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Ngiam Kee Jin
ISEAS Associate Senior Fellow
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Abstract

Singapore has weathered the Asian financial crisis better than most Asian economies. This paper examines the roots of Singapore's resilience and assesses Singapore's policy responses to the crisis. It argues that Singapore has used the exchange rate and wage instruments effectively during the crisis. Singapore's managed exchange rate system allowed it to quickly depreciate the Singapore dollar in response to the loss of its export competitiveness arising from the collapse of the regional currencies. As the crisis dragged on into 1998, Singapore decided not to tinker with the nominal exchange rate but instead worked towards direct cost-cutting measures such as wage and operating cost reductions to maintain its competitiveness. Despite the crisis, Singapore has pressed ahead with financial reforms including liberalising the Singapore dollar, to ensure the long-term competitiveness of its economy. Lessons from the Singapore experience on containing the contagion effects of the crisis are drawn.

1. Introduction

Since the breakdown of the Bretton Woods system in 1973, the Singapore dollar has come under speculative pressures twice: first in September 1985 when Singapore was facing a recession, and second when it suffered the contagion effects from the Asian financial crisis which began with the floating of the Thai baht in July 1997. As a small open economy, Singapore is extremely vulnerable to external developments, especially in the surrounding region. Thus, the large and adverse economic shocks triggered by the Asian financial crisis could potentially have had a devastating effect on the Singapore economy. However, Singapore has withstood the financial storm lashing the region and even managed to maintain a relatively favourable economic performance. Although Singapore has weathered the crisis better than many Asian nations, its close integration with the regional economies means that it could not walk away completely unscathed. Indeed, during the Asian financial turmoil, the Singapore dollar depreciated against the major currencies of the US, Japan and

Europe but rose sharply against most Asian currencies, particularly the Indonesian rupiah, Thai baht, Malaysian ringgit and Korean won.

Singapore's resilience appears to be rooted in strong macroeconomic 'fundamentals', sound macroeconomic policies, and a willingness to take timely and effective policy measures to counter the adverse effects of the crisis. In response to a weaker competitive position vis-à-vis its neighbours, Singapore initially depreciated the Singapore dollar against the US dollar to maintain its competitiveness. As the crisis became prolonged, Singapore opted not to tinker with the nominal exchange rate, but instead worked towards cost-cutting measures to restore its competitiveness. At the same time, the authorities pressed ahead with financial reforms and liberalisation to ensure its long-run international competitiveness. This should help consolidate Singapore's position as a financial centre after the region has recovered from the economic turmoil. In fact, the Asian financial crisis might even benefit Singapore in the long term, as it has reduced the threat some Asian economies pose to Singapore as a financial centre.

This paper is organised as follows. In the next section, we present a simple model of the regional currency crisis. We examine the impact of the crisis on Singapore in section 3. We study the roots of Singapore's resilience in section 4. Section 5 addresses the issue of appropriate policy responses to the loss of Singapore's competitiveness arising from the crisis. In section 6, we analyse Singapore's policy responses to the crisis. The last section provides the conclusions and lessons that can be drawn from the Singapore experience.

2. A Simple Model of the Currency Crisis

In this section, we develop a simple model to describe the kind of currency speculation that has plagued some of the more advanced developing countries such as Singapore.¹ We assume that there is an interest rate ceiling, i_c , beyond which the domestic economy cannot bear. If the domestic interest rate is greater than i_c , the authorities will have to give up defending the exchange rate and allow the domestic currency to devalue. With imperfect substitutability between domestic and foreign financial assets, the following modified uncovered interest parity equation can be used:

$$(1) \quad i = i^* + \pi(E_1 - E)/E + RP$$

where i is the domestic interest rate, i^* is the foreign interest rate, E is the exchange rate (local currency per unit of foreign currency), E_1 is the equilibrium exchange rate, π is the probability of devaluation, $\pi(E_1 - E)/E$ is the expected depreciation of the domestic currency, and RP is the composite risk premium.²

Let π be the perceived probability that the government cannot support the current exchange rate. Conversely, $(1 - \pi)$ is the perceived commitment or the credibility of the government to defend the current exchange rate. π is assumed to be an exogenous parameter in the present model and takes on the following values:³

$$(2) \quad \begin{aligned} \pi &= 1 && \text{when } i \geq i_c \\ \pi &= \pi^* \text{ where } 1 > \pi^* > 0 && \text{when } i < i_c \end{aligned}$$

Suppose that the current account and the asset markets are initially in equilibrium, consider the case where there is a large shock, such as the regional economic crisis, which pushes up the equilibrium exchange rate E_1 . From equation (1), this causes the domestic interest rate to rise. As long as the higher domestic interest rate is below the interest rate ceiling (i_c), there will be no currency crisis. Suppose that the shock from the regional economic crisis, perhaps compounded by speculative attacks on the domestic currency, is so large that the domestic interest rate shoots above the interest rate ceiling. In this situation, π is equal to unity. The possibility of π equals to unity is therefore self-fulfilling, since the government will have to give up defending the exchange rate at a cost much less than the cost of high domestic interest rate. Once the current exchange rate regime collapses, domestic interest rate will fall back to $i^* + RP$ and the exchange rate will depreciate to E_1 . The trick for the government is to ensure that the domestic interest rate stays below the interest rate ceiling after a shock.

To see how the authorities can control the domestic interest rate to avert a currency crisis, let us first introduce the following money market equilibrium:

$$(3) \quad R + D/E = M(i), \quad dM/di < 0$$

where R is the international reserves comprising foreign bonds and foreign money, E is the exchange rate, and D is the domestic credit. The left hand side of equation (3) is the real money supply, with foreign prices normalised to one and with the purchasing power parity assumed to hold. The right hand side is the real money demand which is negatively related to the domestic interest rate, i .

It can be seen from equation (3) that the government has different ways of managing the domestic interest rate when an unstable situation arises. One way of controlling the domestic interest rate is to run down the secondary reserves (which is the excess of international reserves over and above the monetary base) to retain sufficient liquidity in the economy.⁴ The other is for the authorities to increase its holdings of domestic credit, D , thereby injecting enough liquidity into the economy to ease the pressure on the exchange rate. In this case, the government is acting as a lender of last resort. Another way is to appreciate the exchange rate. When the Singapore dollar was under speculative attacks in September 1985, the authorities engineered an appreciation of the Singapore dollar to stem currency speculations and claimed to have inflicted punishment on speculators.⁵ An appreciation in itself is self-defeating because it only increases the domestic interest rates with further loss of reserves, as shown by equation (3). To prevent a rise of the domestic interest rate amidst an appreciation of the currency, it is necessary to inject a sufficient amount of secondary reserves into the system.

On its face value, appreciating the exchange rate to stamp out currency attacks seems nonsensical. However, there is one important aspect of this policy which has been widely ignored: It can in fact help the authority to re-establish its reputation as a tough, committed government. Credibility of government during currency crises has been shown to be crucial in the literature on self-fulfilling currency attacks. As emphasised by Obstfeld and Rogoff (1995), speculators do not attack a currency at random; they will attack only when a country's credibility in defending its currency is in doubt. During the recent Southeast Asian currency crisis, policy-makers have learnt the hard way how important credibility is when they tried to reverse market sentiment and restore investors' confidence. The economic impact of a rise in

credibility can be illustrated by a lower value of the parameter π^* . From an inspection of equation (1), if the impact of an appreciation on π^* is sufficiently large, offsetting the direct impacts of the appreciation itself, interest rate need not be raised and, perhaps, could even be lowered. This policy of appreciation may help the market agents to focus more on, and opt for, the possibility that the current exchange rate regime will prevail.

If the threat of retaliatory appreciation is fully anticipated by speculators, π^* could be lowered without the need of an actual appreciation. Moreover, the domestic interest rates could be lowered without actual adjustments in the exchange rates. The threat could work as long as there is a chance that it will be applied. However, it remains to be seen whether this policy of appreciation to beat down currency speculators can be repeated in the future, even though Singapore has applied it successfully to avert a currency crisis in September 1985. During the Asian financial crisis, this policy of appreciation was not tested, as the Singapore dollar did not come under speculative attack. Speculators might have decided not to attack a strong-willed and credible authority. However, Singapore was not completely insulated from the Asian financial crisis, as the adverse impact from the crisis was felt by Singapore's financial markets and the real sectors of the Singapore economy.

3. Impact of the Crisis

The Asian financial crisis has adversely affected Singapore through several channels. First, Singapore's exports to the crisis-hit economies were badly affected as a result of severely diminished regional demand, due in part to the collapse of their currencies. Second, Singapore's exports became less competitive against these economies in third-country markets. Third, Singapore's banks were weakened by their sizeable lending exposure to these countries. Fourth, the large outflow of Singapore's investment to the region in the early in 1990s, in response to the government-led regionalisation drive, suffered a severe setback. Fifth, Singapore's brokerage firms were hurt when the Kuala Lumpur Stock Exchange (KLSE) imposed a new rule on August 31, 1998 requiring all trading in Malaysian shares to be done on the KLSE. The new KLSE rule, together with the imposition of exchange controls by Malaysia,

effectively shut down the trading of Malaysian shares on Singapore's Clob International.⁶

The remainder of this section will examine the effects of the crisis on Singapore's currency and other asset markets, financial and corporate sectors, and economic performance.

Currency Contagion

After Thailand's long battle against currency attacks, the Thai baht was finally freed on July 2, 1997 from its peg to the US dollar. The baht fell by over 15 percent immediately, and by about 80 percent by the year-end. The Singapore dollar was not spared the contagion effects. From a high of S\$1.43 per US dollar on the day before the float of the Thai baht, the Singapore dollar went all the way down to S\$1.75 per US dollar on January 7, 1998, a decline of 18.3 percent over the six month period. However, the other regional currencies depreciated much more during the same period, ranging from 70 percent for the Indonesian rupiah to 35 percent for the Philippine peso. Therefore, although the Singapore dollar depreciated against the US dollar and other major currencies, it appreciated sharply against the regional currencies. As a result, Singapore's nominal and real effective exchange rates was relatively stable both before and during the crisis (See Figure 1).

Falling Asset Prices

The stock market and the property market in Singapore were badly hit by the crisis. Figures 2-3 show the movements of the stock market and property market price indices. The stock market opened January 1997 with the Straits Times Index (ST Index) at 2,055.44. The ST Index dropped drastically to a 10-year low of 856.43 in September 1998; a decline of some 60 percent over a fourteen-month period. The property market saw the private property price index plunging from 270.0 in the first quarter of 1997 to 163.7 in the fourth quarter of 1998, a drop of about 40 percent over a one-year period. The decline could have been more precipitous had the government not taken drastic measures in May 1996 to cool the private residential property market which was then showing signs of a bubble.⁷

Weaker Financial and Corporate Sectors

The non-performing loans (NPLs) of local banks operating in the region have gone up.⁸ As can be seen from Table 1, the local banks' loan exposure to Malaysia, Indonesia, Thailand, South Korea and the Philippines in March 1999 was S\$34.7 billion, or 12.5 percent of their total assets. Non-performing regional loans made up 24.3 percent of all loans to these countries, up from 23.3 percent in December 1998 and 17.8 percent in September 1998. If domestic and other global loans were added to these regional loans, the NPL ratio for Singapore banks was 8 percent in March 1999, up from 7.6 percent in December 1998 and 6.6 percent in September 1998. However, the Deputy Prime Minister, BG Lee Hsien Loong, told Parliament on July 6, 1999 that the NPL levels did not threaten the financial health of any of the local banks because they had set aside substantial provisions and the collateral backing of these regional loans exceeded the regional NPLs outstanding. The NPLs were high because local banks only wrote them off when all avenues to recover the loans had been exhausted and also because of the broad classification of NPLs.⁹

Slower Economic Growth

The Singapore economy could not be completely insulated from the regional economic turmoil, as the country has strong trade and financial linkages with the region. According to Singapore's official statistics (which do not publish figures on Singapore's trade with Indonesia), Malaysia, Thailand, and the Philippines combined (the so-called ASEAN-3) accounted for nearly a quarter of Singapore's total exports.¹⁰ The missing statistics are however provided by the Indonesian authorities which reveal that Singapore exported some US\$4 billion worth of goods to Indonesia in 1998.¹¹ Hence, the ASEAN-4 (which includes Indonesia) accounted for nearly a third of Singapore's total exports. In terms of tourism, Indonesia, Japan and Malaysia are Singapore's top three visitor generating markets in 1999, accounting for 17.4 percent, 12.4 percent and 7.3 percent of Singapore's tourist arrivals respectively.

Because of its regional exposure, Singapore felt the full brunt of the adverse spill-over effects of the Asian financial crisis in 1998, following very strong growth in 1997. As shown in Table 2, Singapore's GDP growth slowed down significantly from a positive 11.8 percent in the third quarter of 1997 to a negative 2.1 percent and

negative 1.1 percent in the second and third quarter of 1998 respectively. As a result, its GDP growth fell from a robust 8.9 percent in 1997 to a mere 0.3 percent for 1998 as a whole.¹² While admittedly low, Singapore's growth in 1998 was among the highest in Asia.

Given Singapore's role as the business hub of Southeast Asia, three of its service industries (namely wholesale and retail trade, hotels and restaurants, and financial services) were severely affected by the crisis. The hotel and restaurant sector registered negative growth for five consecutive quarters, starting as early as the first quarter of 1998. The wholesale and retail trade, and financial services sectors had negative growth rates for four consecutive quarters starting in the second quarter of 1998. The manufacturing sector was also hit, as it experienced negative growth for three consecutive quarters starting in the second quarter of 1998. Only the transport and communications, and business services sectors continued to show positive quarterly growth, despite the crisis.

As a result of the economic downturn, the unemployment rate increased from 2.4 percent in 1997 to 3.2 percent in 1998, the highest since 1989 (Figure 4). The number of unemployed persons in 1998 was some 62,100, compared with about 45,500 in the preceding year. The number of unemployed had been accelerating in the second half of 1998 as the seasonally-adjusted unemployment rate climbed to a high of 4.5 percent in December 1998, from just 2.3 percent in June 1998. Still, in comparison with other countries in the region, Singapore's unemployment rate has remained low.

4. Roots of Resilience

Singapore's resilience in the face of the large and adverse economic shocks triggered by the Asian financial crisis can be traced to the four "foundations" it has laid over the years. These are: (1) the maintenance of strong economic fundamentals, including a healthy banking sector, (2) the adoption of a managed exchange rate system, (3) the establishment of an adjustable wage system, and (4) controls on bank lending in the Singapore dollar.

Strong Fundamentals

Singapore's strong economic fundamentals are well-known. These include low foreign debt, huge foreign exchange reserves, large account surpluses, substantial budget surpluses, high savings rates, strong inflow of direct foreign investment, low inflation rates, prudent government policies and a sound financial system. (See Table 3). Good corporate governance and the credibility of policymakers in Singapore have also helped to maintain investors' confidence throughout the crisis.

After a brief recession in 1985/86, the Singapore economy has registered continuous strong growth, without any sign of macroeconomic imbalances developing. Its current account surplus has grown rapidly from almost zero balance in 1985 to reach a high of 20.9 percent of GDP in 1998. The current account surpluses can be attributed to the surplus in both the public sector budget and the private sector account. As a result, the savings rate has always been exceptionally high, reaching some 54.4 percent of GDP in 1998. The foreign exchange reserves rose to US\$75 billion (9 months of imports) in 1998.¹³ Monetary policy has been anchored by the exchange rate and directed at price stability. This has helped limit inflation to an average of only 2 percent during the 1990s which was well below the international level.

The sound economic fundamentals of the economy have been reinforced by a well-capitalised and well-supervised banking sector. As shown in Table 4, the local banks are well-capitalised by international standards. Their capital adequacy ratios increased from 16 percent in 1996 to 18.3 percent in 1998, despite making substantial provisions over the years. They even managed to earn positive profits amounting to some S\$1.45 billion in 1998, albeit 40 percent below the 1997 levels. Compared to the situation in the region, there was no danger of a banking crisis erupting in Singapore, as local banks' exposure to the region constituted less than 20 percent of their total global assets. The bulk of their loans were made domestically, where the corporate borrowers were able to absorb the negative shocks in asset prices and demand, due to their strong balance sheet positions.

Managed Exchange Rate System

The Monetary Authority of Singapore (MAS) manages the Singapore dollar not against a single currency, but against a trade-weighted basket of currencies of Singapore's major trading partners. In other words, it manages the nominal effective exchange rate (NEER). The NEER is allowed to float (but with frequent intervention to moderate exchange rate fluctuations) within an undisclosed target band, which it assesses to be consistent with Singapore's economic fundamentals. The target band has to be set right, as an overvalued exchange rate invites speculative attacks, while an undervalued currency leads to overheating. Singapore has learnt a painful lesson of maintaining an overvalued NEER in the early 1980s. Chan and Ngiam (1998) has shown that the overvaluation of the NEER, coupled with economic recession, led to speculative attacks on the Singapore dollar in September 1985. This episode suggests that Singapore should view currency over-valuation and economic slowdown as warning signs of an impending currency attack on its currency. This finding is consistent with that in Frankel and Rose (1996), which showed that currency crashes in emerging countries tended to occur when their currencies were overvalued and output growth was slow.

Adjustable Wage System

The wage system in Singapore is fairly flexible, as it allows for wage reductions in difficult times such as during the recession years of 1985 and 1998. In Singapore, the National Wages Council (NWC), which is a tripartite body of employers, unions and government, sets non-mandatory annual wage guidelines in the light of external market pressures and domestic inflationary concerns in order to achieve orderly wage settlements consistent with macroeconomic objectives. The NWC was established in 1972 and its guidelines have been generally followed by the public sector and unionised private sectors of the economy. Other employers were also influenced by the guidelines for fear of losing workers (Lim and Associates, 1988, pp. 203). Hence, the NWC guidelines have a definite impact on wages in Singapore.

Following the recession in 1985, Singapore has adopted a more flexible wage system. The NWC has since drawn up a new monthly pay structure, comprising a basic wage and a monthly variable component (MVC).¹⁴ The pay structure also

consists of an annual wage supplement (AWS) and an annual variable bonus. However, only the public sector has adopted such a comprehensive pay structure which allows for more flexible wage cuts in bad times. The private sector has adopted the AWS and an annual variable bonus but not the MVC. Hence, unlike the public sector, it does not have the flexibility to make quick adjustments to wage costs, as it would have to wait for cuts in year-end bonus, annual wage supplement or Central Provident Fund (CPF) contribution rates. To make wages in the private sector more flexible, the NWC is advocating that companies should start introducing the MVC into the wage structure. Its aim is to build this component up to 10 percent of total wages over the years. When accomplished, the current structure of 80 percent of basic wage and 20 percent of annual variable bonuses will be altered to this: 70 percent basic wage, 20 percent annual bonus and 10 percent MVC.¹⁵

Controls of Singapore dollars

The MAS has had a longstanding policy of discouraging the internationalisation of the Singapore dollar, out of fear that a large offshore market in Singapore dollars could destabilise capital flows and cause greater exchange rate and interest rate instability (Ngiam, 1998). Before August 1998, the MAS regulated local financial institutions through regulation “MAS 621” (originally issued in 1983 and amended in 1992), which required them to consult the MAS before providing Singapore-dollar credit facilities to non-residents for financial investments, third-party trade or use outside Singapore. Financial institutions were also required to consult the MAS on Singapore-dollar facilities to residents if the proceeds were to be used outside Singapore. To ensure that its regulations were not being circumvented through financial derivatives, the MAS has defined Singapore dollar credit facilities to include a wide range of financial instruments, including foreign exchange swaps, currency swaps, interest rate swaps, facilities incorporating options, and forward rate agreements in Singapore dollars. These restrictions, backed by strong fundamentals and flexibility of the exchange and wages, have helped to mitigate the impact of recent speculative pressures on the Singapore dollar. However, they also have the effect of hindering the deepening and widening of the financial markets in Singapore as well as the growth of Singapore as a financial centre.

5. Analysing Policy Options

In this section, we address the issue of appropriate policy responses to the loss of Singapore's competitiveness arising from the Asian financial crisis. After holding steady the Singapore dollar against a basket of currencies for one and a half years, the Deputy Prime Minister Lee proclaimed in February 1999 that "we do not rely on exchange rate depreciation to boost our competitiveness".¹⁶ He went on to say that the MAS would "prefer to do this directly, by reducing business costs, improving labour productivity and enhancing capabilities". The pertinent question is whether exchange rate depreciation can be more effective than cost-cutting measures, such as CPF and wage cuts, in arresting the slide of the Singapore economy during the crisis in 1998.

A convenient starting point for discussion is an equilibrium model of a small open economy, which is depicted in Figure 5. In this model, which follows Dornbusch (1996), there are two determinants of output and employment in Singapore: the real wage in Singapore dollars, W/E , and the real money stock, H/E . Obviously, W and H are the nominal wage and money stock respectively, and E is the exchange rate (measured as the number of Singapore dollars per unit of foreign currency). The schedule LL is the combination of real wage and real balances consistent with internal balance. It is upward sloping because an increase in W/E worsens international competitiveness and, thus, requires an increase in H/E to boost spending in order to maintain full employment. Points to its left correspond to unemployment and points to its right reflect over full-employment. The schedule XX is the combination of W/E and H/E that maintain external balance. It is downward sloping because an increase in W/E hurts international competitiveness and, hence, requires an offsetting cut in H/E to reduce spending in order to maintain the external balance. Points to the left correspond to external surplus and points to the right represent external deficit.

Consider now an initial situation at point P and a fall in the regional demand resulting from the Asian financial crisis. The effect is to cause the LL curve to shift to L^1L^1 and the XX curve to X^1X^1 . The intersection of the new curves L^1L^1 and X^1X^1 (at point P^1) lies below point P . At point P , the economy is facing unemployment and an external deficit (or an external balance less than the target level). With fully

flexible exchange rates and nominal wages, the economy moves to point P^1 where there is both internal and external balance. However, the real wage is lower at point P^1 than at point P because of the negative real disturbances.

With flexible nominal wages but a fixed exchange rate, the economy moves towards L^1L^1 such as at point B. The movement towards point B restores internal balance and improves external balance. As there is an external surplus at point B, real money stock is rising. The economy converges over time to point P^1 where both internal and external balance is restored.

However, if money wages are not fully flexible (or are sticky downwards) and there is no real wage rigidity, then devaluation has a role to play. A devaluation cuts real wages, fosters competitiveness, and in that manner helps create employment and improve external balance. It can bring the economy from point P towards L^1L^1 such as at point C. There is an external surplus which causes an increase in real money stock. Again, the economy will eventually move to the equilibrium point P^1 .

Another extreme case is where real wages are fixed. Suppose, in Figure 6, the real wage is fixed at a level shown by the horizontal line ww . The external deficit at point P leads to lower real balances under a fixed exchange rate and, hence, the economy converges to point D. A devaluation can bring the economy to point F, but the sticky real wage implies a rapid adjustment to the line ww at point G. Because of the reduction in real balances, there is a transitory external surplus. The economy will eventually move back to point D. In a world without money illusion, a nominal exchange rate devaluation per se will not have any persistent real effects. In this “no money illusion” world, there is also an internal-external conflict, as the attainment of external balance at point D (from point P) moves its economy away from internal balance. As a result, real balances will fall (interest rates will rise). High interest rates will worsen the unemployment situation and weaken the banking sector. This state of affairs can make the economy vulnerable to currency attacks, as shown in section 2.

At this stage, three questions need to be asked. First, is there a real wage rigidity in Singapore? Second, are money wages fully flexible in Singapore? Third, is devaluation an effective and useful instrument in the context of Singapore?

Real wages in Singapore are not fixed, as workers in general are willing to accept nominal wage cuts and exchange rate depreciation during an economic downturn. With flexible real wages, either exchange rate depreciation or a real wage cut can play a useful role in bringing about stimulus of domestic output and correction of external deficit. Singapore has used both of these instruments effectively during the crisis.

Nominal wages in Singapore are fairly, but not fully, flexible. Although the nominal wages can be cut, agreement among employers, trade union and government through the NWC must first be sought before wage guidelines are issued. The guidelines are implemented only by the public sector and unionised private sectors of the economy. Moreover, they are not implemented right away. For example, the wage and CPF cuts recommended by the NWC in mid 1998 were implemented only from January 1999. Months before the implementation, government ministers and traded union leaders, through a series of speeches, had been preparing and exhorting workers to accept wage and CPF cuts, in order to save their jobs and to revive the Singapore economy. When there is unemployment caused by a fall in regional demand and when the country cannot co-ordinate a drop in wages easily and rapidly, devaluation can provide a quick solution. This has been the strategy of the MAS as it has allowed the Singapore dollar to fall from S\$1.43 per US dollar to about S\$1.70 per US dollar during the first few months of the Asian financial crisis.

However, when the crisis persisted and further enhancement of export competitiveness was needed to turn the economy around, the MAS argued for direct wage cuts rather than exchange rate depreciation. This is understandable, as the MAS has traditionally adopted a strong Singapore dollar policy. The result has been a stable Singapore dollar, low inflation, low interest rate and confidence in the currency and Singapore's financial sector. A large or continuing depreciation to enhance export competitiveness would jeopardise all these achievements. Moreover, as a small open economy, the cost reduction from the depreciation can be quickly eroded through higher inflation. According to studies by the MAS, the bulk of the initial gains in competitiveness arising from a weaker exchange rate are lost within three years through higher inflation.¹⁷ Worse, the higher inflation tends to become entrenched, with adverse consequences for the economy. If the higher inflation is

unanticipated, there is also a distribution effect as nominal debtors (in Singapore dollars) will benefit at the expense of nominal creditors.

6. Policy Responses

As the Asian financial crisis has eroded Singapore's competitiveness, its policies and costs were adjusted to adapt to the new environment. Singapore's policy responses to the Asian financial crisis have been flexible, timely and pragmatic. As the exchange rate could be adjusted promptly, it was used in the initial stage to prevent the erosion of Singapore's competitiveness. Fiscal and cost-cutting measures, which took a longer time to implement, were employed at a later stage to strengthen Singapore's competitiveness. In addition, Singapore took the opportunity afforded by the lull in regional activity to position its financial sector for the next wave of regional growth by implementing important financial reforms, including the liberalisation of the Singapore dollar. The easing of the use of the Singapore dollar would obviously weaken one of the four foundations for Singapore's resilience discussed in section 4. However, it could be argued that, like a tripod, only three foundations would be enough to ensure Singapore's resilience.

Initial Response: Exchange Rate Depreciation

Following the outbreak of the crisis in July 1997, the MAS took steps to ease its monetary policy to cushion the rapidly decelerating Singapore economy. It has also allowed the Singapore dollar to fluctuate in a flat and wider target band because of the volatility and uncertainty in the financial markets (MAS Annual Report 1997/98, pp. 49). As a result, the NEER has been broadly stable since mid 1997, in contrast to the appreciating trend of previous years. During the crisis, there has been no speculative attacks against the Singapore dollar, although some selling pressures caused it to slide against the US dollar. In the absence of domestic inflationary pressures, the MAS has allowed the Singapore dollar to fall against the US dollar in line with the regional currencies in order to preserve its competitiveness. This can be looked upon as a short-term recourse to combat the effects of the crisis. The long-term objective of managing the exchange rate to attain price stability remains unchanged.

With a recovering economy and stable currency markets by mid 1999, the MAS has accordingly shifted its exchange rate policy stance back to neutral, and moved the Singapore dollar back to its narrower, pre-crisis exchange rate band.¹⁸ The MAS has also revealed that since early 1999, the value of the Singapore dollar based on a trade-weighted basket of currencies had returned to its pre-crisis levels, even though the economy was still operating below its full potential.

Subsequent Response: Fiscal and Cost-cutting Measures

In spite of pressures on the currency, and stock and property markets in the second half of 1997, the government has refrained from direct intervention. When the fiscal year 1998 (FY98) Budget was announced in February 1998, the real economy was still robust and growing by 7.9 percent in the last quarter of 1997.¹⁹ Accordingly, the FY98 Budget was not designed to stimulate the economy, as it still provided for a budget surplus of some S\$2.7 billion (equivalent to 1.7 percent of GDP), down from the surplus of about S\$6.1 billion in fiscal year 1997.²⁰ Clearly, the FY98 Budget was too prudent, and underestimated the impact of the regional economic crisis. The authorities might have thought that the impact on competitiveness from regional currency developments would be moderate, owing to Singapore's reliance on higher value-added activities and on industrialised economies for its electronic exports.

When it became clear in mid-1998 that the deterioration of the Singapore economy was more serious and protracted than originally projected, the government unveiled a S\$2 billion off-budget package in June, with three broad objectives. One was the reduction in business costs through additional property tax rebates, as well as rental and utilities rebates by government agencies. The second was the strengthening of economic infrastructure through speeding up of development projects, as well as providing more funds for skill training and local enterprises. The third was the stabilisation of specific sectors of the economy, in particular the property market, by suspending government land sales until the end of 1999 and deferring stamp duty on uncompleted properties. The government also assisted households by granting them rebates on Housing and Development Board (HDB) charges and rentals, as well as helping them with mortgage re-scheduling. As a result, property prices began to stabilise in second half of 1998, as can be seen in Figure 3. The stabilisation of

property prices helped prevent more bankruptcies and an increase in non-performing loans.

The June 1998 off-budget package failed to arrest the slide in the real sector of the economy which registered decelerating quarterly GDP growth rates and rising unemployment. As a result, another cost-reduction package worth S\$10.5 billion was introduced in November 1998 which aimed to reduce business cost by 15 percent.²¹ The main measures under this package include a 10 percent point reduction in the employers' CPF contribution, a wage cut of 5 to 8 percent, a 10 percent corporate tax rebate for 1999, and further cuts in government rates and fees.²²

The two off-budget packages reduced the projected surplus for the fiscal year 1998 to only S\$1.1 billion (MAS Annual Report 1998/99, pp. 42). Although the fiscal policy in 1998 was less deflationary than the previous budget surpluses (about 4 to 6 percent of GDP), it could have been more stimulative given that the economy was in recession in the second half of 1998. Nevertheless, the direct cost-cutting measures have improved Singapore's competitiveness. As can be seen in Figure 7, the unit labour cost of the overall economy has come down significantly in the first three quarters of 1999. Likewise, the unit business cost of the manufacturing sector has fallen sharply in the first nine months of 1999.

Given the continuing slowdown in economic growth, the government implemented a more expansionary fiscal policy in the FY99 Budget to soften its impact on businesses.²³ For fiscal year 1999, the deficit was estimated at about S\$5 billion or 3.5 percent of GDP. The focus of this Budget was on long-term spending in strategic areas like education and infrastructure. Since the announcement of the FY99 Budget in February 1999, the economy has been recovering strongly, registering a growth rate of 6.7 percent for the second and third quarters, and 7.1 percent for the fourth quarter of 1999. For the whole of 1999, Singapore enjoyed a respectable 5.4 percent growth. Its labour market also rebounded sharply, as the unemployment rate dropped dramatically to 2.9 percent in December 1999 from a high of 4.5 percent in December 1998. Singapore's V-shaped recovery could be attributed to two main factors. One was the strong growth in global electronics which absorb some two thirds of Singapore's domestic exports. The other was the quick turnaround in the regional economies. With a stronger than anticipated economy recovery in

Singapore, the government was able to turn an estimated S\$5 billion budget deficit for FY1999 into a surplus of S\$3.2 billion

Financial Sector Reforms

The regional financial crisis laid bare the dangers of over-dependence on manufacturing and entrepot trade. Thus, despite the crisis, Singapore decided to press ahead with liberalising its financial sector because of its resolve to become a leading financial centre. In fact, it can be argued that as a land-scarce nation, Singapore's potential lies in financial and business services rather than manufacturing. The MAS thus took the opportunity afforded by the lull in regional activity during the crisis to position the financial sector for the next wave of regional growth.

To further develop Singapore as a financial centre, the MAS has enhanced financial sector transparency by raising disclosure standards. In view of the strength of the banking sector, higher disclosure standards should reduce the risk of unwarranted contagion. The MAS also decided to take a different approach to financial-sector management by emphasising the need for a "lighter touch", with the focus changing from regulation to supervision. One major outcome of this change in mindset was the introduction of several steps to ease restrictions on the use of the Singapore dollar, including: encouraging well-established foreign entities to issue Singapore dollar bonds in Singapore, allowing Singapore-run firms to borrow Singapore dollars for use outside Singapore, promoting the growth of derivatives based on the Singapore dollar (e.g. Singapore stock index futures and Singapore dollar swaps), and allowing foreign companies to list their shares in Singapore dollars in the local bourse. The new rules allowing a wider use of the Singapore dollar are contained in regulation "MAS 757" issued in August 1998 to replace regulation "MAS 621".²⁴ Although these changes did not amount to a full-fledged internationalisation of the Singapore dollar, they would go a long way towards broadening and deepening Singapore's financial markets. With the internationalisation of the Singapore dollar, the MAS might find it less easy to stabilise the exchange rate as there would be more funds moving in and out of the country. But given Singapore's strong fundamentals and healthy reserve position, the MAS would be well-placed to handle this larger movement of funds.

8. CONCLUSIONS AND LESSONS TO BE LEARNT

As a small open economy, Singapore is extremely vulnerable to external economic developments. Thus, the large and adverse economic shocks triggered by the Asian financial crisis could potentially have had a devastating effect on the Singapore economy. Amidst extensive distress in the region, however, Singapore has emerged relatively unscathed. Although its stock and property markets have taken a beating, its economy has performed remarkably well under the circumstances. The economy registered a small positive growth in 1998 and then rebounded with a remarkable 5.4 percent growth in 1999. As a result, pay cuts for public sector employees have been fully restored in January 2000, and CPF cuts for all workers will be restored within five years. Singapore's resilience and quick recovery can be attributed to its strong fundamentals, sound policies, and willingness to take bold and effective measures in response to the crisis.

The Asian financial crisis has taught Singapore several important lessons. The primary lesson is that Singapore has withstood the currency storm lashing the Asian region because of its strong economic fundamentals. With high current account surpluses, substantial budget surpluses, high savings rates, huge foreign exchange reserves, strong inflow of foreign direct investment, almost non-existent external debt, and negligible non-performing loans, Singapore was able to deter currency attacks and to take timely and bold measures to counter the large negative shocks triggered by the crisis. Because of its strong position, Singapore was able to promise loans of US\$1 billion to Thailand and US\$5 billion to Indonesia, as part of the IMF "bailout package" for these two countries. In addition, Singapore has used its foreign reserves to intervene directly in the foreign exchange markets, to help shore up the baht and rupiah in the midst of the crisis.

The other lesson is that the flexibility of both exchange rate and wages in Singapore has enabled it to weather the Asian financial crisis better than most Asian economies. By adopting a managed exchange rate system, it was able to prevent an over-valuation (or under-valuation) of the Singapore dollar. An over-valued exchange rate could invite speculative attacks, which Singapore found out the hard way in September 1985. Indeed, the September 1985 episode indicated that currency

over-valuation and economic recession were two important warning signs of an impending currency attack. The collapse of the regional currencies during the Asian financial crisis could have left Singapore with an over-valued currency. To prevent currency over-valuation which could trigger a currency attack, Singapore's immediate response was a calculated move to devalue the Singapore dollar against the US dollar and other major currencies.

As the crisis dragged on into 1998, the focus in Singapore shifted to direct cost-cutting measures, such as wage and cost reductions to boost its competitiveness, because further devaluation of the Singapore dollar would affect investor confidence and thus negatively impact Singapore as a financial centre. Thus, the exchange rate and wage adjustment, coupled with some fiscal and monetary easing to stimulate domestic demand, enabled Singapore to adopt a concerted multi-pronged approach to tackle the crisis. Using a policy mix judiciously, Singapore has not only avoided the worst effect of the crisis, but also spread the burden of adjustment across very segment of its society.

Another useful lesson is that Singapore's long track record of prudent fiscal and monetary policies proved to be a great asset, as it helped reassure markets that the fiscal and monetary easing taken by the authorities to address short-term problems are less likely to endanger or signal a deviation from commitments to its long-term goals. Singapore has also built up a reputation during the September 1985 episode that it is willing to engineer an appreciation of the Singapore dollar to punish speculators. Speculators might have decided to leave the Singapore dollar alone during the Asian financial crisis because of Singapore's reputation of having a strong-willed and credible government.

Last, but not least, Singapore has shown that financial liberalisation, which will greatly enhance Singapore as a financial centre, can be undertaken despite the crisis. This is because Singapore has built three strong foundations in the form of strong fundamentals, a flexible exchange rate system and an adjustable wage system, which would be sufficient to ensure its resilience against any currency attacks.

NOTES

1. A more detailed version of this model can be found in Chan and Ngiam (1998).
2. The composite risk premium reflects risk of default, corporate bankruptcy and the like. A similar model is found in World Bank (1998).
3. Here we assume that π^* is exogenous for various reasons. First, there are so many variables out there that can affect government's credibility that it is better to treat π^* as exogenous. Second, we are more interested in the comparative static results rather than the dynamic interactions of variables which will require the modelling of π^* as a function of endogenous variables. Finally, simplicity and insight can be gained if π^* is treated as a parameter or as a function of some exogenous variables such as D or an exchange rate appreciation.
4. The government can also inject liquidity into the economy, to stabilise the domestic interest rate, by borrowing either locally or from abroad.
5. See Chan and Ngiam (1998) for a thorough analysis.
6. The controls measures introduced by Malaysia in September 1998 required: the repatriation of all ringgit held abroad and an end to all offshore trading of ringgit, the retention of the proceeds of the sale of Malaysian securities in the country for one year, and central bank approval for the conversion of ringgit into foreign currency.
7. The measures included capital gains tax and stamp duty on sellers.
8. The major local banks are DBS Bank, OCBC Bank, Overseas Union Bank and United Overseas Bank.
9. For example, restructured loans were classified as NPLs. Loans adequately collateralised and not in arrears in interest or principal payments were also classified as non-performing if they had weak financials.
10. See Ministry of Trade and Industry (2000), *1999 Economic Survey of Singapore*.
11. See International Monetary Fund (December 1999), *Directions of Trade Statistics Quarterly*.

12. Singapore was technically in a recession in 1998 as it also had three consecutive quarters of negative seasonally adjusted quarter-on-quarter GDP growth in 1998.
13. This does not include the foreign assets held on behalf of the Central Provident Fund (CPF).
14. In the public sector, the MVC is known as the non-pensionable variable payment (NPVP) which accounts for about 8 percent of total monthly pay.
15. See “Employers to receive guidelines on MVC” in *The Straits Times*, 29 May 1999.
16. See “Scenarios for Singapore’s future” in *The Business Times*, February 13-14, 1999.
17. See “Macroeconomic Policies in Singapore: Principles, Milestones and Future Prospects”, which was delivered by Dr Richard Hu, Minister for Finance, at the Annual Dinner of the Economic Society of Singapore, 22 March 1997.
18. See “Recovery can be sustained” in *The Straits Times*, 8 July 1999.
19. FY98 represents the fiscal year which runs from 1 April 1998 to 31 March 1999.
20. See “Economic crunch may cut Budget surplus in half” in *The Straits Times*, 28 February 1998.
21. The off-budget package introduced in November 1998 was in response to the recommendations of the Committee on Singapore’s Competitiveness (CSC), which was originally formed in 1997 specifically to assess Singapore’s competitiveness over the next decade and propose strategies for improvement.
22. For details on the fiscal and cost-cutting measures introduced in 1998 to reduce business costs, see Ministry of Trade and Industry, Singapore (1999), *1998 Economic Survey of Singapore*.
23. See “Dr Hu goes with \$5-billion Budget deficit” in *The Straits Times*, 27 February 1999.
24. For a detailed description and analysis of the liberalisation of the Singapore dollar, see Ngiam (1998).

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About the author: Dr Ngiam Kee Jin is Associate Professor at the National University of Singapore Business School, and Associate Senior Fellow at the Institute of Southeast Asian Studies.

E-mail: fbankj@nus.edu.sg

TABLE 1
Regional Exposure of Singapore's Banks

	Sept 1998	Quarter Ending Dec 1998 Mar 1999 (S\$ billion)	
Gross exposure to regional countries (RCs)	35.8	34.2	34.7
As percentage of total assets	14.5%	12.5%	12.5%
Inter-unit*	4.6	4.5	4.4
Net exposure to RCs:**			
Malaysia	17.1	16.4	17.2
Indonesia	3.6	3.2	3.3
Thailand	8.7	8.4	8.0
South Korea	1.3	1.1	1.1
Philippines	0.5	0.6	0.7
Total	31.2	29.7	30.3
NPLs ratios:			
NPLs of RCs as % of total loans to RCs	17.8%	23.3%	24.3%
Global NPLs as % of global bank and non-bank loans	6.6%	7.6%	8.0%

* Loans to and investment in own banking subsidiaries and branches

** Gross exposure less inter-unit

Source: *The Straits Times*, July 7, 1999

TABLE 2
Gross Domestic Product at 1990 Market Prices
(Percentage change over same period of previous year)

	1997					1998					1999		
	Q1	Q2	Q3	Q4	Annual	Q1	Q2	Q3	Q4	Annual	Q1	Q2	Q3
Total	5.9	9.9	11.8	7.9	8.9	4.4	0.1	-2.1	-1.1	0.3	0.6	6.7	6.7
Goods Producing Industries	-0.9	6.6	12.3	10.8	7.3	9.1	2.4	-3.0	-3.3	0.9	1.9	6.5	7.5
Manufacturing	-5.2	4.4	9.8	8.6	4.5	6.6	-0.2	-4.2	-2.6	-0.4	6.7	14.5	16.6
Construction	10.2	13.0	19.8	17.4	15.3	15.7	9.0	-0.3	-5.7	4.0	-0.1	-13.3	-15.6
Services Producing Industries	10.0	11.9	12.0	7.0	10.2	2.4	-1.2	-2.0	-0.4	-0.3	-0.6	5.7	5.3
Wholesale & Retail Trade	2.7	8.5	11.1	3.9	6.4	1.9	-4.9	-6.1	-7.1	-4.1	-2.3	6.6	9.3
Hotels & Restaurants	2.3	3.6	3.5	-1.5	1.9	-4.3	-2.5	-5.1	-1.4	-3.3	-1.0	2.1	4.1
Transport & Communications	8.6	9.8	10.5	8.1	9.2	7.0	5.7	4.0	4.5	5.3	5.7	6.4	7.6
Financial Services	27.3	29.2	24.7	12.6	23.4	-6.4	-13.0	-11.8	-3.2	-8.8	-8.6	12.9	4.3
Business Services	8.3	7.3	10.0	8.3	8.5	6.9	5.6	3.4	3.6	4.9	0.6	-0.2	1.2

Source: Ministry of Trade & Industry, Singapore, *Third Quarter 1999 Economic Survey of Singapore*

TABLE 3
Selected Economic and Financial Indicators of Singapore

	1995	1996	1997	1998
Real Economy	(Change in percent)			
CPI inflation	1.7	1.4	2.0	-0.3
Gross national savings (percent of GDP)	51.8	52.9	54.5	54.4
Gross capital formation (percent of GDP)	34.5	37.0	38.7	33.5
Public Finance	(Percent of GDP)			
Revenue and grants	33.1	36.0	35.8	29.1
Expenditure, net lending, and funds transfer	21.4	27.6	26.5	29.1
Overall balance	11.6	8.4	9.3	0.0
Primary operating balance ¹	6.1	4.0	4.0	-0.5
Money and Credit	(Change in percent)			
Broad money (M3)	8.7	8.6	8.3	8.0
Credit to private sector	20.3	15.8	12.7	8.0
Interest rate (three-month interbank rate, in percent)	2.4	3.4	6.6	1.8
Balance of Payments	(US\$ billion)			
Current account balance (In percent of GDP)	14.4 (17.3)	14.5 (15.9)	15.0 (15.8)	17.6 (20.9)
Overall balance	8.6	7.4	8.0	3.0
Official reserves (In months of imports)	68.8 (7.0)	77.0 (7.5)	71.4 (6.9)	75.0 (9.4)

¹ Overall balance excluding net lending, capital revenue, investment income, debt interest, and fund transfer.

Source: International Monetary Fund, *Public Information Notice No. 99/26*

TABLE 4
Indicators of Financial Soundness of Singapore's Banks

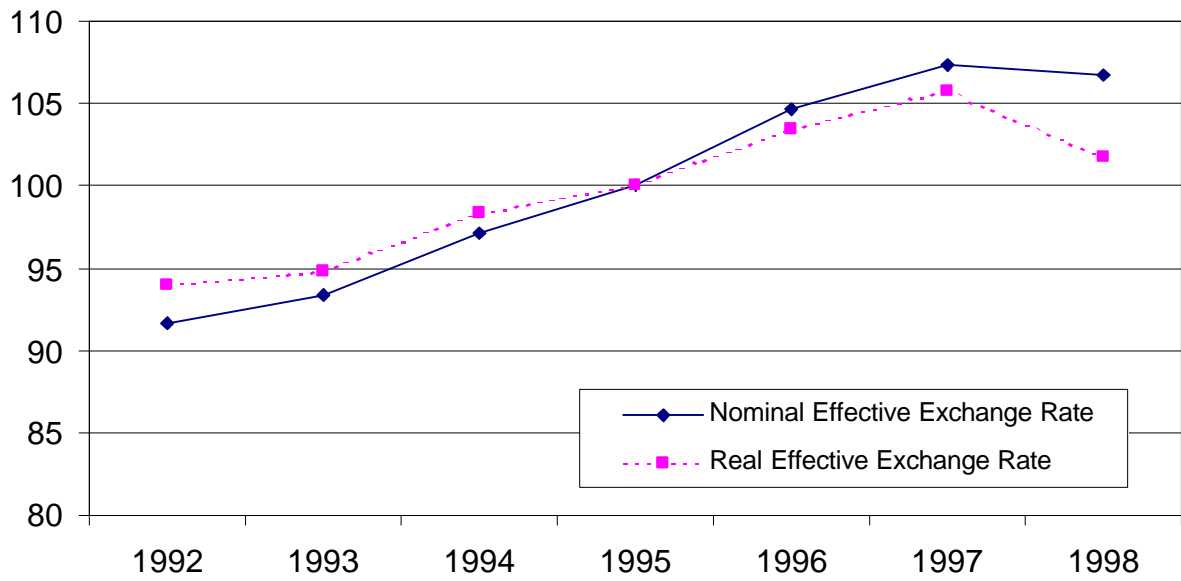
Variables	1996	1997	1998
Non-performing loans to total loans (%)	2.8	3.8	11.3
Loan Loss reserves to total loans (%)	2.8	2.8	5.8
Loan loss reserves to non-performing loans (%)	92.0	80.5	53.0
Equity to assets (%)	11.3	12.5	10.5
Total capital adequacy ratio* (%)	16.0	18.5	18.3
Provisions (S\$ millions)	416.0	1,717	3,062
Pre-tax profits (S\$ million)	3,239	2,429	1,451
Shareholders funds (S\$ millions)	20,397	22,426	23,494
Shareholder funds to non-performing loans (%)	692.1	484.5	184.7

* Sum of tier 1 and tier 2 capital to risk weighted assets.

Source: Gan et al.(1999)

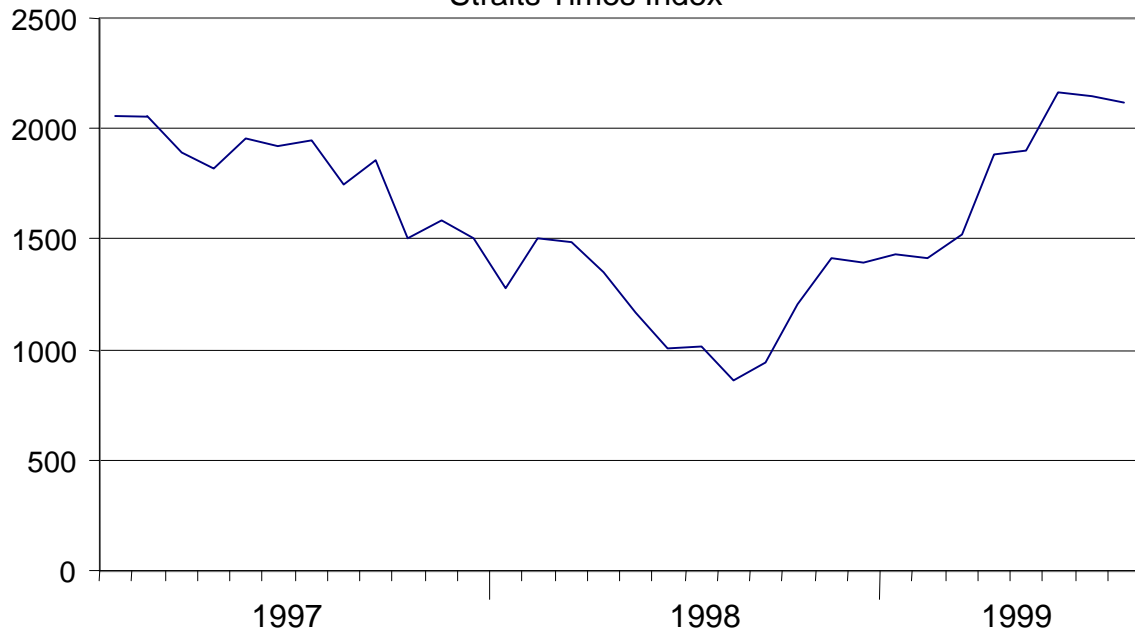
FIGURE 1

Singapore's Nominal And Effective Exchange Rates



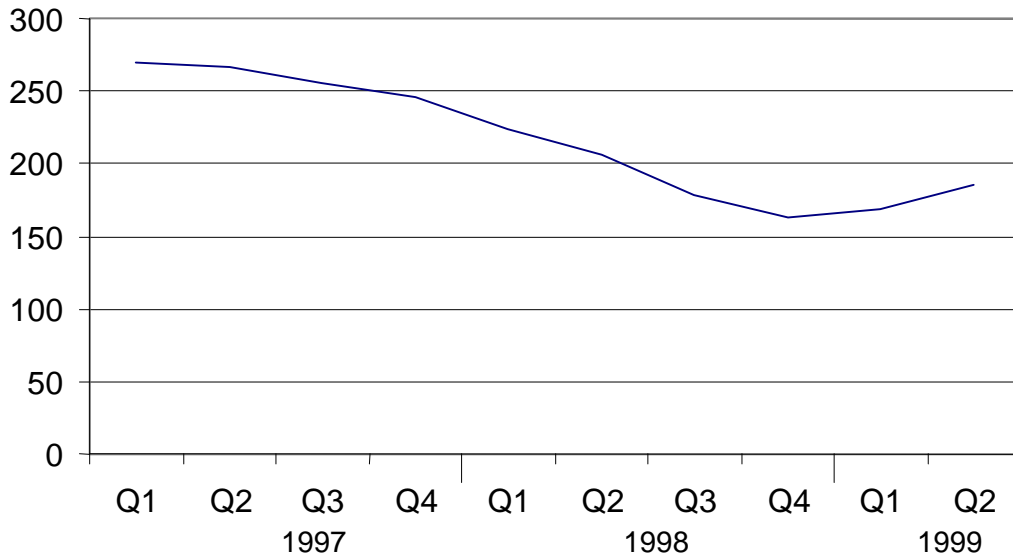
Source : International Monetary Fund,
International Financial Statistics (October 1999)

FIGURE 2
Straits Times Index



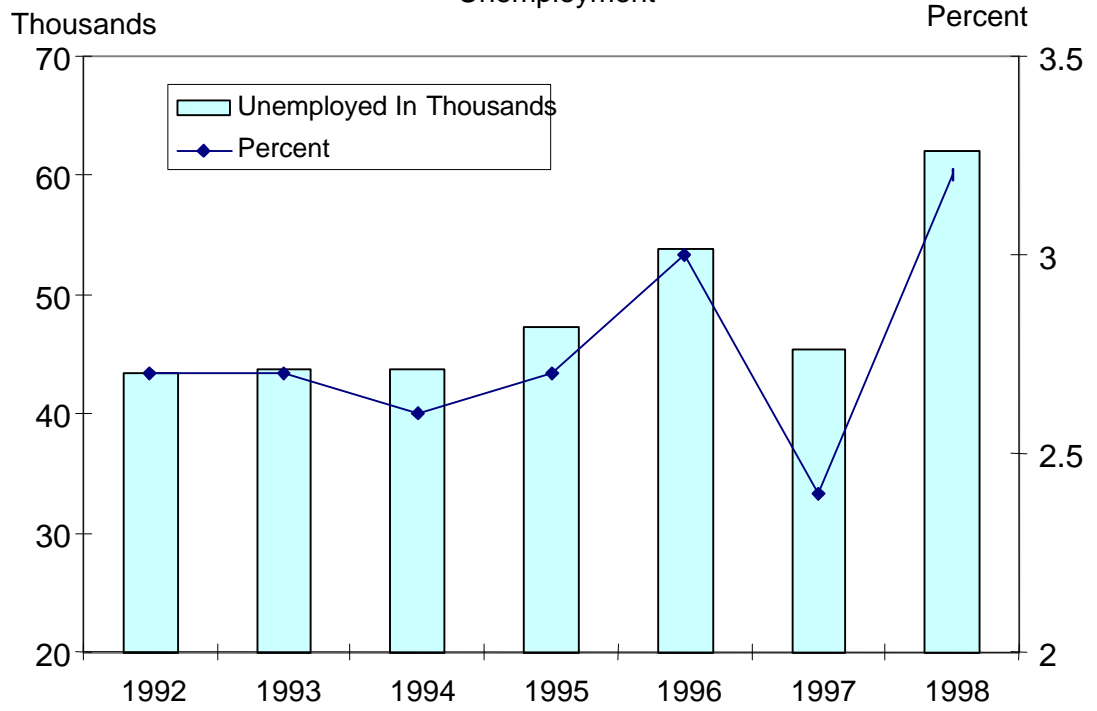
Source : Monetary Authority Of Singapore,
Monthly Statistical Bulletin (September 1999)

FIGURE 3
Private Property Price Index



Source : Singapore Department of Statistics,
Monthly Digest of Statistics (October 1999)

FIGURE 4
Unemployment



Source : Singapore Department of Statistics,
Statistical Highlights 1998.

FIGURE 5

Policies to Bring About Internal and External Balance

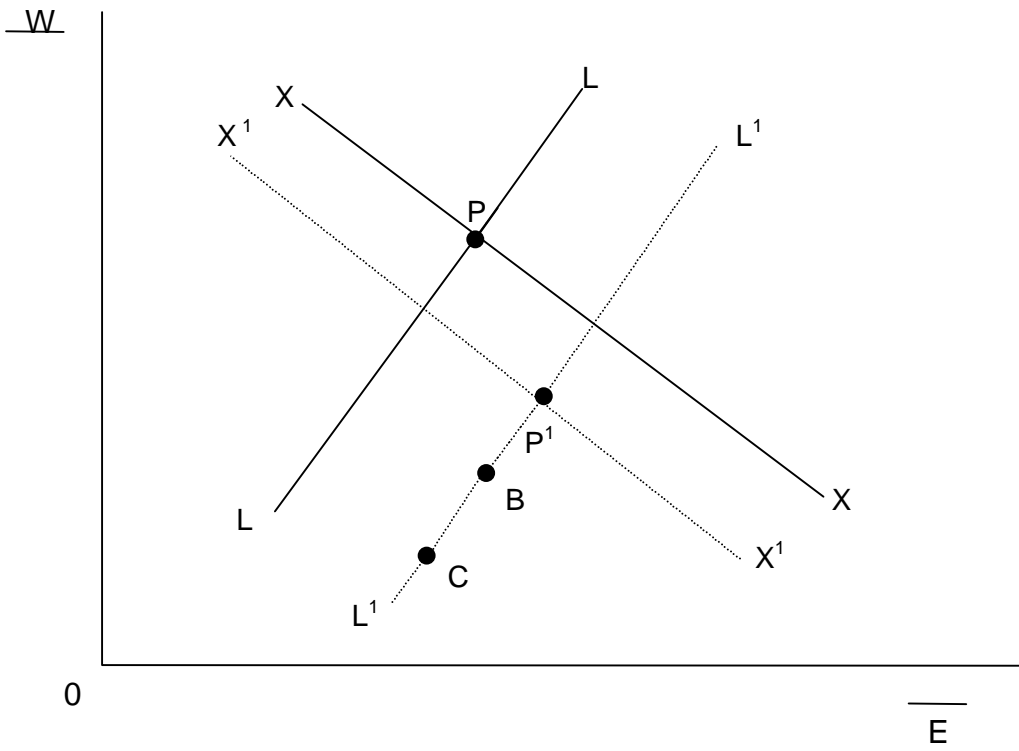


FIGURE 6
 Ineffectiveness of Exchange Rate Changes
 Under Fixed Real Wages

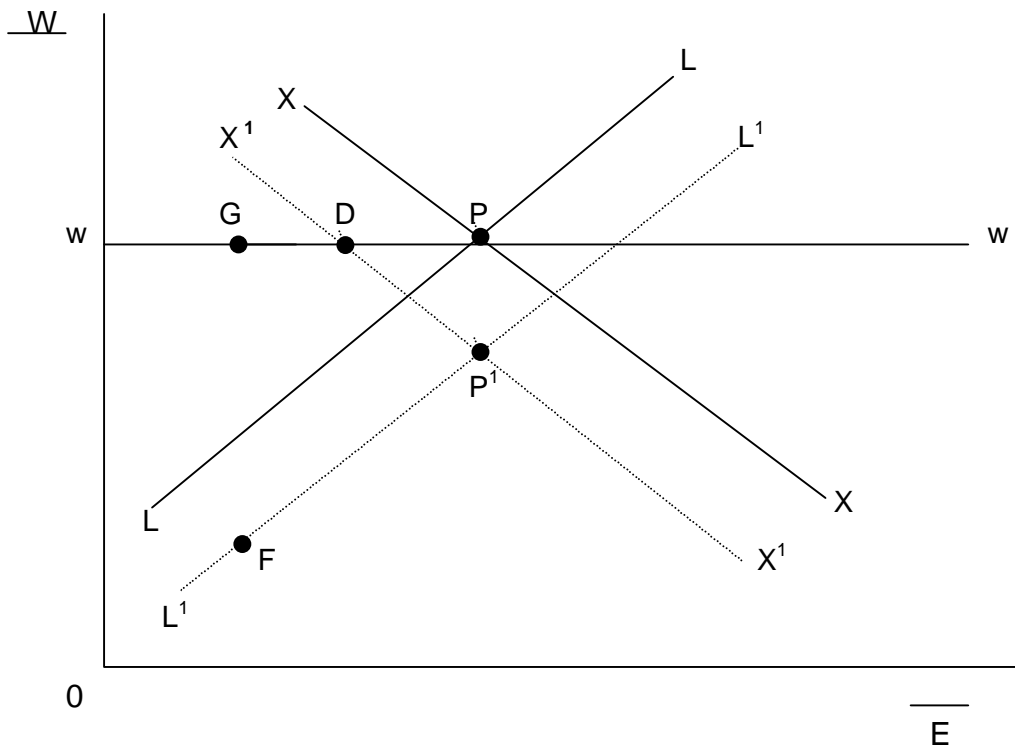
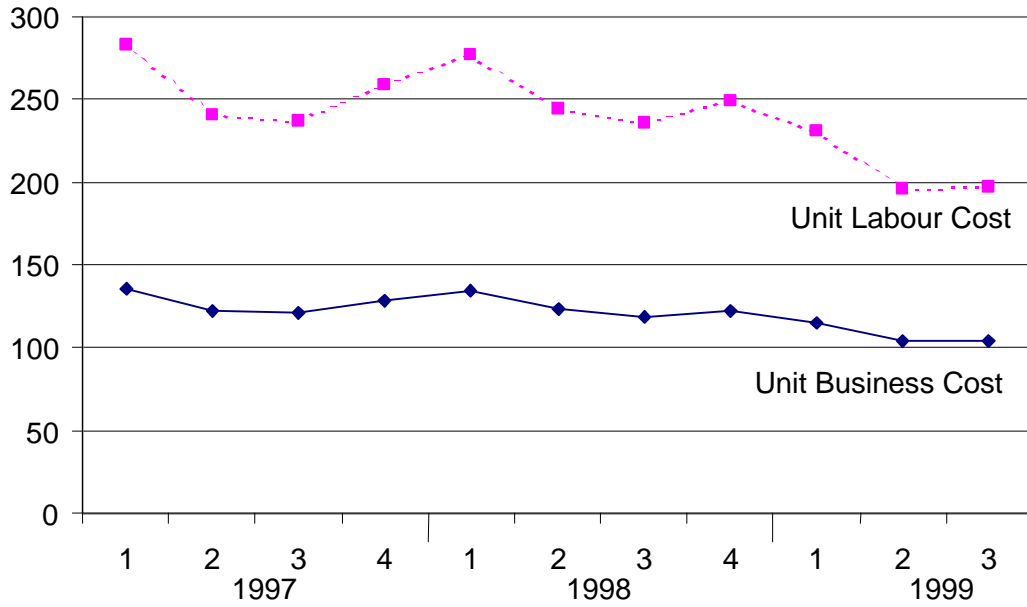


FIGURE 7

Indices of Unit Business Cost and Unit Labour Cost



Source : Singapore Ministry of Trade and Industry,
Economic Survey Of Singapore (Third Quarter 1999)

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