence in the central bank and also because of the lack of an organised secondary financial market in Thailand. Debt, foriegn direct investment, and equity inflows into the Asia/Pacific area grew exponentially from \$U.S. 25 billion in

1990 to \$U.S. 110 billion in 1996.¹

The baht was overvalued against the other currencies because the U.S. dollar, which accounted for roughly 80%² of the basket to which the baht was pegged, started to gain strength³ and also because the flow of foreign funds into Thailand continued unabated. Thai exports had become too expensive to compete in a global market of emerging economies with lower labor and capital cost⁴. Although Thailand was able to finance its persistent current account deficits with foreign capital inflows during the decade from 1985 to 1995, when investor confidence was predicated on an increase in Thailand's export revenues. The basis of this confidence crumbled as funds were increasingly diverted to property for speculation purposes, and export growth came to a virtual standstill. Export growth finally collapsed when Japan, Thailand's second largest trading partner, devalued the yen in 1996. Current account deficit as a percentage of Gross National Product grew to alarming levels because the people of Thailand were now importing much more than the country was exporting. By now, the excessive lending - financed primarily by borrowing from abroad - by banks and finance companies to the property sector had created a glut in the market for real estate. Property prices were depressed and many financial institutions were plagued with bad loans because property developers were unable to meet their loan obligations.

The massive inflows of foreign capital slowed to a trickle as foreign money managers began a careful review of their investments in Thailand in the aftermath of a financial scandal that resulted in the

¹Source: The World Bank, (1996).

²Analysts estimated that the weights for Thailand's basket system was 80% for the dollar, 12% for the yen and 8% for the mark.

³The US dollar strengthened by more than 50% against the yen and 25% against the German mark from the spring of 1995 to mid-1997. The dollar's strength stemmed from large capital inflow into US markets, as foreign investors rushed to invest in fixed-income securities. Foreign net purchases of long-term US government and corporate bonds in 1996 jumped by 70% over 1995 levels.

⁴Thailand's price edge in the global markets was eroded by rising labor costs, domestic interest rates and other expenses. Exports shrunk by 1.3% in 1996, versus growth of 24% posted the year before.

bankruptcy of the Bangkok Bank of Commerce. The current account deficit, which had been overlooked during the years of economic boom and large capital inflows, was now a major source of concern. Hedge fund managers and currency speculators, long convinced that the baht was overvalued, decided that it was time to mount speculative attacks on the baht. They were confident that the Bank of Thailand cannot defend the baht and bail out failed financial institutions indefinitely without depleting its foreign reserve. It wasn't long before local investors realized that the situation faced by the region was essentially untenable and rushed to hedge against the depreciation of the baht by selling baht for dollars. For similar reasons, exporters who were paid in foreign currency decided to delay converting their revenue into baht. A widespread selling of the baht set the final stage for its collapse. The central bank lost billions in reserves with each successive defense of the baht. In fact, the foreign reserve levels at the Bank of Thailand were so low towards the end of June that it couldn't afford the gradual shift over time towards greater flexibility .

This paper attempts to show that the lethal combination of a pegged exchange rate and government loan guarantees under a poorly regulated financial system can lead to the creation of property bubbles which may ultimately undermine the financial stability of an economy. The paper maintains that the overvaluation of the Thai baht under the fixed exchange rate regime created an incentive for producers to favor the production of non-traded goods, such as real estate. This incentive to concentrate on the production of nontraded goods was reinforced by the moral hazard created by the implicit or explicit guarantees by the Thai government to bail out financial institutions in distress. These guarantees shielded the owners of the financial institution from the potential losses from their own bad decisions, and thus created an incentive for those who ran these financial institutions to take excessive risks. When these risky prospects failed, the financial crisis was triggered, and the Thai baht collapsed in the foreign exchange market.

The paper is organized as follows. In Section 2, a chronology of the events leading up to the abandonment of the pegged exchange rate regime is presented. In Section 3, a macroeconomic model, which helps to explain an overvalued Thai baht caused a switch in favor of the production of nontraded good, such as real estate, is presented. The diversion of resources into the production of non-traded goods has a negative impact on the balance of payments and exerts downward pressure

on the value of the Thai baht. The moral hazard problem is discussed in Section 4. This section explains how government loan guarantees encouraged some financial institutions to take excessive risks. When the payoffs expected from these risky loans fail to materialize, these financial institutions become insolvent, and the financial crisis was triggered. Section 4, the last section of the paper, contains some concluding remarks.

2. THE ORIGIN OF THE THAI FINANCIAL CRISIS AND ITS DENOUEMENT

2.1 Background to the Crisis

Following the oil crisis and financial restructuring in the mid-80s, Thailand rapidly moved towards industrialisation, supported by pro-business government policies, a massive inflow of investment from Japanese multinationals, and relatively low labour costs. Thailand became one of the fastest growing economies in the world - the economy saw annual GDP growth rates of about 12 percent between 1987 and 1990, and 8 percent between 1991 and 1995⁵ - as terms of trade for the kingdom improved. Thailand's exports from the manufacturing sector had risen to about 70 percent of total merchandise exports, the largest percentage of any member of the Association of Southeast Asian Nations (ASEAN).

2.2 Pegged Exchange Rates and Currency Appreciation

Thailand experienced its share of economic instability during the last decade. One structural factor that enabled the current crisis, as well as the fiscal imbalances of the early 1980s, to develop was the alignment of the Thai exchange rate with a basket of currencies dominated by the U.S. dollar. While pegged to the dollar between 1950 and 1984, the baht was only permitted to fluctuate within narrow bands. Although the pegged exchange rate arrangement provided a stable financial environment that attracted foreign investments and facilitated a steady flow of foreign capital for loans and investments, it also prevented the value of the baht from adjusting sufficiently in response to shifts in economic conditions. As a result, the baht started to deviate from Thailand's

⁵All data in this page are from: *Department of Business Economics*, Ministry of Commerce, Thailand, various years.

macroeconomic fundamentals in 1983, when the dollar appreciated in relation to other currencies, such as the Japanese yen and the German mark. The balance of payments deficits continued to grow and international investors became concerned about the overvalued Thai baht. The Bank Of Thailand (BOT) responded to international pressures on the currency by devaluing the baht in 1984⁶. It had since adopted a managed float system under which the baht is pegged to a basket of currencies with by far the highest weighting in the US dollar. Although the actual composition of Thailand's 13-year basket system remained a secret, analysts have been able to estimate the weights to be 80% for the dollar, 12% for the yen, and 8% for the mark. From 1987 onwards, the Thai monetary authorities have pursued a "stable baht" policy that has kept the official rate for their currency at about 25 baht to the dollar. Thailand enjoyed the competitive advantages of depreciation between 1985 and 1996 as dollar depreciated almost continuously against the European currencies, the Japanese yen, and other major currencies. It was able to attract considerable direct investment from Japanese companies that wish to relocate their production facilities to a lower cost South East Asian location when the Thai baht depreciated against the yen. Thai manufacturers also gained a competitive edge in the global market as a result of the depreciation of the U.S. dollar.

2.3 Financial Liberalization

The Asian Tiger economies had been growing at rates of 5 to 10 percent per year for the past decade. Average annual GDP growth in East Asia was 8.4%⁷ from 1980 to 1994, this was more than double the world average of 3.4%. Global fund managers shifted their focus to the booming Asian economies when the major developed economies entered a phase of slow economic growth, weak consumption and investment demand between 1991 and 93. In 1994, the gradual erosion of investor confidence ignited into a full blown financial crisis in Mexico, causing capital inflows to the Western Hemisphere countries to fall from \$U.S. 62 billion in the previous year to \$U.S. 39 billion. Stronger economic growth, lower inflation, and improved fiscal and balance of payments positions

⁶For further details see Chapter 9, *The Role of Exchange Rate Policy*, in Thailand's Economic Miracle by Warr and Nidhiprabha (1996)

⁷Source: The World Bank, various years.

made the developing economies more attractive to investors in search of greater returns. There was a considerable gap in the average rate of return from investments between Thailand and the more developed economies. The average rate of return in Thailand was 17% compared to 11% in Japan and about 13% in the E.C.⁸ Financial liberalization was another factor that encouraged capital inflows, it became a major policy trend in the developing countries of East Asia during the last decade. These economies had just begun the process of opening up to foreign direct investments, foreign goods and services, and capital flows. Total capital flows to the Asian countries rose slightly from \$U.S. 72 billion to \$U.S. 73 billion in 1994 as a result of an increase in both foreign direct investments and portfolio capital inflows.

Thailand's financial industry has historically been heavily regulated by the ministry of finance and the central bank. Strict restrictions were imposed on the number of banking licenses granted and the activity that each licensed financial institution may engage in. However, as Thailand's economic development progressed, it became essential for the country to align its financial system with international standards. Easing of regulatory restrictions commenced with the liberalization of interest rate ceilings in the early 1980s. Foreign exchange liberalization was only allowed to proceed when Thailand accumulated considerable foreign exchange reserves. With foreign exchange liberalization, commercial banks were allowed to enter foreign currency transactions without approval from the bank of Thailand. Thai nationals were no longer prohibited from holding foreign currency accounts and conglomerates were permitted the unlimited repatriation of funds without prior approval from the central bank. Additional liberalization measures since 1992 included the relaxation of exchange controls, and the establishment of the Bangkok International Banking Facilities (BIBF) and the Provincial International Banking Facilities (PIBF) to permit banks and other financial institutions to open more branches and expand the range of activities in which they may engage. Thai borrowers and investors were quick to seize upon the opportunity to obtain cheaper financing from foreign sources. Capital flows into Thailand averaged a remarkably high 10.3% of GDP between 1990 and 1996. The huge capital flows into Thailand came, primarily, in the form of offshore borrowing by banks and private corporations, which together averaged 7.6% of GDP in the 1990s.

⁸Source: *Survey of Current Business*, U.S. Department of Commerce (1994).

Portfolio capital inflows and foreign direct investments were substantially smaller at 1.6% and 1.1% of GDP respectively.

The seeds of the financial crisis were planted when Thailand liberalized financial inflows as a first step toward establishing the country as a regional financial centre in 1993. Although the Thai currency is closely linked to the U.S. dollar, the Thai government did not fully recognise the moral hazard of such a policy at a time when they no longer impose restrictions on capital flows. Because the interest rates on the U.S. dollar abroad were much lower than domestic interest rates and because private corporations interpreted the fixed exchange rates as a guarantee by the Thai government that there would be no currency exchange risk, the corporate sector in Thailand borrowed and lent U.S. dollars on the assumption that their exchange rates would remain more or less the same when the time came to repay. With easier access to foreign credit through the BIBF and a seemingly unassailable foreign exchange rate, the corporate sector flooded the market with liquidity between 1993 and 1995 as they rushed to borrow funds at interest rates of only 5% to 7%⁹. International banks and investors were equally eager to lend and invest as they sought to diversify their portfolio and earn higher yields without due regard for the potential foreign exchange risk. To make matters worse, most Thai corporations did not bother to hedge their exposure because of the lack of appropriate swap instruments in Thailand's under-developed financial market, or because of a mere reluctance to add to borrowing cost. While some firms resorted to employing a basket hedge by borrowing in different currencies to match the composition of the central bank's currency basket, many others simply assumed that U.S. dollar revenues or offshore operations would act as a natural hedge. Increasing concerns about the susceptibility of foreign capital inflows to swings in investor confidence did not deter the Thai government from offering special incentives that encouraged foreign borrowing in the early 1990s. In particular, banks which operated exclusively in borrowing and lending foreign currencies under the BIBF, continued to enjoy special tax breaks.

The current financial crisis may have been averted if the government of Thailand had switched directly to a floating exchange rate arrangement in the aftermath of the financial crisis in 1984. Under

⁹Foreign interest rates were 400 to 500 basis points below prevailing rates in the Thai financial market.

a floating exchange rate system, borrowers would have to weigh the risk of a possible depreciation of the Thai baht against the benefit of lower interest rates, and foreign lenders would have been less confident of the borrowers' ability to repay in the event of sudden shifts in interest rates.

2.4 The Crisis

Thailand would have continued to experience strong growth but for the fact that global competition in external trade has emerged with newly industrialized and export-oriented economies with cheap labour, and the shift in global exchange rates. The export competitiveness of Thailand and other Southeast Asian economies suffered when China devaluated the yuan in 1990 and 1994. Lower inflation and faster productivity growth made the yuan the most undervalued major currency in the world. Also contributing to the gradual erosion of Thailand's competitive edge was the U.S. dollar which had strengthened from the spring of 1995 to mid-1997 as a result of increasing capital inflows into U.S. markets. Foreign net purchases of fixed-income securities such as long-term U.S. government and corporate bonds in 1996 increased by 70% over 1995 levels. Behind the appreciation in the dollar against the yen was an arrangement between the U.S. Treasury and the Japanese Finance Ministry to allow Japan to export its way out of trouble and use the resulting surpluses to buy U.S. Treasury bills to keep US interest rates at politically desirable level. Indeed, the appreciation of the dollar against the yen marked a turning point for Thailand and the beginning of the stage of overvaluation. The value of the Thai baht rose even higher when it appreciated against the U.S. dollar by roughly 4% in 1994 because Thailand's annual inflation rate increased to 6% while the U.S. annual inflation rate fell to 2%.

As the Thai baht gained ground against stronger currencies, the purchasing power of the people of Thailand began to grow. The overvalued baht also gave them the illusion of sudden wealth. Consequently, the population's propensity to consume increased and savings fell. Thais spent their new found wealth on imported goods and travelling abroad. Sales of new Mercedes Benzes in Thailand ranked third in the world and new luxury boutiques with the latest fashions from Europe and the United States filled the shopping areas of Bangkok. The Thais went on lavish shopping trips abroad for products that were not available at home. Thailand's current account deficit, which had been growing steadily since 1992, reached \$14.7 billion in 1996, a staggering 8% of gross domestic

product. In response to the deterioration in the balance of trade, the government tightened monetary policy to dampen domestic demand.

Thailand saw the slowest rate of growth of GDP in a decade in 1996. Tight monetary policy aimed at decreasing domestic inflation and short-term capital inflow contributed to the slowdown in economic growth and some improvement in external imbalance during the year. The Thai economy took an unexpected downturn as export growth, a key driver of the Thai economy, bowed to the impact of the appreciation in the U.S. dollar. In contrast to a growth rate 23.6% in 1995, exports shrunk by 1.3% in 1996. Imports grew by only 6.4% during the first three quarters compared to 30.5% for 1995. Although the dangers associated with a current account deficit was overlooked when investor confidence in the Thai economy held and short term capital inflows were in abundance, investors began to panic as export and economic growth started to falter. The deficit was now the primary reason for the downward pressure on the baht. In June, the International Monetary Fund (IMF) expressed its concerns that rising deficit levels have made Thailand more vulnerable to economic shocks and shifts in investor sentiments. The threat is particularly severe in Thailand's case because short term capital accounted for more than half of net capital inflows to the country in the 1990s. It recommended a greater degree of exchange rate flexibility to improve monetary autonomy and to reduce the incentive for short-term capital inflows. The IMF suggested that the Thai government should implement fundamental policy changes along a tight monetary stance to help counter the large and volatile capital inflows that were attracted to Thailand as a result of capital account liberalisation. Unfortunately, any consideration of policy shifts at the Bank of Thailand and the Finance Ministry were hampered by political turmoil that caused continuous reshuffling among the economic policy makers. Eventually, the Bank of Thailand addressed the problem of widening current account by instructing the commercial banks and financial companies to set aside a 7% provisions for all short term loans¹⁰ and reduce their exposure to the property sector and the foreign exchange markets. A series of customs and excise tax hikes imposed by the government on luxury imports failed to discourage rampant consumer spending, which continued unabated. By the time

¹⁰Unfortunately, banks and financial companies circumvented the regulation by resorting to loans with maturities of one year plus one day.

Thai authorities tightened economic policies, investors - both foreign and domestic - were pulling funds out of the country, and the currency crisis had already developed.

As the U.S. dollar continued to appreciate against the other currencies, the overvalued Thai baht caused a shift towards the production and consumption of non-traded goods, which was real estate in Thailand's case. Substantial inflows of foreign capital as a result of the liberalisation of the financial sector, especially the introduction of the Bangkok International Banking Facilities in March of 1993, led to excessive lending by Thai financial institutions to the property sector which, at that time, generated the highest rate of return. The rapid expansion in the real estate market can also be attributed to the design of the Thai deposit insurance system which gave the owners of financial institutions an incentive to engage in risky investments. We shall discuss the moral hazard and the implications of such a deposit insurance arrangement for the stability of Thailand's financial institutions in Section 4. By 1995, the oversupply of housing emerged, expanding into a major problem. With loans increasingly expensive and hard to get under the central bank's squeeze on lending, the sector began to collapse in 1996. The sector's debts totalled around 800 billion baht in 1996. The slump in property sales market and the lending squeeze worsened developers' cashflow troubles. Companies started defaulting on their local and foreign loans, especially property developers that borrowed far too much to build far too many condominiums that few people were buying. Somprasong Land Plc, a large property developer with extensive links to the major banks in Thailand, stunned the financial markets when it defaulted on interest payments on euro-convertible debentures worth \$U.S. 3.1 million in February 1997. The amount of non-performing loans from over extension of loans to the property sector in the past resulted in a sharp deterioration in the quality of loan portfolios of banks and financial companies, and many finance companies and some small banks faced liquidity problems. Sensing that the Thai government cannot afford to bail out financial companies and, at the same time, defend the Thai baht with the limited foreign exchange reserves in its coffers, speculators started to sell the baht in the foreign exchange markets in late 1996.

The financial system in Thailand also suffered from a lack of transparency about government and central bank operations, about the true state of financial sectors, and about the links between banks, industry, and government and their possible impact on economic policy. So, in the absence of

sufficient information, markets are entitled to fear the worst and to doubt the capacity of governments to take corrective action. In the past, foreign banks and investment houses had sought a quick profit by borrowing yen and dollars at low interest rates in Japan and the United States and relending the proceeds as short-term notes at far higher rates in Southeast Asia. The success of such a financial technique - which became known as the carry trade - depend on foreign interest rates remaining low and the local currencies holding their value. As rumours of an impending interest-rate hike in the Japan started to circulate in 1996, many investors sold their Asian notes and the local currencies in a panic to unwind their positions. Rating agencies such as Moodies and S&P being overly optimistic in the past quickly downgraded the sovereign debt of Thailand. Most American and European portfolio managers, bound by mandates did not allow them to hold non-investment grade bonds, were forced to sell off Asian securities and converted the proceeds back into dollars. Big foreign companies with local operations began hedging against the Thai baht to protect the value of their revenues. The greatest downward pressure on the baht was exerted by domestic corporations that had borrowed billions of dollars at low rates abroad in their scramble to acquire dollars or yen as they braced for a sharp rise in yen and dollar denominated debts. It became apparent that the debt burden in Thai companies could no longer be sustained when international banks minimised their exposure by reducing their credit lines to domestic banks in Thailand, causing a credit crunch and pushing interest rates upwards. Speculative pressures mounted on the Thai baht as international investors, big foreign companies and local companies scrambled en masse for yen and dollars in a bid to protect their holdings and revenues. As money flowed out of Thailand, the central bank spent over two-thirds of its foreign reserve holdings on currency intervention - all to no avail. Foreign reserves fell from \$U.S. 39.2 billion in January to \$U.S. 32.4 billion in June.

On 2 July 1997, the Ministry of Finance, upon the recommendation of the Bank of Thailand, announced the switch of its exchange rate system to a managed float, allowing the value of the baht to be determined by market forces in line with economic fundamentals. It has since fallen steadily from 25.8 baht to the dollar on July 1 to a trading range of between 45 and 49 baht to the dollar. With no sign of improvement in Thailand's economic and financial situation in August of 1997, the Thai government turned to the IMF for assistance.

3. THE MACROECONOMIC MODEL

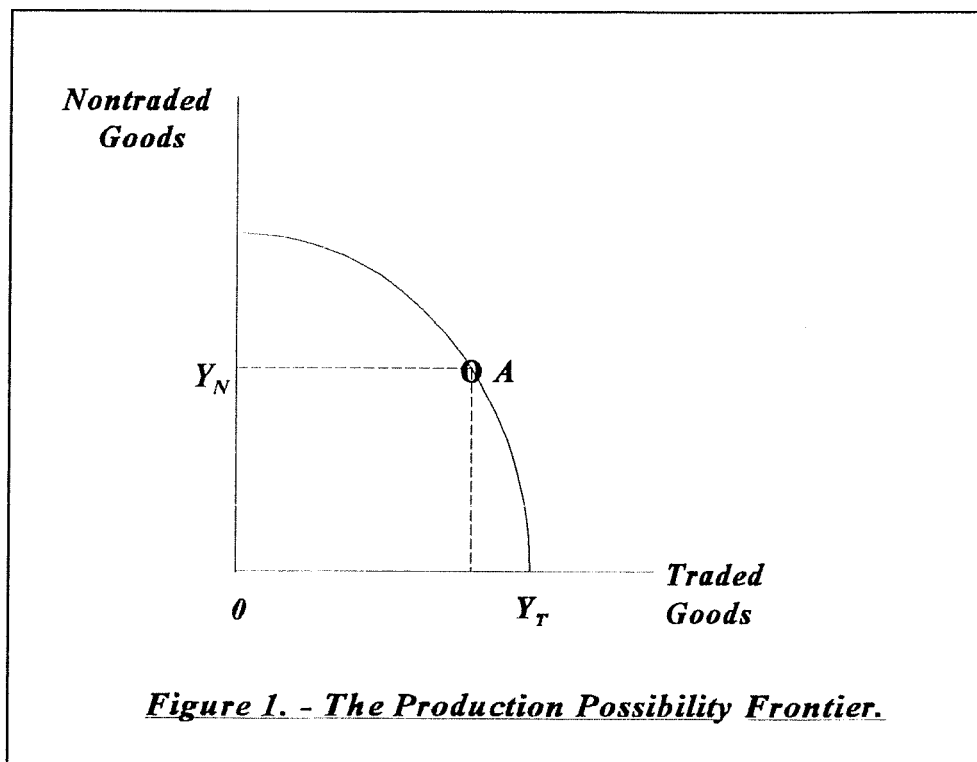
Consider a small open economy, say Thailand, which trades with two large economies, say Japan and the United States. Here, Japan is used as a proxy for Thailand's trading partners in Asia. The small open economy pegs its currency the Thai baht, to the U.S. dollar, while the Japanese yen floats against the U.S. dollar. The macroeconomic model formulated in this section is meant to help explain the Thai currency crisis that forced the central bank of this country to abandon the peg against the U.S. dollar. Because non-tradable goods played a fundamental role in the currency crisis, they are explicitly introduced and analysed in the macroeconomic model¹¹.

3.1. The Production Possibility Frontier

A small open economy like Thailand takes the prices - in foreign currencies - of both imports and exports as given in the short run. From the perspective of Thailand, it is possible to aggregate imports and exports into a composite commodity called traded goods. Under the assumption that a small economy can buy or sell any amount of the traded good it wishes, its trade balance become the quantity of the traded good it produces minus the quantity of the traded good it buys. According to this approach, the question of how a given trade balance breaks down into imports and exports are left unanswered. The approach just tells us the overall trade balance, which is the variable we are usually interested in.

¹¹The macroeconomic model formulated in this section is based upon Chapters 7 and 11 of the textbook "Macroeconomics: A European Text" written by Michael Burden and Charles Wyplosz (1997). It is often referred to as the Mundell-Fleming Model.

Besides the traded goods, Thailand also produces non-traded goods, namely the goods that her domestic residents produce but are not traded internationally. Some goods and services are not traded internationally because this is physically impossible. Thus real estate, infrastructures, local transport, et cetera, are non-traded goods. Other goods and services are not traded internationally because they are protected by prohibitive tariffs or by special national regulations. These types of goods and services will become traded goods if trade is liberalised and protectionist measures are dismantled. However, the main obstacle that prevents a good or a service from being traded internationally is transport cost. A haircut, medical service, car repair, bulky and heavy products such as rocks and cement, are good examples of nontraded goods. With the passage of time and the technological progress in the fields of telecommunications and transport, goods, and services that are currently nontraded might become traded in the near future.



When resources are fully employed - optimal use of the capital stock and unemployment is at the equilibrium level - it is only possible to increase the output of one good by reducing the output of another. Figure 1 depicts the tradeoff between the output of the traded goods and the output of the nontraded goods by a concave curve called the production possibility frontier.

A point, such as A, on the production possibility frontier represents an efficient production plan that yields Y_T units of the traded goods and Y_N units of the non-traded goods. With the accumulation of capital - both physical and human - and the increase in the labor force, the production possibility frontier will shift outward. The production possibility frontier also embodies the imperfections and distortions on the goods market, the market for capital, and the labor market. As an example, a reduction in unemployment benefits will shift the production possibility frontier outward.

3.2. The Real Exchange Rate and Optimal Production

Let $P_{T,J}$ be the price in yen of the traded goods produced in Japan and $P_{T,US}$ be the price in U.S. dollars of the goods produced in the United States. The price in Thai bahts - an index - of the traded goods is assumed to be given by the following geometric mean:

$$(1) \quad P_T = [P_{T,J} * E_{baht/\yen}]^{w_J} [P_{T,US} * E_{baht/\$}]^{w_{US}}$$

In (1), $E_{baht/\yen}$ represents the nominal exchange rate of the Thai baht with respect to the Japanese yen, i.e., the number of Thai baht needed to buy one Japanese yen. Similarly, $E_{baht/\$}$ is the nominal exchange rate of the Thai baht with respect to the U.S. dollar. Also, the weights w_J and w_{US} are, respectively, the weights assigned to Japan and the U.S. in computing the price index P_T . In 1996,

17.9% of the Thai exports went to the United States. A reasonable weight for the U.S. dollar in 1996 is thus $w_{US} = 0.179$. Of course, it is required that $w_J + w_{US} = 1.0$.

Now triangular arbitrage involving the Thai baht, the Japanese yen, and the U.S. dollar ensures the following equality:

$$(2) \quad E_{baht/\yen} = E_{\$/\yen} * E_{baht/\$}$$

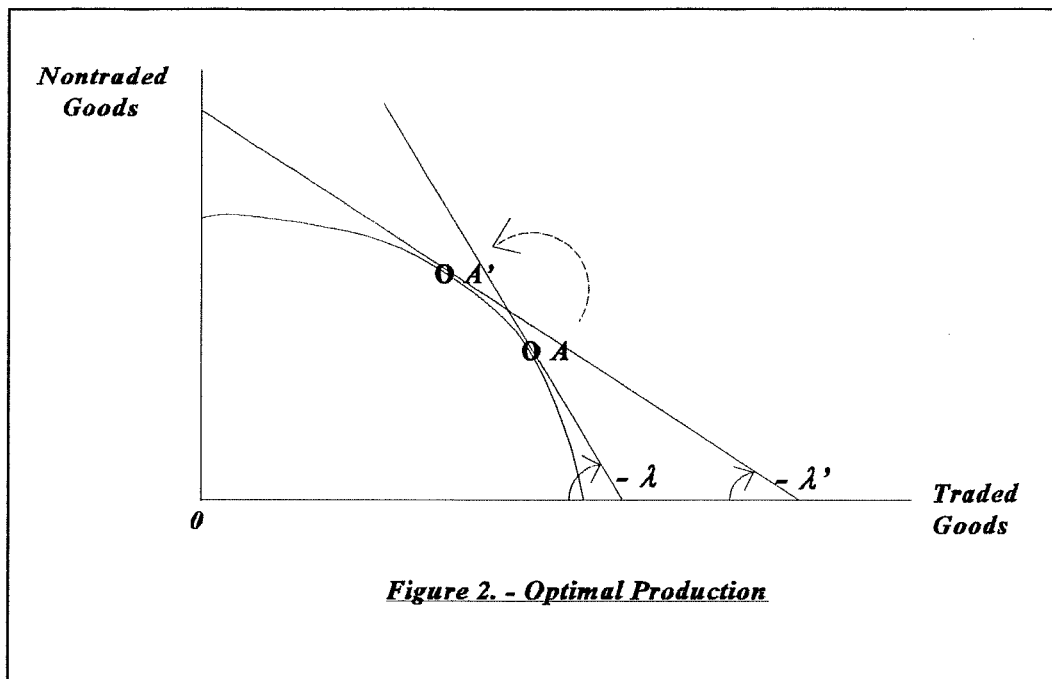
Using (2) in (1), we obtain :

$$(3) \quad P_T = [P_{T,J} * E_{\$/\yen} * E_{baht/\$}]^{w_J} [P_{T,US} * E_{baht/\$}]^{w_{US}} = (E_{\$/\yen})^{w_J} (E_{baht/\$}) (P_{T,J})^{w_J} (P_{T,US})^{w_{US}}$$

Let P_N be the price in Thai bahts of the non-traded goods and define :

$$(4) \quad \lambda = \frac{P_T}{P_N} = \frac{(E_{\$/\yen})^{w_J} (E_{baht/\$}) (P_{T,J})^{w_J} (P_{T,US})^{w_{US}}}{P_N}$$

As defined, λ represents the relative price of the traded goods in terms of the non-traded goods. It is often called the "Real Exchange Rate". Given the real exchange rate λ , the optimal production is located at the point on the production possibility frontier where the slope of the tangent to the frontier is equal to $-\lambda$. The optimal production is depicted by point A in Figure 2.

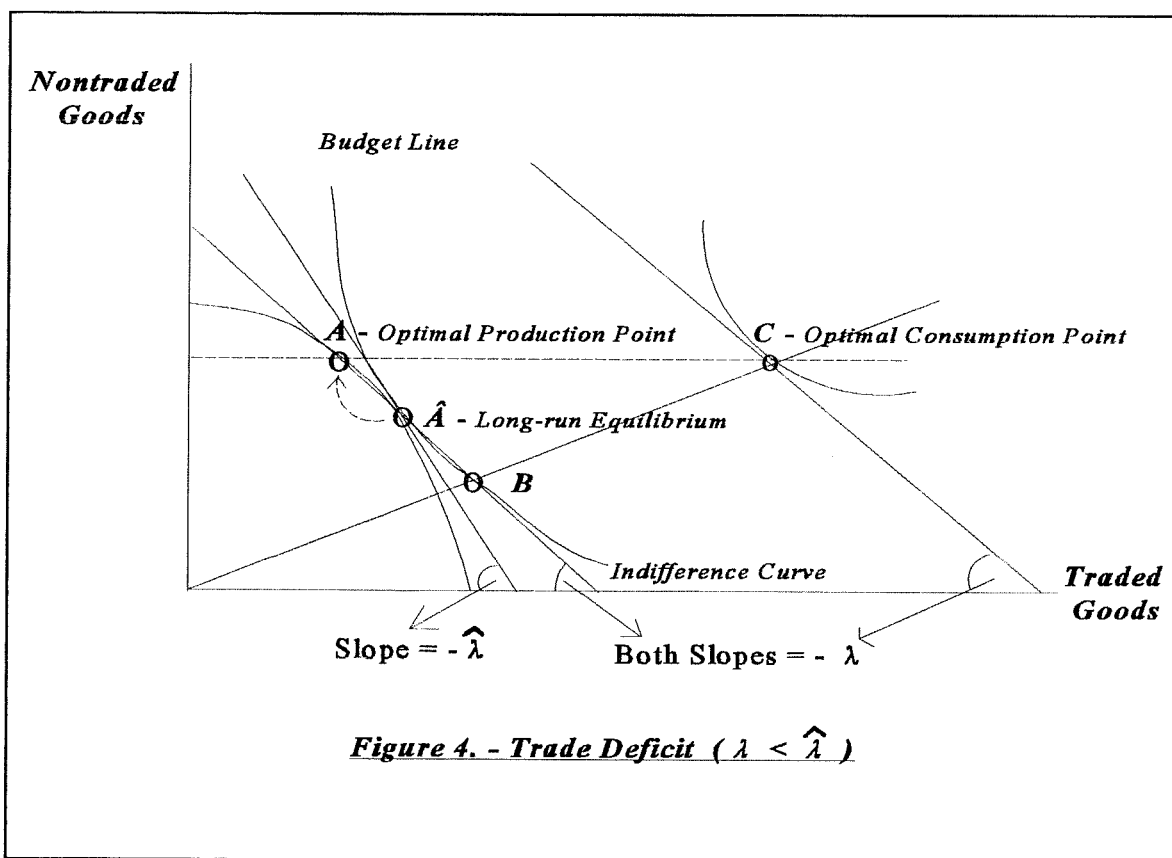


When the real exchange rate declines from λ to λ' , the optimal production moves upwards along the production possibility frontier, from A to A' . Resources move out of the traded goods sector into the nontraded goods sector, especially real estate, causing the latter to expand and the former to contract.

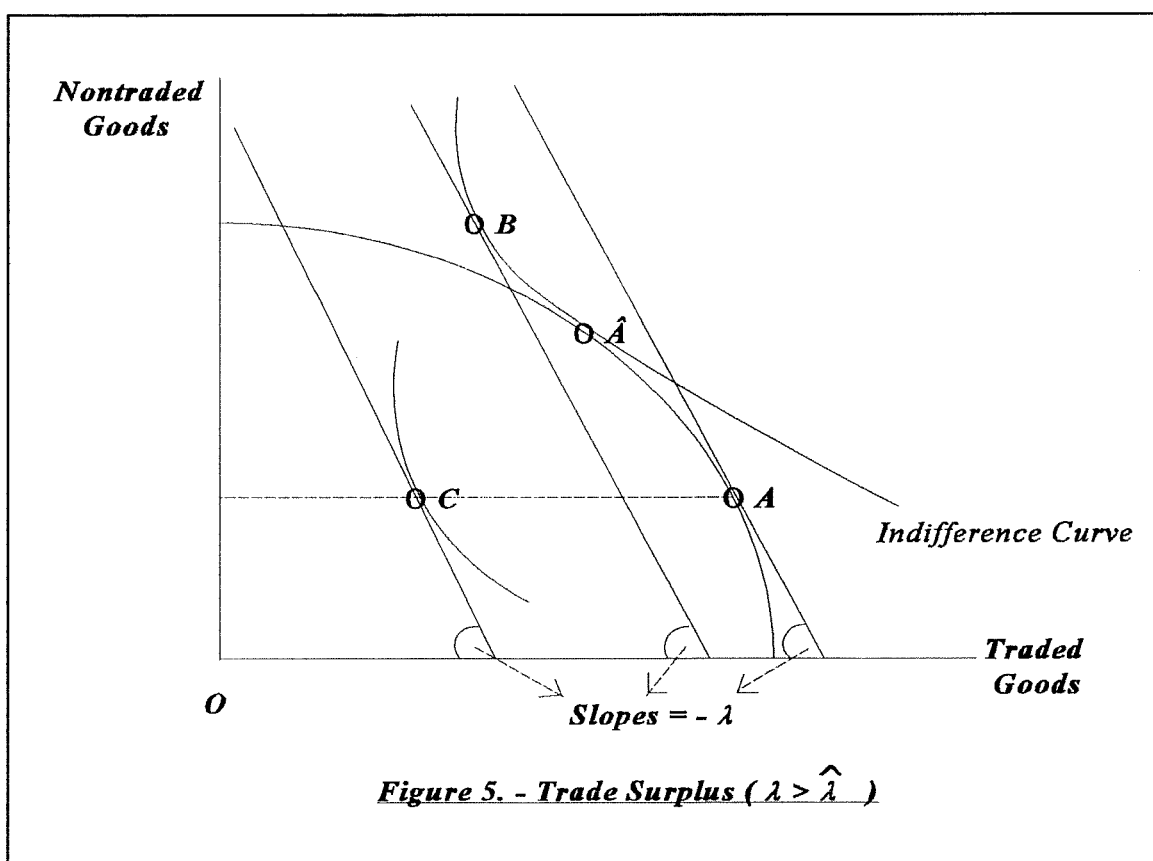
Now in the short run, the prices $P_{T,J}$ and $P_{T,US}$ are rigid. So is P_N , the price of the nontraded good. Given that the Thai baht is pegged to the U.S. dollar, the real exchange rate - as defined by (4) - will be stable as long as the Japanese yen remains stable with respect to the U.S. dollar. When the U.S. dollar appreciates with respect to the Japanese yen, λ will go down, triggering a resource flow into the sector producing the nontraded goods. Also, observe that an overvalued Thai baht, i.e. a low value of the exchange rate $E_{baht/\$}$, depresses the real exchange rate, distorting resource allocation in favor of the nontraded goods sector.

is the tangency point between the production possibility curve and an indifference curve of the representative consumer. In long-run equilibrium, the relative price of the traded goods in terms of the nontraded goods is $\hat{\lambda}$; the output of the traded goods is \hat{Y}_T ; and the output of the nontraded good is \hat{Y}_N .

In the short run, the real exchange rate can deviate from its long run value. The following figure shows that a country's production point (A) lies above its long-run equilibrium (\hat{A}) if $\lambda < \hat{\lambda}$.



Because the output of the nontraded good must be completely consumed by the representative consumer, the short-run equilibrium consumption point must lie on the horizontal line passing through A . Let B be the point on the indifference curve passing through the long-run equilibrium \hat{A} such that the slope of the tangent to this indifference curve at B is $-\lambda$. It is clear that B is below \hat{A} on this indifference curve. Assuming that preferences are homothetic, we can assert that the optimal consumption point C must also lie on the straight line OB . Hence C must be on the right hand side of A ; that is, when $\lambda < \hat{\lambda}$, the short-run equilibrium involves a trade deficit because the consumption of the traded goods exceed the amount supplied by the small open economy.



The case when $\lambda > \hat{\lambda}$ involves a trade surplus : the equilibrium consumption point C lies to the left of point A , which is below \hat{A} on the production possibility frontier in Figure 5. The argument is similar to the case where $\lambda < \hat{\lambda}$.

To recapitulate, we can assert that the primary current account, namely the trade balance, improves with a rise in the real exchange rate.

3.4. The Mundell-Fleming Model For A Small Open Economy

We are now ready to formulate a macroeconomic model for a small open economy with both traded and nontraded goods. In the model, time is divided into two periods: period 1 and period 2. Period 1 represents the short-run, while period 2 represents the indefinite future, which is the long-run. Our formulation and analysis deals only with the short-run in which the prices P_N , $P_{T,J}$, and $P_{T,US}$ are rigid. With rigid prices, the real interest rate r is also equal to the nominal interest rate in the small open economy. In what follows, all the real variables are expressed in units of the traded goods.

Consumption in period 1 depends positively on real wealth Ω and current real disposable income Y_1^d , and is written as :

$$C_1 = C(\Omega, Y_1^d) = C(\Omega, Y_1 - \bar{T}_1)$$

where Y_1 is the current real GDP and \bar{T}_1 is the tax levied by the state.

Investments in period 1 depends positively on *Tobin's* q ¹² but negatively on the real interest rate r :

$$I_1 = I(q, r)$$

Government expenditure is taken to be exogenous, say $G_t = \bar{G}_t$. The primary current account CCP is the difference between exports X and imports Z , i.e.,

$$CCP = X - Z$$

Furthermore, imports depend on domestic absorption, $A = C + I + G$, and is written as :

$$Z = Z(A, \lambda)$$

where λ , we recall from Section 3.3, is the relative price of the traded goods in terms of the nontraded goods.

¹² The ratio of the value of equities to the cost of producing new capital is known as q . Given a high value of q , which indicates that the price of existing assets is more than the cost of replacing these assets, firms will want to produce more assets. The demand for investments is therefore an increasing function in *Tobin's* q . See Sargent (1987) and Tobin (1969).

Similarly, exports are imports of the rest of the world, and can be written as :

$$X = X(A^*, \lambda)$$

where A^* represents the domestic absorption of the rest of the world.

The primary current account thus becomes:

$$CCP = X(A^*, \lambda) - Z(A, \lambda) = CCP(A, A^*, \lambda)$$

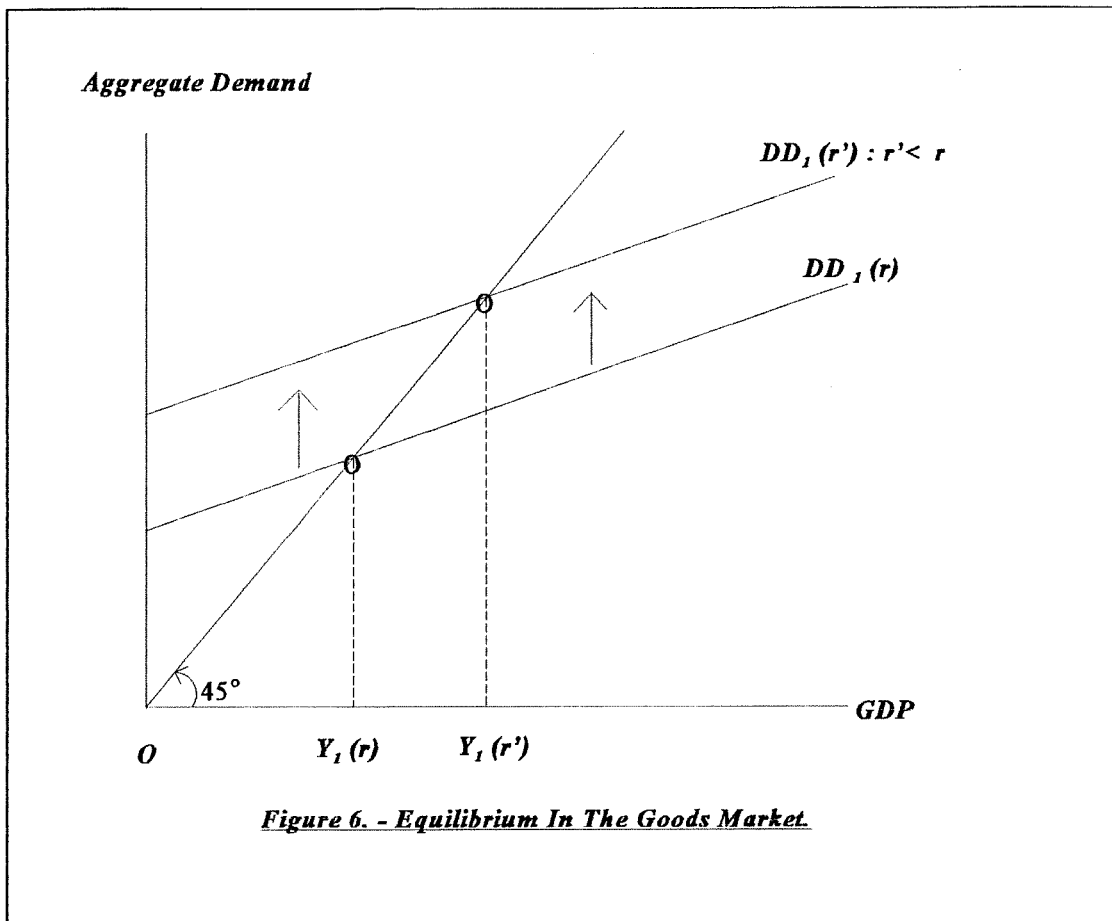
Here a variable marked with an asterisk (*) refers to the rest of the world. In Section 3.3, we have provided a theoretical argument for the assumption that $Z(A, \lambda)$ is a decreasing function of λ .

Therefore, the primary current account $CCP(Y_1, Y_1^*, \lambda)$ is decreasing in Y_1 but increasing in Y_1^* and λ .

The aggregate demand in period 1 of the small open economy is given by :

$$DD_1 = C(\Omega, Y_1 - \bar{T}_1) + I(q, r) + \bar{G}_1 + CCP(Y_1, Y_1^*, \lambda)$$

Given Ω , \bar{T}_1 , q , r , \bar{G}_1 , Y_1^* , and λ , it can easily be seen that DD_1 is strictly increasing in Y_1 but has a slope less than the marginal propensity to consume out of disposable income. The following figure depicts the equilibrium in the goods market in this case.



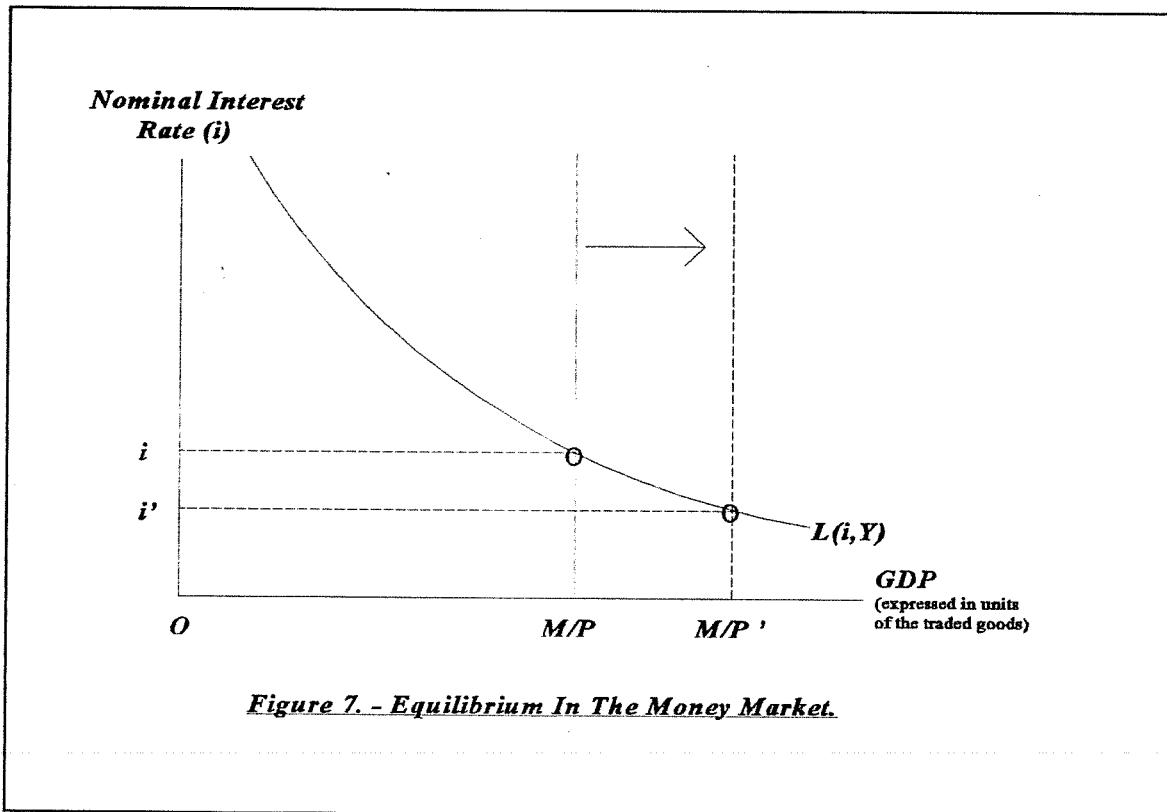
The intersection of DD_1 and the forty-five degree line gives the equilibrium national income for given values of Ω , \bar{T}_1 , q , r , \bar{G}_1 , Y_1^* , and λ . A decline in r causes DD_1 to shift upwards by raising investment $I(q, r)$. The equilibrium income will rise when r goes down, and this inverse relationship is represented by a downward sloping curve - the IS curve in the (Y_1, i_1) plane, - where i_1 is the nominal interest rate in period 1 in the small open economy.

A depreciation of the real exchange rate (i.e. a rise in the value of λ) improves the primary current account and induces an upward shift in the aggregate demand DD_1 , which in turn causes the IS curve to shift to the right. An increase in \bar{G}_1 , or a reduction in \bar{T}_1 , or an increase in Y_1^* also shifts the IS curve to the right.

With real GDP measured in units of the traded goods, the equilibrium in the money market is given by :

$$(6) \quad \frac{M}{P} = L(i, Y)$$

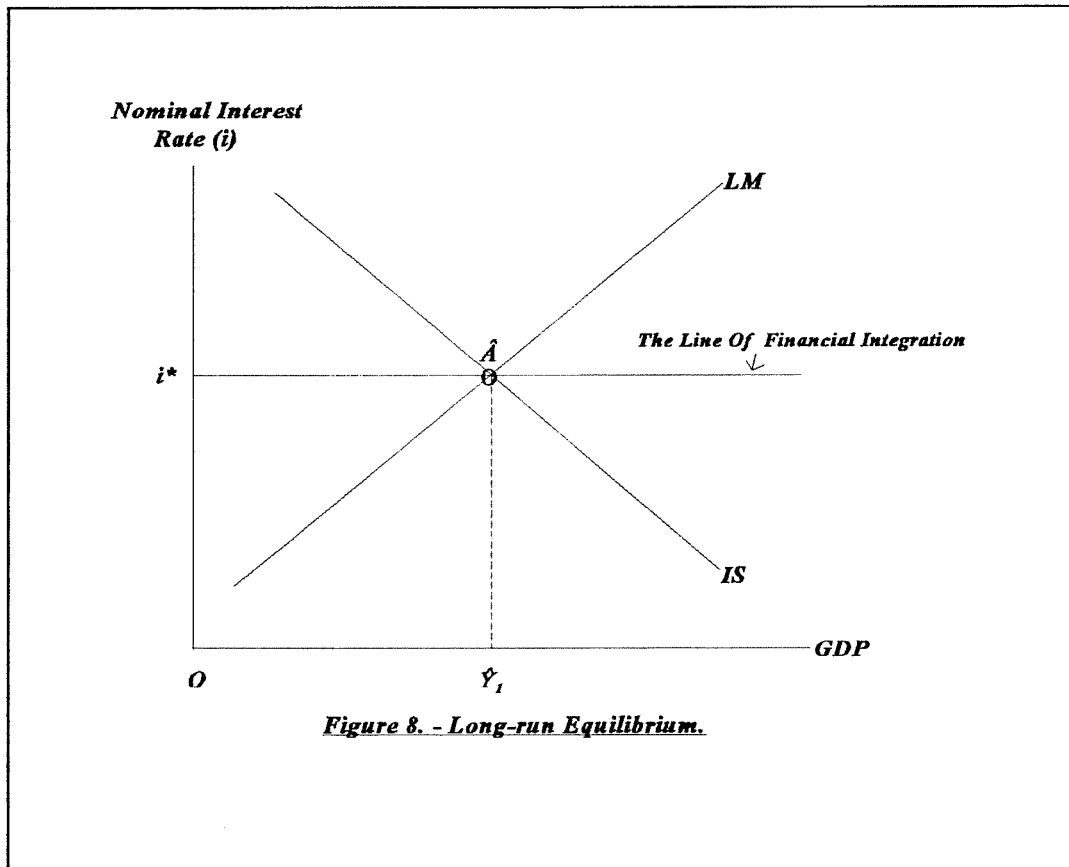
Where M is the Thai money supply: P is the price level of Thai goods¹³, and $L(i, Y)$ is the real demand for money, which depends positively on national income Y but negatively on the nominal interest i . In the (i, Y) - space, the equilibrium condition (6) is represented by the LM curve, which is upward sloping.



¹³ P is the cost, per good, of a representative basket of traded and nontraded goods in Thai bahts. The price in Thai bahts of the traded goods has already been defined by Equation 3.

From Equation 3, an appreciation of the U.S. dollar with respect to the Japanese yen (a decrease in the value of $E_{\$/\text{¥}}$) triggers a decline in P_T . The fall in the price of traded goods lead to a fall in P , the general price level, and an increase in the real money supply M/P in Equation 6. For each given level of real GDP, the interest rate must decline to restore equilibrium in the money market. Hence the LM curve shifts to the right in this case. The same results hold if the Thai baht rises relative to the U.S. dollar.

The long-run equilibrium of the small open economy is depicted by point \hat{A} in Figure 8.



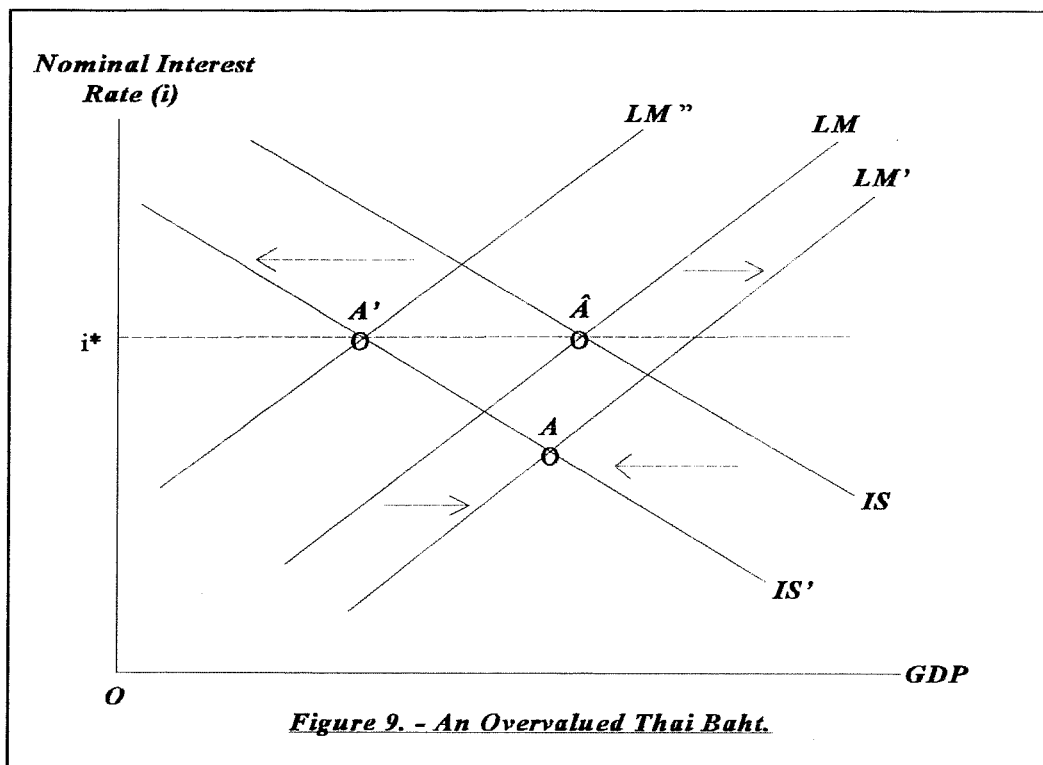
The same long-run equilibrium is also depicted by \hat{A} in Figure 3. In long-run equilibrium, the real exchange rate is given by $\hat{\lambda}$, which, according to (4), also satisfies :

$$\hat{\lambda} = \frac{P_T}{P_N} = \frac{(E_{\$/\text{¥}})^{w_J} (E_{\text{baht}/\$}) (P_{T,J})^{w_J} (P_{T,US})^{w_{US}}}{P_N}$$

Given $E_{\$/\text{¥}}$, $P_{T,J}$, $P_{T,US}$, and the price of the nontraded goods P_N (we can take =1), there exist a unique value of $E_{\text{baht}/\$}$ such that the price of the traded goods relative to the nontraded goods is equal to $\hat{\lambda}$. Furthermore, assuming that capital mobility is perfect and that financial markets are efficient, we can assert that in long-run equilibrium the domestic interest rate i must be equal to the world interest rate i^* . Therefore, the long-run equilibrium \hat{A} must also be on the horizontal line with ordinate i^* .

3.5 Analysis Of Economic Policy

Suppose that the Thai central bank overvalues its currency by pegging the baht to the U.S. dollar at a rate below the long-run equilibrium value of $E_{\text{baht}/\$}$. The IS curve shifts to IS' because an overvaluation of the baht results leads to an increase in Thailand's trade deficit. Since an overvalued Thai baht is reflected by a lower $E_{\text{baht}/\$}$ in Equation 3, the price of traded goods (P_T) in Thailand falls. From Equation 9, the real money supply increases because the fall in P_T results in a lower general price level (P); therefore, the LM curve shifts to the left from LM to LM' in Figure 9 .



The short-run equilibrium is now at point *A* in Figure 9. At point *A*, the domestic interest rate is lower than the world interest rate, triggering capital outflow. Because Thailand follows a fixed exchange rate regime, the capital outflow causes the money supply to contract and induces a run down of foreign reserves. The *LM* curve will gradually shift towards *LM''* on the left as the trade deficit caused by the overvaluation of the Thai baht continues to drain foreign exchange resources. The goods and money markets are in equilibrium at *A'* which corresponds to a lower output. Unless the central bank devalues the Thai baht, the Thai economy will stay in a state of recession. Currency speculators became increasingly confident that the Bank of Thailand would eventually be forced to devalue the Thai baht because billions of official international reserves had already been spent in the defense of the Thai baht on the foreign exchange market and the bailout of the country's ailing financial institutions. As speculative pressures on the Thai baht continued to increase, the central bank announced that Thailand will switch to a floating exchange rate system on the 2ND of July 1997.

4. MORAL HAZARD AND FINANCIAL CRISES

The over-extension of credit to the property sector is a common factor behind bank losses in both developed and developing countries since the late 1980s. Liberalization of the financial sector often results in the growth of speculative asset-bubbles because banks tend to perceive the deregulation of lending and the relaxation of interest rate controls as an opportunity to expand their loans to high yielding investments in the real estate sector.¹⁴ This rapid expansion of bank loans often involved a lowering of credit standards as banks lend to customers whose creditworthiness is more marginal. If the banking system is in the process of being deregulated while this domestic credit expansion is taking place, the credit risk of the banks will be increased because lending skills may not have developed sufficiently to cope with the more competitive environment. Moreover, factors such as the general level of interest rates, the volume, and the direction of capital flows which may adversely affect the quality of property loans are beyond the control of lending banks. Banks are able to vary the rates on residential mortgages on property loans to a certain extent, but a sharp increase in the interest cost of such loans would require the bank to substitute credit losses for interest rate losses as borrowers become unable to service their loans. The cyclical nature of the property market exposes banks, that lend to the property sector, to the risk of liquidity and interest rate mismatches. Banks are particularly vulnerable to such risks in the event of capital flow reversals and sharp increases in interest rates.

In Thailand, as in the other parts of the globe, property booms are frequently the result of the expansion of bank credit. Thai financial institutions have been deeply involved in high-yielding investments in the commercial real estate market since the early 1980s. The exposure of these companies to housing debts range from 25% to 30%.¹⁵ Financial liberalization through the BIBF

¹⁴Please refer to Park and Park. "Capital Market, Real Asset Speculation, and Macroeconomic Adjustment in Korea." (1992); and Caprio, Atiyas, and Hanson. Financial Reform: Theory and Experience. (1994).

¹⁵Small firms claimed to have made as much as half their loans to property developers. Although large banks are required to limit their property lending to 10% of total loans, they can always divert more funds to property loans through their subsidiary finance companies.

resulted in a massive inflow of foreign funds that fueled the speculation in the real estate market during the economic boom of the early 1990's. A property bubble was created as the price of land and property in Thailand rose to unrealistic levels. The BIBF made it possible for Thai banks and financial companies to finance their investment in real estate with high-risk, high-interest, short-term debt instruments such as bills of exchange on the international market. More than half of the total loans of one leading firm consisted of these papers. And finance companies not only issue bills of exchange; they also buy them from other lenders. The fact that such bills are not usually backed by collateral increased the exposure of finance companies to the property sector and made it more difficult for the lending institution to recover its loans if the property firm were to default. Banks in Thailand readily accept the collateral values of real property as a substitute for the actual ability of property developers to service their debts during the process of loan evaluation. Most Thais also look upon the involvement of politically connected business partners as implicit government guarantees for their loans; thus, the approval of loans were based not so much on the feasibility of the projects in question, but on the basis of personal or political connections and government instruction. Many finance companies released loans to their relatives without sufficient guarantee; some even tried to get away with huge sums of money by manipulating financial figures. Developers, on the other hand, were under the impression that their debt obligations can be met by the sales or rental of their property regardless of prevailing market conditions. Unfortunately, property developers in Thailand had little experience of dealing with the slump or oversupply situations and most of these companies lack the data on which to base their construction projects. By the time a fall in property prices across the board signals an oversupply situation, it was already too late for most companies and their banks to escape crippling losses.

Financial companies began to feel the impact of a slow economy and a slump in property prices in 1996. Many were forced to raise the rates paid on their deposits to levels that were too high for them to afford on the returns from their investments in the property sector. To survive, they were driven to even riskier investments as they hoped for the economy to turn around so that the company can meet interest rate obligations and still turn a profit. Conservative companies that had refused to take on risky investments were also in trouble as they struggled to keep their customers by attempting to

match the high deposit rates of competitors with risky investments by relying on the usual income from their loans. With the increase in borrowing rates and a weak property market, 70 percent of Thailand's more than 1,000 developers began to experience cash-flow problems. Left with property that they could neither rent or sell no longer, property developers were no longer capable of meeting loan repayment schedules. The defaults on the debts undercut the value of all high risk debt and reduce the asset base of the banks and financial companies. It became obvious that finance companies and smaller banks were on the verge of failure.

The Thai government maintained a policy that financial institutions must not be allowed to fail. One of the major objectives of the BOT is to maintain stability of the payment system. Since the secondary debt market in Thailand has not been fully developed, there are limited channels for financial institutions to adjust their liquidity besides the interbank market. Hence the BOT had to take the action as the lender of last resort in providing liquidity during the period of deposit run. A separate entity known as the the Financial Institutions Development Fund (FIDF) was established by the Bank of Thailand to assist in the rehabilitation and the disbursement of government loans to insolvent financial institutions. The Government, through the FIDF, guarantees the repayment in Baht, subject to certain limitations, of principal and interest owing to creditors (as well as depositors) of such financial institutions. As such, the role of the FIDF in Thailand was not so much to protect the deposits of individual depositors but to inject the necessary funds to prop up ailing financial institutions. A charge is levied on insured financial companies to pay for claims against the FIDF. The size of these premiums were not linked to the riskiness of the bank's portfolio of loans and investments. In the sense that the FIDF repays the depositors on the bank's behalf in the event of bank insolvency, it may be considered a deposit insurance agency. The purpose of such insurance was to calm depositor fear of losing their savings; hence reducing the likelihood of bank runs which may result in the collapse of the banking system.

The very design of the Thai deposit insurance programs, together with lax regulation led to the costly problem of moral hazard in the management of the financial institutions. Deposit insurance and the small amount of initial outlay that owners of financial institutions needed to put up towards the loan

encouraged excessive risk taking and fraudulent practices by relieving the depositors of the usual responsibility to monitor those who hold their money, and by relieving the companies of the responsibility for poor performing investments while allowing them to gain when the investments prospered. Thai depositors did not take the necessary precautions because they were under the impression that the government would insure their deposits. The insurance encouraged depositors to supply huge sums of money to the finance company without the usual checking of creditworthiness or monitoring of performance that accompanies other loans.

To see how a government insurance scheme made risky investments profitable for the owners of financial companies, let us study a numerical example.¹⁶ For simplicity, we assume that depositors are not paid any interest. In Table 1. In the Appendix, the owner of the financial institution has full authority over how the deposits are invested and can choose between “risky” and “safe” investments. An initial outlay of \$100 is required for the safe investment, which returns either \$100 or \$110 with a 50 percent probability. It is considered safe because it cannot lose any money - the safe investment will always yield at least the initial outlay of \$100 - and has more stable returns. The safe investment returns \$5 on top of the initial outlay on the average. The risky investment has a 50 percent probability of returning \$125 in a high return scenario; however, it has an equal chance of returning only \$65, \$35 less than the initial outlay, in a low return scenario. It also loses \$5 on the average. Such investments are considered a waste of social resources and will never be contemplated in a well-functioning system. Nevertheless, managers may still be tempted to proceed with the risky investment because the manner in which financial companies are insured and financed frequently creates a difference of interest between the parties involved.

Financial companies raise the funds for lending and investing from depositors and capital supplied by the owners themselves. Lets suppose that the Thai Government required owners to provide capital equal to about 3% of the total value of investments. While Thai depositors, insured by the FIDF, contribute \$97, the owners of the financial institution only pays \$3 of the initial outlay. The depositors

¹⁶The example is drawn from Chapter 6 of the textbook “Economics, Organization & Management” written by Paul Milgrom and John Roberts (1992).

have first priority on any proceeds from the investment and will be paid in full if the returns on the investments exceed \$97. If the returns from the investment fall below \$97, the depositors will get what remains of the investment, the owners do not receive a cent, and the FIDF must pay the difference between the available fund and the depositors' \$97 claim.

We begin to study how the risk is shared between the depositors, the owners of the financial institution, and the deposit guarantee agency by a close examination of the distribution of costs and benefits in the case of the safe investment. The gross return refers to all the income produced from the investment including the initial capital outlay. Table 2. in the Appendix shows that the owners earn a gross return of \$13 if the investment turns out favorably and \$3 if the gamble fails. Net returns are the difference between the gross return and the initial outlay. The owners put up an initial investment of \$3 and receive net returns of either \$10 or \$0. The expected value of their net returns is thus \$5. Depositors received their money back, netting zero, regardless of the outcome of the investment and the FIDF neither receives or disburses any funds. The FIDF does not need to bail out the financial company to help meet its obligations in the safe investment scenario, but the situation turns against the deposit insurance system when the risky investment is undertaken.

The first three columns of Table 3 in the Appendix describes how the initial outlay and returns are divide among the three parties. The owners of the financial companies enjoy exceptionally high profits when returns are high. While the FIDF must pay off the depositors' claim on the behalf of the financial companies when returns are low, owners lose no more than their initial investment of \$3. It is thus clear that owners benefit at the expense of the FIDF when they undertake risky investments. Although the risky investment carries an expected net loss of \$5 overall, the owner of the financial institutions makes \$28 in a high return scenario and loses just \$3 in a low return scenario for an expected net gain of \$11. Therefore, owners have an incentive to choose the risky investment because it pays them more than twice the returns from the safe investment. The deposit insurance agency suffers an expected loss of \$16, the difference between the owners' expected returns and the total returns on the investments, because it needs to pay depositors when investments returns are too low to cover deposits. Since depositors are insured by the government in any event, they get their money

back. There is an incentive for owners to select riskier investments when made to choose between investments with equal expected returns, because they expect to profit most when the FDIF's expected losses are greatest.

The provision of deposit insurance in Thailand encouraged banks and financial companies to make excessive investments and lend heavily to the speculative real estate sector. The fall in property prices during the economic slowdown in 1996 raised serious concerns about the government's commitment to bail out financial companies in distress. In the next few months, foreign capital started to flow out of Thailand. Somprasong Land, with prime real estate holdings in Bangkok, became the first Thai company to default on its \$U.S. 3.1 million Eurobond. Investor confidence finally crumbled in 1997 when the BOT announced that it will not bail out Finance One, one of the country's largest financial intermediaries. In March, depositors withdrew more than 30 billion baht after the government ordered 10 smaller finance institutions to raise a combined \$318.5 million to offset insufficient liquidity. In a desperate attempt to restore confidence to the country's ailing finance sector, the government announced that 16 troubled financial companies will be suspended for a month so that mergers may be arranged. The central bank was to spend billions in foreign exchange reserves in its attempt to arrest the fall of the Thai baht but it was too late to stop the reversal of capital flows. During the course of the financial crisis in Thailand, the FIDF incurred liabilities of more than 1.2 trillion baht from bailing out the financial sector and guaranteeing depositors and creditors.

The IMF approved a \$U.S. 16 billion rescue package for Thailand on the 21ST of August, 1997. As part of a package of measures designed to restructure the financial sector, strict conditions were imposed on the extension of FIDF resources. Instead of being bailed out by the central bank, ailing financial institutions must either shut down or seek mergers with more stable banks. Towards the end of 1997, 58 of the 91 finance companies in Thailand had been ordered to cease operations.

5. CONCLUSIONS

Ironically, Thailand's economic success during the late 1980's and the early 1990's may have led, in part, to the financial crisis that the country now faces. Strong growth, and generally prudent macroeconomic management, as seen in continuous public sector fiscal surpluses over the same period, had attracted large capital inflows to Thailand at a time of relatively weak economic growth in Europe and Japan. Under the impression that fixed exchange rates would eliminate any currency exchange risk, Thai companies engaged in heavy external borrowing which led to excessive exposure to foreign exchange risk in both the financial and corporate sectors. As the baht became increasingly overvalued with the every appreciation in the U.S. dollar in the years that followed, the production and consumption of non-tradables, especially in the real estate sector, rose. Foreign credit that poured into the country resulted in a real estate bubble and overbuilt property markets because Thailand's financial markets had been liberalized without adequately strengthening the regulatory and supervisory systems for banks and financial institutions. In particular, the Thai deposit insurance scheme created a moral hazard problem by giving banks and financial institutions an incentive to undertake risky investments in the real estate sector, financed with short term funds from abroad.

While the euphoria lasted, the institutional and structural weaknesses in the Thai economy were overlooked. The high economic growth and increasing current account deficit in Thailand were easily financed by the capital flows from abroad. But the country's competitiveness in the global export market was gradually eroded by the overvalued Thai baht and the entry of emerging economies with low labour costs. The growing primary account deficit became a major cause of concern amongst international investors when Thailand's bad balance of payment situation was made worse by a

slowdown in Thai export growth at the beginning of 1996. As the economy faltered, falling real estate prices led to the collapse of the property sector. Property developers could no longer meet their loan obligations to the banks and financial companies. Given the over-extension of credit to the real sector in the past, banks and financial companies were left with an inordinate amount of non-performing loans on their balance sheets; most of the smaller companies were bound to fail. The reduction in normalised cash-flows at financial institutions led to rumours concerning their financial stability and resulted in a partial run on deposits at some institutions. Once doubts arose about the solvency of the borrowers, investors began to withdraw short-term financing. The reversal of capital inflows into Thailand reached a climax when the central bank reneged on its promise to bail out one of Thailand's largest financial institutions in 1997, investors were no longer confident in the viability of the Thai financial system.

In the series of speculative attacks on the Thai baht that followed, the central bank spent over two-thirds of its foreign reserve holdings as the government struggled to bail out failed financial institutions and, at the same time, defend the baht in the foreign exchange market. The central bank was also forced to raise interest rates when it was clear that the Thai economy was slowing and needed lower rates. On July 2, the central bank had to replace the fixed exchange rate regime with a "managed float", as it could no longer tap the reserves.

The managed float of the baht has resulted in a depreciation of 37% against the U.S. dollar in the period of one year. The Reference Rate for the baht reached a low of 56.06 per U.S. dollar on the 13TH of January, 1998. Although the baht had recovered to 38.84 per U.S. dollar by October that

year, it was still approximately 29.5 percent lower than on the 2ND July 1997. The Thai government has made minimal efforts to intervene in the foreign exchange market since the flotation of the Baht on 2 July 1997. Instead, it has adopted a number of fiscal and monetary measures designed to stabilize foreign exchange rates.

The debt of the private sector is now much larger in baht terms than it was at the beginning of July 1997 because of the devaluation of the Thai baht . With investor confidence at an unprecedented low, most of the corporate sector will be struggling to roll over their short term debts, particularly those with less than a year to maturity. Already, several flagship Thai companies have admitted publicly that the devaluation had cost them the equivalent of their profits over the next two years. The situation for the property, construction and financial companies is much grimmer, many of these companies will simply go bankrupt. Little property has been changing hands over the past year because owners have been unwilling to realise their losses. Since most of the financial companies have been shut down and IMF rules prevent the government from propping up companies which are not viable, real estate prices will drop further as owners are forced to sell their property in depressed market conditions. As for the banking sector, it is difficult to quantify the damage. Most banks, particularly the small ones, will need to be recapitalised over the next two years by rights issues or mergers with stronger financial institutions.

Finally, it is worth noting that the financial crisis left an incentive for Thailand to reform its economic systems, and to initiate some much need restructuring, so that the country may emerge from the experience not weaker, but stronger institutions with a greater ability to attain sustainable economic

growth. The Thai baht is on the rebound one year after the crisis, reflecting an initial overshoot and current under-valuation. Investor interest is also on the rise and likely to climb even higher as reform efforts make the investment climate in Thailand even more attractive.

APPENDIX

TABLE 1. - Description of Investment Opportunities.

Type of Investment	Safe Investment	Risky Investment
Initial Outlay	100	100
High Return	110	125
Probability	0.50	0.50
Low Return	100	65
Probability	0.50	0.50
Expected Return (Gross)	105	95
Expected Return (Net)	5	(5)

TABLE 2. - Analysis of the Safe Investment.

	Depositors	Owners	FIDF	Total
Initial Outlay	97	3	0	100
High Return	97	13	0	110
Low Return	97	3	0	100
Gross Expected Return	97	8	0	105
Net Expected Return	0	5	0	5

APPENDIX

TABLE 3. - Analysis of the Risky Investment.

	Depositors	Owners	FIDF	Total
Initial Outlay	97	3	0	100
High Return	97	28	0	125
Low Return	97	0	(32)	65
Gross Expected Return	97	14	(16)	95
Net Expected Return	0	11	(16)	(5)

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