

THE ASIAN CRISIS: AN ALTERNATE VIEW

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Foreword

The Asian Development Bank *Economic Staff Paper Series* presents the results of selected preliminary research undertaken by the Economics and Development Resource Center. It is designed to stimulate discussion and critical comment on socioeconomic issues facing the developing countries of the Asian and Pacific region. It is hoped that in some small way the discussion generated by the series will increase our understanding of the development process in the region.

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Abstract

The paper argues that the macro focus of the literature on the Asian crises is not helpful in understanding the causes of the crises. The actual causes lie deeper in the operation of the real, that is, the corporate sector. In this context, the paper analyzes the micro behavior of individual firms. Risk-loving behavior of revenue-maximizing firms, engendered by the policy environment and the working of the financial sector, leads domestic producers to expect a continuation of specific incentives and expansions in demand. Capacity expansion and capital increases, tools used for diversification and grabbing larger market shares, are financed by raising debt, resulting in high gearing ratios and making firms critically dependent on unimpeded cash flow and availability of credit. Against this micro background, the paper argues that the handling of the crisis was inappropriate. Since the financial sector often exhibits characteristics of a public good, the paper argues for immediate recapitalization of banks through state intervention that rapidly restores credit availability. This strategy, which is fiscally viable, will revive credit to the real sector and revive growth.

I. Introduction

Popular sentiment in much of East Asia ascribes the East Asian crisis¹ to sudden and destabilizing withdrawal of foreign capital.² This is the “panic” view, encompassing bank runs, “fickle” investors, and “hot money”.³ The argument is that East Asia did not exhibit traditional fundamental weaknesses associated with weak or “wrong” macroeconomic policies that result in currency and financial instability. These countries were reportedly following the “right” policies, hence, the East Asian miracle. Unlike the debt crisis of the 1980s, macroeconomic indicators in East Asia were strong. For example, precrisis budget deficits were low or nonexistent. Public debt and inflation rates were also low and investment, savings, and growth rates (of gross domestic product [GDP]) were high.⁴ In some sense, this is also an explanation as to why the crisis was not generally expected, and subsequent rationalizations amounted to post-facto arguments.⁵ There have also been theoretical attempts to model self-fulfilling speculative attacks, usually with game theoretic assumptions about expectations.⁶ However, regardless of the model, “weak” fundamentals are necessary for such self-fulfilling speculative attacks to occur.

Given the comment about conventional macroeconomic indicators, “weak” fundamentals need to be reinterpreted. By and large, the argument in the literature now runs along the following lines.⁷ Starting in 1996, current account deficits of East Asian countries began

¹The adjective “Asian,” as opposed to “East Asian” or “Southeast Asian” is used in the title of this paper, because in a geographical sense, neither East Asia nor Southeast Asia captures the geographical areas affected. Subsequently in the text, we revert to the more common expression, East Asia. However, the five countries we have in mind are Indonesia, Republic of Korea (henceforth Korea), Malaysia, Philippines, and Thailand. A currency or financial crisis can be interpreted as exhibiting capital outflows, depreciating currencies, failing banks, fall in asset values, and loss of confidence as symptoms. The features have been well documented in a host of studies listed in this paper and elsewhere.

²For Asian developing countries, net inflows on the capital account (as a share of host-country gross domestic product (GDP) roughly doubled between 1984-1988 and 1989-1993 (see Khan and Reinhart 1995).

³Corsetti and Srinivasan (1999) argue that unlike in the case of debates on the European Monetary System between 1992 and 1993 or Mexico at the end of 1994, the East Asian experience has reduced the dichotomy between “panic” and “fundamentalist” views.

⁴In 1996, GDP growth rates were 5.5% in Thailand, 8.0% in Indonesia, 8.6% in Malaysia, 5.7% in the Philippines, and 7.1% in Korea. Gross domestic investment/GDP rates were respectively 41.7, 30.8, 41.5, 23.3, and 38.2 percent. Inflation rates measured by the consumer price index (CPI) were 5.9% in Thailand, 7.9% in Indonesia, 3.5% in Malaysia, and 8.4% and 4.9% in the Philippines and Korea respectively. The CPI may of course have underestimated inflation because of controlled prices in the case of some essential commodities and utilities. Finally, the central government budgetary surplus as a percentage of GDP was respectively 0.9, 0.8, 0.7, 0.3, and 0.0 percent (ADB 1998).

⁵Unlike the debt crisis of the 1980s, macroeconomic imbalances did not originate in public sector fiscal deficits, which may partly explain the failure to predict the East Asian crisis. In the 1990s, public sector debt as a share of GDP declined in East Asia.

⁶Apart from the discussion in Corsetti and Srinivasan (1999), see Obstfeld (1998).

⁷See, for example, Chapter 2, “Responding to the East Asian Crisis”, in World Bank (1999). There is a reason for using the adjective “now”. For a while at least, there was an original IMF view that the crisis had been caused by deteriorating macroeconomic fundamentals in the conventional sense. But this has also now converged to the mainstream diagnosis.

to rise. These current account deficits were sustained through short-term capital inflows in the form of short-term private debt or portfolio investments, encouraged by differentials between local and global yields on debt and securities. Given stable exchange rates, external capital inflows were often uncovered and uncollateralized. Coupled with weaknesses in the financial system⁸ and inability of the real sector to efficiently absorb capital flows, an investment bubble began to build up, in the form of low quality and speculative investments, often with assets of doubtful value as collateral.⁹ Perverse expectations and a change in capital market sentiment triggered a run on the currency, which then spread to other currencies through a contagion effect.¹⁰ Once the crisis set in, private investment and personal consumption expenditure also contracted. A recovery based on exports was not possible because credit mechanisms broke down and export prices could not be adjusted to absorb greatly increased import costs. Both fiscal and monetary policies implied tradeoffs that were unacceptable.

Against this background, this paper revisits the causes of the East Asian crisis to examine the possibility that if the diagnosis had been different, and the structural causes of the crisis that existed in the corporate sector had been identified, the handling of the crisis would perhaps have been more effective and have caused less social distress. We also use the analyses to suggest a different approach to the handling of banking sector reforms. The approach suggested is based on the understanding, derived in the paper, that along with governance weaknesses, the banking sector crisis also represents a case of market failure and therefore presents an ideal situation for public intervention. In this context, we take up the argument put forward in recent writings by Wade (1998) and attempt to provide an analytical framework for his “high debt model”, extending the argument further by looking at the future relevance of the Asian model of development. We conclude that the model, which is premised upon a close relationship between the corporate and the financial sector and an active role from the government, remains valid but can be effectively used only when some of the governance aspects are suitably strengthened. The structure of the paper is as follows. The second section is a brief review of the literature on the causes of the crisis. This is done under five major heads: the current account deficit, short-term debt, the financial sector, exogenous factors, and efficiency-type arguments. These are macro arguments that do not attempt to examine the structural factors in the real sectors that could have contributed to, or may indeed have been at the root of the crisis. Therefore, in the third section, we examine firm behavior in an attempt to provide an alternative explanation as to why the crisis happened. The fourth section is devoted to governance type issues, with a focus on public governance rather than on corporate governance. It has a micro focus, flowing from the discussion in the third section and can be viewed as an alternative and better way of handling the crisis. There is thus an attempt to highlight the analytical base of the Asian model of development and argue for its continued relevance for the region’s future growth. Finally, the fifth section is in the nature of a conclusion.

⁸The argument is that integration into global financial markets had not been backed up by domestic regulatory institutions as a prerequisite with usual associated problems of moral hazard and adverse selection.

⁹Competition in the banking sector prevents deposit rates from dropping and lending rates from increasing, thus squeezing the spreads of banks. Spreads can only be maintained by lending to high-risk borrowers, aided by moral hazard-type problems.

¹⁰One can factor in exogenous shocks like the Chinese devaluation (1994), or more recently the devaluation in Taipei, China in August 1997 or the recession in Japan.

II. Causes of the Crisis

A. Current Account Deficit

Economists argue that the current account deficit, as a percentage of GDP, gives a fair idea of a country's balance of payments (BOP). As we know, the current account deficit is nothing but the difference between national savings and national investment and is thus a manifestation of excess demand. This is important for two reasons. First, it has implications for growth. Second, depending on what is happening to the capital account, it affects exchange rates and hence the competitiveness of an economy. With a higher current account deficit, if, for a moment, one ignores the capital account, an economy that operates with a fixed exchange rate runs into trouble as foreign fund managers start attacking (sell forward) the "overvalued" domestic currency.

The Summer-IMF hypothesis traces the root cause of the East Asian crisis on the following simple hypothesis—it happened because of large current account deficits in the region. Large and persistent current account deficits tend to undermine the BOP position if any of the following happens: (a) Foreign loans are used for financing "dud" projects where the productivity of investment is low relative to the costs of borrowing; (b) there is low export diversification, which constrains the flow of foreign exchange earnings¹¹; and (c) foreign capital inflows finance domestic consumption rather than investments.

Taken in isolation, the current account deficit only offers an incomplete answer. The crisis started in Thailand where the current account deficit has been high since 1990, when it was 8.5 percent of GDP. But there is no explanation why the crisis took place only in 1997 and not earlier. The question therefore is, Does a high current account deficit necessarily trigger a crisis? Surely the answer depends on how the current account deficit is financed, that is, the composition of capital account inflows used to finance the deficit. Seen in this perspective and focusing only on the external sector, the crisis actually becomes a capital account problem rather than a current account imbalance issue. Further, can a discussion of the current account deficit be delinked from the exchange rate regime? Stated differently, in principle a high current account deficit can trigger expectations about depreciation and lead to speculative attacks against a currency. But if current account deficits are not used to finance domestic consumption, there need not necessarily be any difficulties about servicing future debt.¹² The East Asian crisis was not a direct outcome of too much emphasis on present consumption, as had happened in Mexico. Current account deficits in Mexico during 1989-1994 were not accompanied by a commensurate increase in investments and were used to boost domestic consumption. Unlike Mexico, in East Asia there was generally a fiscal surplus and high investment and saving rates.¹³ Domestic savings rates remained substantially higher than global averages. Since excess demand clearly reflected high levels of investment demand, the simple, current account based explanation for triggering the crisis breaks down.

¹¹Caprio and Klingebiel (1996) showed that countries with lower export diversification are more prone to finance-related crises.

¹²The problem can arise if external borrowing is invested in inefficient projects in the nontradable sectors that do not generate income streams to service the debt. This may have taken place in some of these countries, but as referred to in the next paragraph, the ICORs told a different story. However, this is clearly a case of market and not public policy failure.

¹³In 1994, Mexico had a current account deficit to GDP ratio of 6.4% while Thailand had a deficit of 5.4 percent. However, the investment/GDP ratio was 23.2% in Mexico and 40.3% in Thailand.

Incidentally, if one leaves out Malaysia and Thailand, in the other three countries, current account deficit/GDP ratios were not all that high.¹⁴ In addition, the incremental capital/output ratios (ICOR)¹⁵, reflecting the productivity of investments, were low as compared to Mexico. For Mexico the average ICOR during 1990-1994 was about 7, whereas for Thailand the average ICOR during 1991-1995 was around 5.¹⁶ Therefore, despite post-facto rationalizations, it cannot be argued that the condition of weak fundamentals as stated above was satisfied. There is no evidence in a country like Thailand that in general, returns on domestic capital formation were too low to repay foreign creditors. Additional productive capacity was indeed converted into extra earnings in terms of foreign currency.¹⁷ All these reasons weaken the current account hypothesis as being the principal or even one of the main factors causing the crisis.

B. Short-term Debt

However, the current account deficit can be linked not to total external debt, but short-term debt (defined as debt shorter than one year in duration). Such debt accumulation became possible because of liberalization of the capital account.¹⁸ There was an increase in short-term debt owed by private financial institutions and nonfinancial corporations. Admittedly, there were some cross-country variations in this. In Thailand and Republic of Korea (henceforth Korea), the borrowing was more by banks and nonbanking financial institutions that performed the task of intermediation. In Indonesia, there was a lot of direct borrowing by nonfinancial institutions. Although data on short-term debt are at best imperfect, in Indonesia, Korea, and Thailand, the short-term debt to foreign exchange reserves ratio was more than 100 percent in mid-1997 (World Bank *Global Economic Prospects 1998*).¹⁹ Such short-term debt often creates mismatches between currency and maturity of

¹⁴In Korea, it was below 3% till 1996, when it went up to 4.8 percent. In Indonesia, it was less than 3.5% throughout. In the Philippines, it varied between 4.5 and 5.5 percent.

¹⁵ICOR denotes additional capital required to produce an extra unit of output. Hence a lower ICOR generally reflects higher productivity of investments.

¹⁶ICOR figures are from Rakshit (1997). However, it is also true that ICORs rose in the 1990s. This could be due to diminishing returns to capital as well as deteriorating investment quality, typical during credit booms.

¹⁷There was no reason to believe that these countries would be unable to service external debt from export revenues. The debt service ratios (amortization and interest) as percentage of export (both goods and services) revenue improved from the 1980s till 1996. In 1996 the debt service ratios were 11.5% for Thailand, 36.8% for Indonesia, 5.9% for Malaysia, and 13.7% for the Philippines (Asian Development Bank 1997), the Korean figure not being available. External debt was thus not a problem except for Indonesia, and even there, the debt-service ratio had improved since the late 1980s, although it had deteriorated compared to the early 1980s.

¹⁸In a country like Korea, there were controls on foreign direct investments, but controls on short-term borrowing had been removed.

¹⁹These three countries were the worst affected from the crisis. In contrast, the Philippines and Malaysia, with short-term exposures below 100%, were not that affected in relative terms. For all of East Asia as an indicative average, the ratio of short-term debt to reserves went up from 100% in June 1994 to 134% in June 1997. There is also the point that gross reserves were bad indicators of international liquidity, since these were not necessarily usable reserves and liabilities existed. In Thailand, there were outstanding forward contracts. And in Korea, reserves were lent to commercial banks through a special fund. In a background paper prepared for Michel Camdessus' presentation to the Asia-Europe Finance Ministers Meeting (16 January 1999, Frankfurt), one has specific short-term debt figures for all five countries in 1996. They are the following: Thailand—total external debt of \$90.5 billion, short-term debt of \$37.6 billion; Malaysia—total external debt of \$38.7 billion, short-term debt of \$9.7 billion; Indonesia—total external debt of \$130.2 billion, short-term debt of \$28.0 billion; Philippines—total external debt of \$41.9 billion, short-term debt of \$7.2 billion; Korea—total external debt of \$160.7 billion, short-term debt of \$100.0 billion.

liabilities and assets.²⁰ In principle, a liquidity problem is thus possible (see Radelet and Sachs 1998). Yet another factor can be clubbed in. A high ratio of M2 money to reserves, coupled with fixed exchange rates, can potentially lead to a run on reserves by residents because the residents are no longer sure of the future store of value function of their currency holdings and realize that government reserves may not suffice for supporting the currency in circulation. This represents a loss of confidence in the government and its capacity to handle the economic situation.

The issue of short-term debt cannot be properly understood without making a reference to monetary policy used to sterilize capital inflows, thus contributing to an increase in domestic interest rates. The increase in interest rates stimulated further capital inflows in a situation where global interest rates were dropping.²¹ More importantly, differentials between domestic and global interest rates created an incentive for foreign borrowing. Since exchange rates were stable (pegged to the dollar or pegged to baskets where the dollar had a high weight), this borrowing was often unhedged.²² And since interest rates on short-term borrowing were lower than for long-term credit in line with the conventional yield curve, there was a built-in incentive in favor of short-term debt.²³ In an effort to lower borrowing costs, banks and their corporate customers preferred loans in foreign currency and undertook most of their foreign borrowing in short maturities. The implicit understanding was that these credits would always be rolled over as long as they were regularly serviced by corporate borrowers. Thus, in the upswing phase of the cycle, these represented long-term credit at relatively cheaper interest rates. For instance, banks took recourse to short-term, foreign-denominated borrowing in the interbank market to fund long-term bank loans. In Indonesia, between January 1991 and June 1997, the nominal interest rate spread (local deposit rate minus LIBOR rate) was 11.5 percent, with an average annual depreciation against the US dollar of 3.8 percent (World Bank *Global Economic Prospects 1998*).²⁴ Quite understandably, the ratio of short-term foreign debt to equity ranged from 40 per cent in Indonesia to almost 100 percent in Korea.²⁵ As a contributory cause to the crisis, the case is that there

²⁰If investor confidence turns perverse, it may become difficult to borrow again from international capital markets to meet debt service obligations or roll over short-term debt.

²¹Low American interest rates are especially relevant. Financial volatility was perceived to be lower for East Asia than for Latin America. There is a positive correlation between prudent macroeconomic policies and financial stability. Hausmann and Rojas-Suarez (1996) have shown that volatility of real exchange rate matters in the presence of high domestic inflation rates—a direct offshoot of following imprudent monetary policies. A study undertaken by BIS during 1996 arrived at the conclusion that greater financial volatility in emerging Latin American economies during the 1980s was because of higher rates of inflation and hence volatile real exchange rates there. Higher inflation rates, by lowering real interest rates and values of bank assets, increase volatility of domestic financial markets. The working principles of banks are characterized by borrowing short and lending long. Deposits are redeemable at par, and depositors are assured of getting immediate access to liquidity, provided that not everyone tries to withdraw funds simultaneously. Volatility sharply alters the relationship between value of bank assets and liabilities beyond the ex ante protection provided by bank capital, and hence increases vulnerability.

²²Other than virtually stable exchange rates, deposit insurance and government guarantees reduced systemic risk further.

²³Paradoxically, with the benefit of hindsight, interest rates did not factor in expected exchange rate depreciation.

²⁴Although not as sharp, there were similar interest rate spreads in the other countries as well, especially in the Philippines and Thailand.

²⁵These figures are based on a database of 5,500 East Asian firms in nine countries (World Bank *Global Economic Prospects 1998*).

was state oversight in fully understanding the implications of high short-term private sector debt. The complacency was on account of the private nature of the short-term debt. The assumption (proved wrong later) was that private borrowers would borrow only if they could ensure that rates of return were high enough to service their debt.

C. Fragility of the Financial Sector

High short-term external debt by the corporate sector and high leveraging was only one example of a broader issue of financial sector fragility. Banking history is replete with examples of credit booms that led to speculative bubbles, aided by unwarranted optimism and mispricing of risk, especially with weak legal and supervisory structures. Between 1990 and 1996, the ratio of bank lending to GDP grew by more than 50 percent in Thailand and the Philippines. It grew by 27 percent in Malaysia and around 15 percent in Hong Kong, China; Indonesia; Korea; and Singapore (Corsetti et al. 1998). While private credit to GDP ratio increases as per capita income increases, the increases in East Asia were far higher than indicated by increases in per capita income alone (World Bank *Global Economic Prospects 1998*). A credit boom per se is not a problem, provided that investment decisions are sound and lenders retain confidence in that soundness. However, it is not always possible to screen good borrowers from bad ones.²⁶ In the process of handling the problem of asymmetric information and separating good borrowers from bad ones, banks ration their credit. The implicit assumption in this is that investors borrowing at “bank optimal”²⁷ rates of interest are safe and are less likely to invest in dud projects. But this risk-averse behavior of banks broke down in East Asia thanks to the presence of implicit deposit guarantees²⁸ and stable exchange rates. This made credit risk extremely underpriced and led to problems of moral hazard, since there was little bank supervision and no penalty for managers.²⁹ The practice of commercial banks to use market values of real estate assets as collateral for loans also contributed to the creation of the credit bubble. In the slightly longer run, as high-yielding projects got exhausted and excess supply emerged in the property sector, banks began to incur losses.³⁰ In Indonesia, bad debt problems surfaced in the early 1990s and earlier, in the mid-1980s, both Malaysia and Thailand encountered banking crises (Caprio and Klingbiel 1996).

²⁶Information asymmetry becomes a more serious problem during credit booms (see Gavin and Hausmann 1996).

²⁷The interest rate at which expected return to the bank is maximized (Stiglitz and Weiss 1981).

²⁸Expectations of a bailout are not necessarily based on government promises, they occur even if deposits are not explicitly insured (see Diaz-Alejandro 1985). Balance sheets of financial companies often have a public good character. Bank managers quickly recognize these externalities and take advantage of the situation of being either “too big to be closed” or having a near monopoly in financial intermediation due to the underdevelopment of other financial sector agents.

²⁹If enterprise managers live in a Baumol kind of world and maximize revenue rather than profits, output will be more than output in a profit-maximizing framework. Marginal costs do not enter such a manager's calculations and output is produced as long as the marginal revenue is positive. Overleveraging is therefore almost axiomatic as firms try and produce larger volumes for capturing larger market shares, without generating sufficient investment surpluses internally. Banks can be made to function in a better way if those who benefited from risk-taking absorb most of the associated costs. A study conducted by Weisbrod et al. (1992) on banks in emerging economies found that the franchise value (profitability of a banking licence) of banks have fallen over the years, compelling them to venture into more risky projects.

³⁰This implies that the costs of bailout become prohibitive and sooner or later, government guarantees on deposits will no longer be implementable, thus triggering a crisis.

The moral hazard problem manifested itself in two other ways as well—corporate and international. At the corporate level, political pressures to maintain high rates of economic growth led to a tradition of public guarantees to private projects, some of which were effectively undertaken under government control, directly subsidized, or supported by policies of directed credit to favored firms and industries (see IMF 1998). Even in the absence of explicit promises of “bail-out”, underlying systemic risk was nonexistent. The international dimension of the moral hazard problem hinged upon the behavior of international banks, which during the period leading up to the crisis, lent large amounts of money to domestic intermediaries, neglecting their risk management capability (McKinnon and Pill 1994). Banks, both domestic and international, could have become complacent in their credit appraisal as a result of the long and sustained economic growth in these countries, that made thoughts of a cyclical downswing look remote and unrealistic. Such an “over lending” syndrome reflects classic “moral hazard” as all those involved firmly believe that in the case of financial disaster, they will be bailed out either directly by the government, or through indirect IMF and/or other multilateral support. A large proportion of foreign debt accumulation took the form of bank-related short-term, unhedged, and foreign-currency-denominated liabilities.

Another feature contributing to the fragility of the banking sector in these economies was weak monitoring and supervising capabilities and practices of the central bank(s). In those countries central banks did not enjoy autonomy in their twin roles of supervising commercial banks and maintaining monetary stability. In the absence of strong central bank supervision and enforcement of prudential norms, commercial banking and nonbanking financial companies have been characterized by

- (i) significant undercapitalization; widespread insider; connected or directed lending (Krugman 1994), weak credit appraisal and portfolio management capacities;
- (ii) nonobservance of prudential norms; unsatisfactory asset classification (Folkerts-Landau et al. 1995); and
- (iii) inadequate loan loss provisions.

Financial sector liberalization (under considerable external pressure) comprising interest rate deregulation and opening of the capital account magnified these weaknesses as banks were exposed to large capital inflows and more sophisticated practices of foreign banks and financial agents. A financial sector crisis was precipitated when the fragile financial sector with all its weaknesses was exposed to an external shock in the form of export slowdown, decline in unit export prices, and steep hike in interest rates.

Bank efficiency also depends on the legal framework. Inadequate legal frameworks make it difficult and time-consuming for banks to seize or transfer collateral behind delinquent loans. There are essentially three ways of dealing with insolvency, liquidation,³¹

³¹Liquidation is a formal court-administered sale of most or all of the assets, usually in piecemeal fashion. At the end of the process, third parties become owners of the assets.

rescue,³² and work out.³³ Whereas both liquidation and rescue are practiced in developed country markets, the general norm throughout Asia is work outs.³⁴ The financial sector suffered from the weak legal framework for debt recovery and calling in of collateral guarantees in these countries. This weakness of the legal infrastructure increased the chances of bank failure as they could not successfully use the workout procedures for debt recovery.

The slowdown in export earnings and hike in interest rates, announced by central banks to defend the currency, drove corporate borrowers and subsequently the bank themselves into Ponzi game type situations.³⁵ More good money was pushed after bad loans in the hope of outlasting the cyclical downswing and avoiding a final writing-off of these bad debts. Financial sector liberalization permitted this “evergreening” of loans by allowing banks to charge differential interest rates and giving them access to larger credit volumes that could be used for keeping the loans on the books as performing assets. In hindsight, it is clear that given the underlying weaknesses of the system, this liberal policy stance simply allowed the bubble to become even larger before it finally burst. Kaminsky and Reinhart (1995) note that in 18 of 25 banking crises in their sample, the financial sector had been liberalized during the preceding five years. There is a similar finding in Demirguc-Kunt and Detragiache (1998), with a cross-country sample of 53 countries during 1980 to 1995. However, the likelihood of a crisis is lower when institutional environments are stronger. Hence, the sequencing and pace of financial sector liberalization is important. Thus interpreted, the financial sector problem can be described as one of sequencing of liberalization without strengthening financial systems and improving corporate governance.

The question remains, however, that not all of the financial sector assets were “bad or high risk loans”. But as the currency crisis became a full-blown financial crisis and banks suffered from depositor runs, triggered in some cases by misplaced policy stance, even the good and viable borrowers suffered from an acute credit crunch. This caused extensive damage to productive capacities, leading to large-scale bankruptcies and unemployment. The currency and financial crises were thus transformed into an economywide recession. The question is, How did the region’s banking and financial sector, which had helped to finance one of the longest episodes of sustained economic booms, suddenly suffer from all types of terminal illnesses arising from currency and maturity mismatches and mountains of nonperforming assets? The question would perhaps lead us to answer another question, Could the credit crunch have been prevented if the diagnosis had been correctly done and the corporate sector issues distinguished from the “speculative boom in some asset markets?” On the other hand, as argued by some,³⁶ the premise that the crisis was a result of current

³²A rescue is a formal court-administered rehabilitation, reorganization, or restructuring in an attempt to preserve the concern as an ongoing income-producing entity. The end result is that one or more creditors become in some way owners of the enterprise (e.g., debt/equity swaps).

³³Work out describes an informal process that does not involve court proceedings. The debtors remain in possession of the assets. Creditors accept either reduction or rescheduling of debts.

³⁴For example, in the absence of legal norms, both Indonesia and Malaysia completely rely on informal work out methods. Within the region, Singapore is an exception to this principle and Singapore amended its old law and modelled it in accordance with the UK Insolvency Act of 1985.

³⁵A Ponzi-game is a situation in which a firm must borrow to meet an increase in payments of outstanding debt. The additional borrowing, however, serves to increase firm debt load, worsening the financial position of the firm. The firm borrows to survive, but in doing so, makes its position more precarious.

³⁶The strongest votaries of this argument are Sachs and Radelet (see Sachs and Radelet 1998 and Radelet and Sachs 1998).

account deficits and represented classic policy failure prevented a distinction between the different sectors and issues underlying them. This could therefore be cited as a case of using aggregate policy measures that resulted in greater than necessary social welfare loss.

D. Exogenous Factors: Terms of Trade Shock and Slowdown in Exports

Since much of the East Asian success story depended on export-led growth, it is understandable that any slowdown in international trade would affect these economies more than relatively insulated ones. During 1996, there was a general slowdown in world trade, affecting export growth from this region. The East Asian economies suffered as their main trading partners, Japan and Latin America, were badly affected by this recession. Japan also faced problems due to an overvalued yen. Since East Asian currencies were tied to the US dollar, an appreciating yen meant rising import costs from Japan. While an overvalued yen helped price-sensitive exports to Japan, there were adverse effects for import-intensive exports to other regions.

The initial years of trade surplus and high export growth had motivated many of these economies to invest heavily in capacity augmentation in steel, semiconductors, electronics, processing, and assembly industries.³⁷ A global or regional recession thus meant excess capacity and in this sense, the crisis went beyond the financial sector and also extended to the real sector. Hypothetically, it could have been possible to neutralize the contraction in demand either through rising domestic demand or by diversifying the export basket to newer items and newer markets. Unfortunately, neither of these happened. Therefore, with the downturn in world trade, large segments of newly added capacities in the industrial sector lay idle. However, short-term capital flows continued unabated. With the tradables sector in bad shape due to the export downturn, too much of investment was directed into nontradable sectors with long gestation periods and relatively lower rates of return. It was also directed to speculative activities, overextended industries, overambitious infrastructure projects, and inefficient government monopolies.³⁸ There was also a deterioration in the terms of trade (and hence a fall in purchasing power) due to oversupply. This excess supply condition tended to become more critical as a result of US firms regaining some of their lost market shares and improving their competitiveness over the 1990s, including continued domestic demand contraction in Japan. One of the features of the Asian crisis has therefore been that economies in which the share of exports to total industrial sector value added has been higher have suffered relatively more than those that are relatively more self-contained.

In addition to the recession element, there could, according to some observers, be a Chinese link originating from unification of the People's Republic of China's (PRC) dual exchange rate system on 1 January 1994, to slackening export growth from the region. The unification of the exchange rate, it is argued, led to a depreciation of the Chinese yuan and thus contributed to an export slump in other East Asian countries. The PRC gained mar-

³⁷Quite understandably, this is linked to easy availability of credit.

³⁸For example, Nikon Industries Corp., a Philippine maker of electric appliances, borrowed \$150 million to buy parts, but instead, gambled the money on local real estate (see Goldstein 1998).

ket share in the US and Japanese markets at the expense of these countries. There is no dispute regarding the depreciation of the yuan, but there is certainly some dispute regarding the effect of this devaluation (see Fernald et al. 1998). There is some empirical support for the proposition that the impact of the 1994 Chinese devaluation was not significant. It should also be noted that even before the unification of the dual exchange rate system, most transactions were actually conducted at the depreciated market rate. The existence of common factors like recession in developed economies, movements in world prices of key exports like semiconductors, and movements in the yen-dollar rate may have had more of a bearing on Eastern Asian exports than the devaluation of the yuan.

E. Efficiency-type Arguments

Now that the crisis has happened, there are arguments that the “Asian Miracle” was only a “mirage”, or that the region’s problems can be seen as penalties that it had to pay for deviating from the “disciplines” of the free market orthodoxy. However, barring Krugman (1994) and the trudging factor (labor, technology, efficiency), most arguments are post-facto rationalizations. And most of Krugman’s ex post analysis also stress the problem of moral hazard rather than efficiency growth.

A rapid increase in input usage, like expansion of employment, increases in education levels, and massive investments in physical capital can bring about rises in output levels. It is also known that growth based on expansion of inputs, rather than on growth in output per unit of input, is inevitably subject to diminishing returns. The original Krugman (1994) argument is a re-run of this simple hypothesis, where growth faltered because of declines in factor efficiency. When one accounts for the role of efficiency in explaining growth in East Asia, Krugman’s findings were that the contribution was negligible (also see Roubini 1998). The higher short-run employment elasticities in the case of East Asia reflect the higher labor-absorbing tendency in manufacturing activities of these economies. This implies that they opted for labor-intensive modes of production, with higher production made possible by siphoning labor from “agricultural” to “manufacturing” and “service” sectors.³⁹ Technological growth for the region was low vis-a-vis international standards. Secular trends in total factor productivity (TFP) are fundamentally an empirical issue. But the point needs to be made that the empirical literature does not indicate a clear trend in TFP during the 1990s, with some studies actually indicating an increase for East Asia (see Collins and Bosworth 1996 and Sarel 1997). That apart, even if one accepts the hypothesis of decline in TFP, diminishing returns would have accounted for slowdown of growth rates in the future, not immediately. And the actual decline in growth was far more than what could have been explained because of the TFP factor (see World Bank 1998). Perhaps we should also state upfront our general skepticism about the TFP literature, where decline in TFP effectively amounts to asserting that our power of explanation of contribution by factors of production has gone up over time.

The above brief survey of the literature has revealed that the discussion of the causes of the crisis has focused almost exclusively on the macro aspects with some attention being given to governance type issues in the financial sector. There has been hardly any attempt

³⁹However, one should also mention that there has been “casualization” in the process, resulting in inadequate insurance benefits or minimum wage coverage.

to answer the question, Were there any structural factors that contributed to the crisis and its timing?⁴⁰ Further, the answer as to why the crisis has been so much more protracted and the recovery so elusive, compared to the Mexican or any other crisis, has been given in terms of the financial sector fragility or the breakdown of export credit mechanisms. In our view, these are at best partial explanations and they need to be supplemented by a more complete analysis of firm behavior if these questions are to be addressed, an effective recovery plan is to be put in place, and some relevant lessons are to be drawn for other developing economies.

III. A Firmer View

The thrust of the arguments in the preceding section is macro. We now turn our attention to a micro and firm-level view of the real (export) sector of the economy, with a few stylized examples. This is meant to be a generic framework (especially for the export sector) and not an explanation that cuts across all the countries and firms across the board. Some elements of what happened in the export sector have already been mentioned—terms of trade shocks, erosion in competitiveness, declining export demand, and increasing overcapacity in some sectors.

Following the 1994-1995 crisis in Mexico, an export boom took place, helped by continued expansion in Mexico's export to the United States.⁴¹ The North American Free Trade Agreement (NAFTA) also helped through export-oriented foreign direct investments in Mexico. Such an export recovery has not happened in East Asia (barring the export growth in the Philippines).⁴² Exports may have slumped because of higher costs of capital and imported inputs, shortage of capital, and recession. About 50 percent of East Asia's exports go to Japan and East Asia, so recessionary conditions within the region have also hampered recovery. World demand and prices for primary commodities like oil, rubber, and timber have gone down and so have foreign currency prices of manufactured products. These have brought down the rate of growth of international trade, which adversely affected export recovery in these countries as well. But in the context of recovery, two questions need to be asked. First, why have exports not responded to the price incentives resulting from exchange rate depreciation? Is there anything other than the J-curve at work? Second, why has manufacturing activity in general not picked up so far and what explains the spate of bankruptcies in this sector across all these countries? Is the answer to these questions simply that the 1996 slowdown and the subsequent nonrecovery are cyclical phenomena? Or are there more deep-seated structural issues at work?⁴³ The earlier slowdown and the expected recovery are related issues. Without understanding the former, one cannot explain the latter, such as why, despite substantial depreciation, exports have not increased.

⁴⁰One tentative explanation along these lines was given by Laura Tyson, former chief economic advisor to the US President (*Business Week* 21 September 1998).

⁴¹The United States accounts for 85% of Mexican exports.

⁴²Capital flows into Mexico also recovered to precrisis levels within six months and in relative terms, they have taken much longer in East Asia.

⁴³See World Bank (1998) for arguments about the fall in world trade growth, yen depreciation, real exchange rate appreciation, and price declines for major export products. As will be evident, barring the last two factors, the thrust of our argument in this section is different. Even for price declines, the explanation is in terms of endogenous firm-level behavior, not quite an exogenous shock.

In an attempt to provide an answer to the question on why East Asian exports have not responded to the currency depreciation and remained sluggish in the post-crisis period, the World Bank (1998) makes the following generic points about these exports:

- (i) Initially, state intervention pushed export growth through sector-specific incentives that amounted to multiple exchange rates. These were a part of the much-debated industrial policy. Subsequently, such incentives were replaced by generalized incentives (trade and investment regime reforms, appropriate exchange rates, macroeconomic policies).
- (ii) There has been a shift in the composition of exports from resource-intensive and labor-intensive ones to more skill-intensive and capital-intensive ones.
- (iii) Competition from low-cost producers (like the PRC) has “pushed” such a shift,⁴⁴ while foreign direct investments and relocation of production bases from first generation newly industrialized countries have “pulled” such a shift.
- (iv) The export basket has become less diversified, both in terms of composition (specialization in high tech products like electronics) and geographical destination (within the region).
- (v) Thanks to standardization and mass production, even high-tech products like electronics have become “commodities”, with little room for product differentiation and branding. They are thus price-sensitive with high elasticities, and can lead to sharp slumps in market shares.
- (vi) In electronics, Thailand and Korea developed national firms. In contrast, Malaysia and the Philippines relied more on international production networks of multinational firms.

In our view the generic explanations provided by the World Bank study can be better appreciated in a general and analytical microeconomic framework that tries to model the behavior of the East Asian firm. The basic assumption underlying our attempt to build such a model is that over the last three decades, behavior of the generic East Asian firm (with obviously some variations across countries and sectors) has been different from the classic profit-maximizing, risk-averse Marshallian firm, which is used for policy formulation in a competitive market framework. This analytical framework is presented in the technical appendix. On the basis of the simple model and stylized examples presented in the appendix, the following points can be made about the behavior of the East Asian firm. It may be noted that not all these points would have been obvious without these stylized examples as some are counterintuitive.

⁴⁴For example, given the export basket, Thailand has considerable exposure to such low-cost exports, with higher labor costs in Thailand not being nullified through productivity gains.

- (i) A specific incentive blurs the difference between revenue maximization and profit maximization.
- (ii) Either a specific incentive or revenue maximization leads to higher domestic output (greater investments in capacity); higher aggregate output translating into higher market share for the domestic firm. There is a terms of trade effect (export prices go down).
- (iii) Revenue maximization does not necessarily lead to lower profits compared to profit maximization. Depending on marginal costs, it is possible for revenue maximization to lead to higher profits initially, and lower profits later, than profit maximization.
- (iv) Consider a transition from specific incentives to generalized incentives. In that transition, incentive neutrality may not be ensured for all sectors, even if it is ensured for some sectors. For example, incentive neutrality may be ensured for newer products that face greater competition and have elastic demand curves.
- (v) Consider the domestic producer's expectations on a transition from specific to generalized incentives. A risk-loving domestic producer and the systemic environment may have encouraged such risk-loving behavior, and presume the continuation of specific incentives.
- (vi) Consider a domestic producer's expectations about a parametric shift in demand. A risk-loving domestic producer will presume expansions in demand. In the case of profit maximization, the premium on risk taking is a function of the differential between domestic and foreign marginal costs.
- (vii) In an initial stage of increasing returns to scale, it is possible to pay labor wages more than the value of the marginal product of labor. But if this eventually switches to nonincreasing returns to scale, labor can be paid more than the value of the marginal product of labor only if capital is paid less than the value of the marginal product of capital.
- (viii) With perfect competition in factor markets, wage increases in excess of the value of the marginal product of labor require declines in the price of capital or increases in capital input.
- (ix) With declining profitability, increases in capital through equity become unviable. Capital increases through borrowing are possible by artificially reducing the rate of interest, such as through state intervention. These trends are accentuated if shortages of skilled labor become a binding constraint.
- (x) Lumpiness of capital inputs implies cycles of overcapacity.

- (xi) This entire strategy of risk-loving behavior and competing on the basis of capital input increases borrowing, and low rates of interest become unviable if the rate of interest goes up and more importantly, if there is a binding constraint on the availability of credit.

The workings of industry-specific incentive systems as part of the industrial policy regime, and the implicit government guarantees and support to exporting firms including the conglomerate nature of these firms of having close links to premier commercial banks and nonbank financial companies (some of which were captive to these conglomerates) resulted in a firm behavior that could be characterized as revenue-maximizing and non-risk averse. This revenue-maximizing behavior implied a less than normal rate of profit for firms. This was acceptable to them as long as their total revenue objectives were met and the firms could continue expanding their market shares. The close cooperation between the government and the corporate sector was also instrumental in achieving this growth objective and was also premised upon its continuing success. Commercial banks could continue lending to these “valued clients” without much reference to prudential norms such as optimal exposure to a single client or single sector, since the successful revenue-maximizing firm behavior implied regular debt-servicing by these companies. Therefore, even abnormally high gearing ratios were seen as acceptable because the past track record was impeccable and bank managers, perhaps, even at the highest levels, were themselves convinced that the East Asian firm behavior with its aggressive market entry strategies based on price competition and market share expansion was an all-winning formula. In this understanding they were supported not only by the national authorities but saw strong reinforcement from multilateral development banks and foreign investors. Multilateral institutions praised the Asian miracle, and even more importantly, private foreign investors poured money into these firms in ever increasing volumes, unmindful of gearing ratios, debt servicing capabilities, and the rather shallow technological and skill capabilities of the borrowing firms.

The making of the financial crisis was thus inherent in the firm behavior, and supported and overseen by national governments through fame and funds. These revenue maximizing and nonrisk-averse firms built up large and diversified asset portfolios within domestic and foreign markets. Their capacity expansion and market entry strategies were based not on deepening the firm’s technological capabilities or maintaining high (wage-adjusted) real productivity levels but on access to “cheaper and unconstrained” supply of resources that enabled them to successfully grab larger market shares. As long as the industry and market selection was right, the strategy resulted in rapid growth and higher market capitalization. This in turn brought forth access to greater resources and the “virtuous cycle” continued with gearing ratios and stock markets valuations rising to dizzy heights. The entire strategy was premised upon the continued success of revenue maximization and market share expansion by exporting firms that did not visualize a demand constraint as they were operating in global markets.

The strategy became infeasible with the demand slowdown in Japan, emergence of massive excess capacity in some of the main export industries, sharp decline in unit values, and rising interest rates that raised debt servicing obligations. The change in the policy stance in some countries from specific to general industrywide incentives also implied that resources so far available to meet the industry-specific conditions were no longer available. The government oversight and support that was also an essential component of this strategy also

became greatly diluted due to the particular circumstances in each of the crisis-affected countries. Korea effectively gave up the industrial policy stance after joining the OECD and also introduced wide-ranging financial sector liberalization. Coordination with the *chaebols*, earlier done on a regular basis at the highest levels of government, was also greatly weakened. The government's desire to establish Thailand as a financial center and its taking over some of the financial business expected to shift away from Hong Kong, China after 1997 led to accelerated financial sector liberalization without the necessary strengthening of central bank capabilities. In Malaysia and Indonesia the change in government-industry relationship, though less marked, also took place as the governments tried to adopt the dominant *mantra* of minimal government intervention and financial sector liberalization. All this implied that firms were free to pursue their private objective of maximizing growth and total revenues without any external policy constraint that could introduce social and broader policy considerations into their behavior. The advantage of a government agency overseeing the individual firm strategies and combining it with a broader sector or national strategy was thus lost. In the absence of such coordination, individual firm behavior went beyond the feasible realm. Unrelated and unwarranted diversification took place. As competition from US and Chinese firms increased and expansion in tradable sectors became more difficult, firms invested more heavily into nontradable sectors where returns were even lower, gestation periods longer, and resource requirements higher. The resulting currency and maturity mismatches and the liquidity crunch has by now been well-documented. We wish to point out only that signs of the impending crisis would have been visible much earlier if government agencies and foreign investors had cared to look for them in the corporate sectors rather than in the macro variables like the current account and fiscal deficit where all attention was focused.

Commercial banks and foreign investors, unable to see the shift in the policy regime and sure of the implicit government oversight and guarantee, continued with their relaxed lending stance to the corporate sector in these countries. When the external shock came in the form of declining export growth rates, falling unit prices, and higher interest rates, the firms and commercial banks, as stated earlier, were driven to Ponzi game type situations until the bubble finally burst. The necessary micro foundations of the Asian crisis can thus be seen to lie in the behavior of the Asian conglomerates and banks. The sufficient condition was the change in government policy that permitted the externalities from individual firm behavior to go unchecked in the precrisis period. The strong government goal in the earlier decades had served to keep these externalities in check and to reconcile private goals with social objectives.

IV. Role of Government in Bank Restructuring in Crisis-affected Economies

These micro results thus emphasize risk-loving behavior in the presence of uncertainty (with risk neutralized by the state), expectations about continuation of incentives, competition on the basis of state intervention in capital markets, and overinvestments in capacity in a Baumol-type revenue maximizing world. In such a framework, a credit squeeze robs the firm of its competitive strategy. Restoring credit flows is thus crucially important in any rehabilitation program.

The aftermath of the East Asian crisis has led to a questioning of this developmental role of the state in financial markets.⁴⁵ The Wade (1998) argument is that such questioning is unwarranted and there are no inherent problems with Asian state capitalism. The point in fact is stronger and one can paraphrase it as follows. Contractionary monetary policy drove up interest rates in an attempt to restore confidence in the East Asian economies. Whether interest rate increases restore confidence in any economy is debatable, but certainly in the case of East Asia, it had perverse results where interest rates increased between 5 to 10 percent (see also Stiglitz 1993, 1998a). Since there were no macro imbalances to start with, interest rate increases made the state of the financial sector worse and contributed to a recession. Given what we said earlier about state intervention in capital markets, the financial system in East Asia had all the characteristics of a public good with positive externalities. More than the hike in interest rates, the starving of credit contributed to firms going bankrupt, firms that had overextended because of risk-loving behavior and revenue-maximizing tendencies. Coupled with the exogenous shock, there was now an endogenous shock. Some firms going bankrupt contributed to the deterioration of the capital position of banks, in addition to interfirm debt contributing to further uncertainty (Stiglitz 1998d). The resulting credit rationing for even viable firms drove them to bankruptcy. With bank-based financial systems and high leverage, households and small and medium-sized enterprises that had no substitute for bank credit were also faced with a credit crunch. There is now sufficient evidence of this credit-crunch-induced corporate sector crisis happening in Indonesia, Korea, and Malaysia, with the impact less sharp in Thailand and the Philippines (World Bank 1998).⁴⁶

Consider the following quote from Stiglitz (1998d). “In medicine, we have come a long way from medieval blood lettings and blaming the victims for their condition.... The financial system is like the brain of the economy. In a crisis it can virtually cease to function.... In normal times we view high capital adequacy standards as a way to ensure prudent banking. The point of the additional capital, however, is to provide a cushion against bad times. If, in the midst of a downturn, we push banks too quickly toward ‘prudent’ capital adequacy ratios, we risk shutting down the flow of credit entirely.... The procedures for handling bankruptcies in normal times and in crises should be quite different. Just as a central concern in the time of crisis in addressing the problems of the financial sector should be the preservation of the flow of credit, so too the central concern in corporation organization should be maintaining production.... Even a well-managed firm could easily go bankrupt simply because it failed to plan for an 80 percent devaluation and a period of interest rates in excess of 100 percent.”

How does one break this vicious cycle and does the East Asian model have a role to play in this? What is the state to do about restructuring the banking sector and restarting credit flows to the corporate sector? We suggest a rather straightforward but effective modality below.

⁴⁵A point has been made that the earlier financial liberalization was itself a deviation from the East Asian model because there was little or no control over external borrowing and little or no state guidance for investment (Brownbridge and Kirkpatrick 1998).

⁴⁶For borrowers who depend on banks, evidence of a credit crunch can be deduced from aggregate credit flows, the spread between bank lending rates and corporate bonds (reflecting the risk premium for individual economic agents), and the spread between corporate and government bonds (a general risk premium). Using this methodology, a study by Ding, Dominic, and Ferri, quoted in World Bank (1998) finds widespread evidence of a credit crunch in East Asia.

As surrogate measures indicative of the fiscal costs of bank restructuring, one can consider the ratio of nonperforming loans (NPLs) to total loans.⁴⁷ Official NPL to loan ratios are 40% in Thailand, 7.9% in Indonesia, 21.8% in Korea, 10.2% in Malaysia, and 11% in the Philippines (ADB 1999).⁴⁸ With comparable methodology, Standard and Poor and J.P. Morgan give ratios of slightly over 40% for Indonesia, between 35 and 40% for Thailand, and between 20 and 30% for Korea (ADB 1999). Using J.P. Morgan figures, our computations are shown in the following table.

Table 1: NPL Ratios and Recapitalization/GDP

	Indonesia	Malaysia	Philippines	Korea	Thailand
NPL ratios (%)	30-35	15-25	8-10	25-30	25-30
Recapitalization needs/GDP (%)	19	20	0	30	30
Debt/GDP (1996)	24	36	—	9	4
New debt/GDP ⁴⁹	43	56	—	39	34

In principle, there are six not mutually exclusive ways to bring about bank restructuring. These are bailouts (supplementing bank capital with public resources), nationalization, assisted mergers, recapitalization and subsequent sales, restructuring plans, and liquidation and payoffs (World Bank 1998). There are tradeoffs in terms of speed, fiscal costs, incentives for bank performance, and generating confidence in the banking system. For example, bailout and nationalization are faster, although they lead to reduced incentives for bank performance. Conversely, confidence in the banking system is restored fastest with nationalization and assisted mergers. Yet another taxonomy of restructuring can be in terms of a market-based approach, a recapitalized-bank approach, and a government-led approach (World Bank 1998). In a market-based approach, enterprises are restructured, assets are sold to domestic and foreign investors, and debt is restructured. Given what was said earlier about the role of the East Asian state in the financial sector, we are skeptical about such a market-based approach being fast enough or restoring confidence in the banking system sufficiently quickly. In a recapitalized-bank approach, the state recapitalizes banks on an ex ante assessment of their losses and does not intervene in corporate sector restructuring. While such an approach can be fast, our skepticism concerns the technical ability of banks to bring about corporate sector restructuring efficiently. And the avowed reduced-moral-hazard advantage of this approach may not come about because the state continues to

⁴⁷The costs also depend on the importance of the banking sector in financial intermediation and corrective action taken by the state.

⁴⁸These are for different months in 1998: July for Thailand, January for Indonesia, June for Korea, June for Malaysia, and November for the Philippines. The figures are not comparable.

⁴⁹Since the figures are from the same original J. P. Morgan source, they are identical to the ones given in World Bank (1999).

provide guarantees and recapitalization is never close-ended. In other words, we are in favor of a government-led approach, where the state takes over distressed assets from banks and replaces them with government bonds.⁵⁰ Banks are recapitalized and the state tries to restructure the claims and bring about corporate restructuring, with the involvement of banks. Since the emphasis is on speed and restoring confidence in the banking system, the government-led approach has much to recommend it.⁵¹

We would therefore prefer a more active and interventionist role for the state in tackling the financial sector crisis. The suggestion above is to allow the fiscal balance to deteriorate temporarily and use these resources to put a large part of the banking sector back on its feet quickly so that the binding financial constraint on the real sector can be removed and recovery started. Are government debt to GDP levels of between 34 and 56 percent sustainable? We believe they are. Depending on assumptions made about the real rate of interest and the growth rate of the economy, such debt levels can be stabilized with a primary fiscal surplus of around 3 percent of GDP. In the period preceding the crisis, both Indonesia and Thailand were able to achieve such primary fiscal surpluses.⁵² Our suggestion thus is for increased government borrowing, both domestic and foreign, to finance the recapitalization of banks. These debts can then be liquidated in the next round of reforms, which would focus on privatizing of state assets, including banks that have been restored back to health. This strategy has the merit of quickly bringing back the banking sector to a healthy position and restoring credit to the beleaguered corporate sector. This could be considered the very basis of an effective recovery strategy that minimizes social distress.

The road map for recovery obviously goes beyond the financial sector and also encompasses the corporate sector.⁵³ Per se, most of these suggestions are unexceptionable, although there is scope for debate about sequencing capital account convertibility. Other

⁵⁰These securities can later be used to develop a pension program.

⁵¹Some elements of the government-led approach have begun to emerge in East Asia, with government-owned asset management companies in Indonesia, Korea, and Malaysia. But these asset management companies have not yet begun to function effectively.

⁵²The magnitude of the surplus was lower for Korea and figures on the primary balance are not available for Malaysia and the Philippines.

⁵³Broadly, the following have been proposed: (a) Close insolvent financial institutions and firms (Korea) and transfer assets to restructuring agencies (Indonesia, Korea, Thailand); (b) Recapitalize and merge others; (c) Use explicit public funds through the budget for bank restructuring; (d) Strengthen prudential regulations, loan classification and provisioning requirements and capital adequacy norms; (e) Liberalize foreign investment in domestic banks (Indonesia, Korea, Thailand); and (f) Restructure domestic and external corporate debt (Indonesia, Korea, and Thailand). Quite understandably, these spill over into areas of competition policy and corporate governance, such as the following: (a) Liberalize restrictive marketing arrangements (Indonesia); (b) Establish competitive procedures for privatization of government assets and government procurement (Indonesia, Malaysia, Thailand); (c) Ban or limit use of public funds to bail out private corporations (Indonesia, Korea, Malaysia, Thailand); (d) Implement bankruptcy laws and exit policies (Indonesia, Korea, Thailand); (e) Privatize and close nonviable public enterprises (Indonesia); (f) Enforce stronger corporate disclosure standards (Korea); and (g) Liberalize foreign direct investment policies in nonfinancial sector areas. On trade policy, most of East Asia was already fairly open. There are therefore limited suggestions about reducing import duties and export taxes (Indonesia) and easing quantitative restrictions on imports and exports (Indonesia and Korea).

The suggestions mentioned above concern domestic economies. In addition, there have been discussions about the future architecture of the international financial system and some debate about capital account convertibility and controls (or taxes) on short-term cross-border capital movements. On the global financial architecture, the thrust of the argument is for improvement in dissemination of information based on greater availability, transparency, and monitoring based on acceptable international standards.

issues are strengthening of national financial systems and managing international financial crises (Corsetti and Srinivasan 1999). The efficiency gains from capital account convertibility need not be repeated, although the apparent benefits (as opposed to current account convertibility) have been questioned in studies like Rodrik (1998), or even by Bhagwati (1998). That apart, capital account convertibility also reduces the scope for discretionary monetary and fiscal policy at home. The flip side is the kind of argument advanced in Bhagwati (1998) that the case for free trade in goods cannot necessarily be extrapolated to free financial flows, since there are several distortions, informational asymmetries being one. There are two kinds of arguments one encounters. First, the obvious proposition is that throwing open the capital account without internal systemic reform is asking for trouble. Second, the proposition that there is a difference between short-term capital movements and other forms of cross-border capital flows lends validity to the suggestion for imposing a Tobin (1978) type tax, or the Chilean variant for handling short-term debt or portfolio investments.

V. Conclusion: Is the Asian Model of Development Still Relevant?

One of the perhaps inadvertent and rather peculiar fallouts has been that both the “radical free marketeers” and the supporters of the “active state intervention and industrial policy proponents” have been left looking a bit embarrassed. The former because the star followers of the free and open policies have suffered the most in these crisis; the latter on account of Korea and Japan having come a cropper. There has been an attempt to argue that these crises have shown the inherent weaknesses of the Asian model of development. The model’s central features include a close cooperation between the state, financial sector, and the corporations, which was said to have reduced financial costs and made economic agents less risk-averse and encouraged them to plan for longer-term goals. It is argued in some quarters that this fostered weak governance, all kinds of corruption, and has been one of the main causes of the problems faced in the banking sector of all these economies. There has been stringent criticism of government intervention in the capital markets as having resulted in connected lending and overlending, erosion of prudential norms, and perversion of the credit appraisal process. In our view this criticism is only partly valid. It should not be used to take away from the central argument that the Asian crisis essentially represented a case of market failure rather than government failure.

Of the various forms of state intervention, state intervention in capital markets is of special interest because market imperfections can be significant there, a point that has been made in Stiglitz (1993, 1998a, 1998b, 1998c, 1998d). Because of pervasive market imperfections in capital markets, state intervention in capital markets can make these markets as well as the economy perform better (Stiglitz 1993). Within capital markets, the East Asian state promoted savings (postal savings banks), ensured long-term credit (development banks), and developed the financial infrastructure (bond and equity markets). There was also financial restraint or financial repression and theoretical arguments that financial restraint leads to inefficient allocation, or empirical surveys linking financial repression to economic performance are both suspect (Stiglitz 1993 and Stiglitz and Uy 1996). In addition to financial restraint, in East Asia priority industries were given preferential access to capital (and foreign exchange). There were also subsidized interest rates, although access to credit may have

been more important than the price aspect.⁵⁴ Note also the budgetary surpluses East Asian governments maintained. Since governments did not borrow, there was no market for government securities. There was therefore no risk-free rate that could be used as a benchmark, and a market for corporate bonds did not develop. Not only did governments not borrow, neither did households. This also biased the system toward high debt/equity ratios. In addition to the risk-free rate, the interest rate reflects a risk premium. Apart from deepening and broadening the financial market to pool risk and bring down the premium, state intervention sought to bring down the risk premium through various means. Reduced provisions for bankruptcy; bank holding of equity in firms, and close links between banks, firms, and the government are examples. High leveraging and the so-called “crony capitalism” were thus part of the strategy.

This is an argument that is developed strongly in Wade (1998), Wade and Veneroso (1998), and Stiglitz (1998a), making the point that the Anglo-American mindset failed to appreciate the role of state intervention in financial markets and failed to differentiate between inadequate oversight and over-regulation.⁵⁵ The state did not misdirect credit; misdirection of credit was done by the private sector and was an instance of market failure, which the state failed to identify as a problem sufficiently early. Almost tautologically, high debt-equity ratios make the system more vulnerable to exogenous shocks, since costs of debt amount to fixed levels of payment, unlike equity costs. Therefore, a linkage between banks, the state and the corporate sector is necessary to reduce systemic risks, as opposed to bailing out firms for inappropriate judgment. The role of the state and a close working relationship among the different segments of socioeconomic agents is further reinforced if our explanation of the Asian crisis being different from all previous recent episodes is accepted. This difference we have argued lies in this current crisis being a case of market failure rather than policy failure and the structural reform efforts consequentially being directed to improving firms’ competitiveness. The role of the state in addressing the problems in the financial, essentially banking sector, has been discussed at length in the previous section. Other than that, government attention and perhaps resources, in the initial stages at least, will also have to be directed at: (i) facilitating technological upgradation of the firms; (ii) overhauling of the education and vocational training system so as to increase the supply of skills that can absorb and adopt the higher levels of technologies; and (iii) creating a system of social security nets that will minimize the social costs of any future cyclical downswings and exogenous shocks.

In the end some useful lessons can be drawn from the above discussion of an alternate and a firm-based analysis of the East Asian crisis. First, some East Asian economies functioned as economies with abundant factor endowments of capital not labor. With capital inputs characterized by lumpiness of investments, it means cycles of overcapacity. During such periods of overcapacity, the withdrawal of government support and a credit squeeze on working capital can be disastrous. This has to be avoided. Second, a shift in policy regimes can only be worked out gradually and sequentially so as not to create a divergence between expectations and realities. These sudden policy shifts often result from externally imposed conditionalities that can lead to unnecessary social stress and welfare loss. Third,

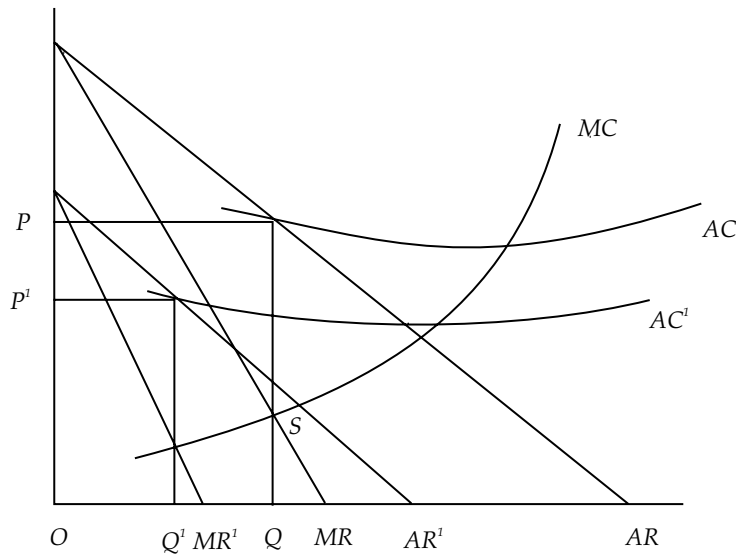
⁵⁴There were restrictions on consumer credit and low interest rates transferred income from households to firms.

⁵⁵Unlike Latin America, the East Asian debt was mostly private.

the Asian crisis shows that we should change our tendency to look for explanatory factors for the crisis in macro conditions specially now when all developing, emerging, and transition economies know the importance of following the right macro policies. Shifting the focus to the “real sectors” may permit more timely and appropriate action, thereby reducing overall welfare loss. Fourth, the East Asian crisis does not simply reflect a governance crisis or that of so-called crony capitalism. As discussed in the third section, the firm behavior and the concomitant government and commercial bank support was the basis for sustained and unprecedented growth in these economies. Although some strengthening of financial sector regulation, monitoring, and supervisory capability is certainly called for, it is simply expedient and perhaps counterproductive to characterize the crisis as resulting from poor corporate and financial sector governance. Let us not forget that until July 1997, the same underlying model was being studied across universities and in research departments of most financial institutions for its relevance to not only developing but also developed economies.

Fifth and finally, one of the most important objectives of government policy in the near future will also be to ensure that the cooperation between the state and other segments of the economy is increasingly transparent and accountable. In short, strengthening the system of governance will remain one of the important priorities of public policy, but not the only one. The transaction costs of a weak governance system are difficult to quantify, but the costs of lack of financial resources to the firms and their inability to achieve high rates of growth are easily quantified as slower or negative economic growth and increasing social distress. The Asian model of development with strengthened governance systems could provide the most effective means of taking Asia back on a high and sustained growth path. Public intervention is warranted to address market failure.

Technical Appendix



At the firm level, the framework we envision is the following. AR is the average revenue curve and MR is the marginal revenue curve.¹ MC is the marginal cost curve. A profit maximizing firm chooses an output level OQ determined by point S , with a price corresponding to OP . If the average cost curve is AC , such a firm can be intramarginal, with zero profits. Through state intervention in the form of incentives (subsidies), the average cost curve can be driven down to AC' . For simplicity, the MC curve is assumed to remain unchanged in the diagram, but this is purely an artifice. The subsidy is a “fixed cost” type of subsidy, meaning the firm is no longer intramarginal. However, if there is a downward parametric shift in demand (AR' and MR'), despite the subsidy, the firm can once again become intramarginal. Note that in this diagram, when the behavior of other firms is not considered², a Baumol-type revenue-maximizing firm will have a higher level of output than OQ (when the demand curve is AR) and a firm that ought not to be intramarginal can end up with zero or negative profits. However, this is no longer the case if the market structure is that of an oligopoly.

We now represent strands of the argument through the following stylized examples.

The Basic Structure

To bring in oligopoly, we postulate a market demand curve given as $p = a - bq$, p being the price and q the aggregate output. If there are n firms ($j=1, \dots, n$), $q = \sum q_j$. The cost function for the j^{th} firm is $C_j = c_j q_j$, c_j being the marginal cost and there being no fixed costs. There are thus differential cost structures across firms. Profits for the j^{th} firm are $\Pi_j = (a - bq) q_j - c_j q_j = (a - bq - c_j) q_j$.

We now think of two producers, a domestic one (subscripted 1) and a foreign one (subscripted 2) and examine the noncooperative equilibrium. There is no product differentiation and the domestic and foreign products are perfect substitutes for each other in the global market.

¹Therefore, one is not working in a perfectly competitive framework. Nor is the firm a monopolist.

²For example, when the firm is a monopolist.

When both producers are profit maximizers, on solving the equations for profit maximization, we obtain the following: $q_1 = (a - 2c_1 + c_2)/3b$, $q_2 = (a + c_1 - 2c_2)/3b$, $q = (2a - (c_1 + c_2))/3b$, $P_1 = (a - 2c_1 + c_2)^2/9b$.³ $p = (a + c_1 + c_2)/3$.

Note that $q_1 > q_2$ as $c_2 > c_1$. As long as the marginal costs of the domestic producer are lower than those of the foreign producer, the domestic producer will have a more than 50 percent share of the market. In the special case when cost functions are identical, $q_1 = q_2 = (a - c)/3b$ and both producers have an equal market share. $P_1 = (a - c)^2/9b$.

We can now introduce a subsidy or incentive to the domestic producer (without a corresponding subsidy to the foreign producer). This subsidy can either be lump sum (K), or one that is a function of output (t), the former being identified with generalized liberalization and the latter being identified with sector-specific treatment. When the incentive (t) is a function of output, it effectively amounts to artificially bringing down c_1 since marginal costs become $(c_1 - t)$. If t is large enough and actually equal to c_1 , there is no difference between profit maximization and revenue maximization. Any such t reduces the difference between revenue maximization and profit maximization. The implications are obvious: q_1 goes up (greater investments in capacity), q_2 goes down, the domestic producer's market share goes up and so do profits. Aggregate output goes up and the price declines (terms of trade effect). When the subsidy is lump sum, nothing changes except the domestic producer's profits. These now become $P_1 = (a - 2c_1 + c_2)^2/9b + K$.

If the domestic producer is a revenue maximizer (in the absence of incentives) and the foreign producer is a profit maximizer, in solving the equations, we obtain the following: $q_1 = (a + c_2)/3b$, $q_2 = (a - 2c_2)/3b$, $q = (2a - c_2)/3b$, $P_1 = (a - 3c_1 + c_2)(a + c_2)/9b$. $p = (a + c_2)/3$. Compared to profit maximization, one gets the intuitive result that as q_1 goes up (greater investments in capacity), q_2 goes down and the domestic producer's market share increases. Overall output goes up and the price declines (terms of trade effect). If one extrapolates on the basis of a monopoly, one also gets a result that is not intuitive. Compared to profit maximization, P_1 does not necessarily go down as a result of revenue maximization. Simplifying the results, revenue maximization leads to lower profits than profit maximization only if $4c_1 > (a + c_2)$. If the inequality is reversed, somewhat paradoxically, revenue maximization leads to higher profits. Consider a scenario where marginal costs change over time, with c_1 going up (higher labor costs) and c_2 coming down as other countries "catch up". It is then possible that revenue maximization leads to higher profits initially, and lower profits beyond a certain point in time.

If there is a subsidy with revenue maximization, nothing changes, except that the domestic producer obtains larger profits. This is regardless of whether the subsidy is specific or lump sum. In the process, it is possible to delay the reduced profits that revenue maximization may lead to eventually.

Either profit maximization (with an output-specific subsidy) or revenue maximization can thus lead to higher levels of output, expansion in capacity, larger market shares, and deterioration in terms of trade. Depending on what is happening to marginal costs, revenue maximization can lead to higher profits than profit maximization initially, but lower profits thereafter.

Multiple Products or Markets

Let us now think of two products the domestic producer can produce, X and Y. These can be interpreted either as two products or two different markets. For example, the same product may be sold to an old market X or a new market Y. Alternatively, an old product X or a new product Y may be sold to the same market. In general, one can have combinations of old and new products and markets. There is a foreign producer (subscripted 2) who competes in X and there is a foreign producer (subscripted 3) who competes in Y. There is of course nothing to prevent 2 and 3 from being identical. For profit maximization, the following needs no explanation.

³In this instance, the profit of the second producer can be obtained by symmetry. But throughout, we will only be interested in the profits of the domestic producer. When the number of firms increases, there will be a profit squeeze. But that is not an aspect we wish to focus on.

We have $q_1^X = (a^X - 2c_1^X + c_2)/3b^X$, $q_2 = (a^X + c_1^X - 2c_2)/3b^X$, $q^X = (2a^X - (c_1^X + c_2))/3b^X$, $\Pi_1^X = (a^X - 2c_1^X + c_2)^2/9b^X$, $p^X = (a^X + c_1^X + c_2)/3$ and $q_1^Y = (a^Y - 2c_1^Y + c_3)/3b^Y$, $q_2 = (a^Y + c_1^Y - 2c_3)/3b^Y$, $q^Y = (2a^Y - (c_1^Y + c_3))/3b^Y$, $\Pi_1^Y = (a^Y - 2c_1^Y + c_3)^2/9b^Y$, $p^Y = (a^Y + c_1^Y + c_3)/3$.

We now move from a regime of output-specific incentives to generalized incentives. With an output-specific incentive, profits from X are $\Pi_1^X = (a^X - 2(c_1^X - t_1^X) + c_2)^2/9b^X$ and profits from Y are $\Pi_1^Y = (a^Y - 2(c_1^Y - t_1^Y) + c_3)^2/9b^Y$. With a lump sum incentive (K) that is uniform for both X and Y, profits from X are $\Pi_1^X = (a^X - 2c_1^X + c_2)^2/9b^X + K$ and profits from Y are $\Pi_1^Y = (a^Y - 2c_1^Y + c_3)^2/9b^Y + K$. Assume that the transition from output-specific incentives to lump sum incentives is incentive-neutral for X, so that $P_1^X = (a^X - 2c_1^X + c_2)^2/9b^X + K$ is greater than $P_1^X = (a^X - 2(c_1^X - t_1^X) + c_2)^2/9b^X$. The producer does not lose as a result of the transition. Does this necessarily imply that the transition is also incentive-neutral for Y? Clearly not. There is no way to establish that $\Pi_1^Y = (a^Y - 2c_1^Y + c_3)^2/9b^Y + K$ is greater than $\Pi_1^Y = (a^Y - 2(c_1^Y - t_1^Y) + c_3)^2/9b^Y$.

Consider a simple instance of this general framework. The same product is exported to two markets X and Y, so the marginal costs are identical for X and Y. The initial output incentive is such that it completely neutralizes marginal costs, c_1 is equal to t . Since it is the same product, the foreign producer is the same in both markets. Given these conditions, with incentive neutrality in X we have, $(a^X - 2c_1 + c_2)^2/9b^X + K$ is greater than $(a^X + c_2)^2/9b^X$. This reduces to $K > 4c_1(a^X - c_1 + c_2)/9b^X$. For similar incentive neutrality in Y, this must guarantee $K > 4c_1(a^Y - c_1 + c_2)/9b^Y$. It is evident that this is not necessarily the case. The answer depends on the demand functions for X and Y. Since X is a developed market, a^X is presumably greater than a^Y , the demand curve for X is "outside" the demand curve for Y. If the slopes of the demand curves are identical, incentive neutrality for X then guarantees incentive neutrality for Y. But the demand curves need not have the same slopes. If the demand curve for X is steeper (greater product differentiation and relatively inelastic demand curve) and the demand curve for Y is flatter (reduced product differentiation and relatively elastic demand curve), then incentive neutrality for X does not guarantee incentive neutrality for Y. In the transition from specific to generalized incentives, incentive neutrality may not have been ensured for newer products that face greater competition and have elastic demand curves. This hinders export diversification.

Incentive Transition

Consider now a transition from specific incentives to generalized incentives with three possible scenarios: first, a system with no specific incentives and a lump sum incentive of K; second, a system where the specific incentive is $0.5c_1$; and third, a system where the specific incentive is c_1 . From what has been said earlier, with a profit-maximizing domestic producer, the following table needs no explanation.

	$K, t=0$	$K=0, t=0.5c_1$ $K=0, t=c_1$
q_1	$(a - 2c_1 + c_2)/3b$	$(a - c_1 + c_2)/3b$ $(a + c_2)/3b$
q_2	$(a + c_1 - 2c_2)/3b$	$(2a + c_1 - 4c_2)/6b$ $(a - 2c_2)/3b$
Q	$(2a - (c_1 + c_2))/3b$	$(4a - (c_1 + 2c_2))/6b$ $(2a - c_2)/3b$
P	$(a + c_1 + c_2)/3$	$(2a + c_1 + 2c_2)/6$ $(a + c_2)/3$
Π_1	$(a - 2c_1 + c_2)^2/9b + K$	$(a - c_1 + c_2)^2/9b$ $(a + c_2)^2/9b$

The problem becomes interesting because there is uncertainty in the system. The incentive regime can be any of the three above, but the domestic producer does not know which one of these it is going to be. For simplicity's sake, let us presume the foreign producer has perfect knowledge. In the following table, the rows represent the choice of the producer, while the columns represent the actual incentive regime. The north-west to south-east diagonal elements are the familiar ones. But the entries in the other cells have to be worked out as the producer has made a "wrong" output decision.

Π_1 values	$K, t=0$	$K=0, t=0.5c_1$	$K=0, t=c_1$
$K, t=0$	$(a - 2c_1 + c_2)^2/9b + K$	$(a-2c_1+c_2)(2a-c_1+2c_2)/18b$ *	$(a-2c_1+c_2)(a+c_1+c_2)/9b$
$K=0, t=0.5c_1$	$(a-c_1+c_2)(2a-5c_1+2c_2)/18b + K$	$(a - c_1 + c_2)^2/9b$	$(a-c_1+c_2)(2a+c_1+2c_2)/18b$
$K=0, t=c_1$	$(a+c_2)(a-3c_1+c_2)/9b + K$	$(a+c_2)(2a-3c_1+2c_2)/18b$	$(a + c_2)^2/9b$ **

It is impossible to determine maximin and maximax values without setting bounds on K . The deduction is simplest when K is within the bounds $q_1c_1 > K > (q_1c_1)/2$, q_1 being the actual level of output produced by the domestic producer. The maximax value is indicated by ** and the maximin value is indicated by *.⁴ A risk-averse domestic producer will choose the maximin value and assume that a specific incentive does not exist. Instead, there is a generalized or lump sum incentive. But if there is no particular reason to assume that this is a zero sum game and if the systemic environment has encouraged risk-loving behavior, the maximax value will be chosen. The domestic producer's behavior is then predicated on the assumption that a full specific incentive exists.

Parametric Shift in Demand

Let us now consider a parametric shift in demand. Given the demand function $p = a - bq$, such a parametric shift can be either in a or in b . We consider a parametric shift in a , an analogous deduction is possible for changes in b . The parametric shift in demand results in a getting transformed to λa . If $\lambda > 1$, the demand curve shifts outward. If $\lambda < 1$, the demand curve shifts inward and if $\lambda = 1$, the demand curve is unchanged. For purposes of simplicity, we assume that the foreign producer does not expect a shift in demand and therefore, q_2 is fixed at $(a+c_1-2c_2)/3b$. It is obvious that a profit-maximizing domestic producer will now choose an output level given as $(a - 2c_1 + c_2)/3b + (\lambda - 1)a/2b$. If $\lambda > 1$, domestic and aggregate output is increased. If $\lambda < 1$, domestic and aggregate output is decreased and if $\lambda = 1$, domestic and aggregate output is unchanged. At such a level of generality it is impossible to be more specific. Therefore, let us consider three special cases with $\lambda = 2$, $\lambda = 1$ and $\lambda = 1/2$.

The following table needs no explanation.

	$\lambda = 2$	$\lambda = 1$	$\lambda = 1/2$
q_1	$(5a - 4c_1 + 2c_2)/6b$	$(a - 2c_1 + c_2)/3b$	$(a - 8c_1 + 4c_2)/12b$
q_2	$(a + c_1 - 2c_2)/3b$	$(a + c_1 - 2c_2)/3b$	$(a + c_1 - 2c_2)/3b$
Q	$(7a - 2c_1 - 2c_2)/6b$	$(2a - (c_1 + c_2))/3b$	$(5a - 4c_1 - 4c_2)/12b$
P	$(5a + 2c_1 + 2c_2)/6$	$(a + c_1 + c_2)/3$	$(a + 4c_1 + 4c_2)/12$

⁴Technically, this maximin value is subject to the condition that $a+c_2 > c_1$. This is acceptable, as without this condition being satisfied, the domestic producer's profits will be negative.

When $\lambda = 2$, output expands. But p also increases because of the shift in the demand curve, a reverse terms of trade effect. Similarly, when $\lambda = \frac{1}{2}$, output contracts and p declines. As in the preceding example, we introduce uncertainty into the system with the requirement that the domestic producer does not know the value of λ . The incentive parametric shift in demand can be any of the three, but the domestic producer does not know which one of these it is going to be. In the following table, the rows represent the assumption of the producer, while the columns represent the actual state of demand.

Π_1 values	$\lambda = 2$	$\lambda = 1$	$\lambda = \frac{1}{2}$
$\lambda = 2$	$(5a - 4c_1 + 2c_2)^2 / 36b$ **	$(5a - 4c_1 + 2c_2)(-a - 4c_1 + 2c_2) / 36b$	$(5a - 4c_1 + 2c_2)(-2a - 2c_1 + c_2) / 18b$
$\lambda = 1$	$(a - 2c_1 + c_2)(4a - 2c_1 + c_2) / 9b^5$	$(a - 2c_1 + c_2)^2 / 9b$	$(a - 2c_1 + c_2)(-a - 4c_1 + 2c_2) / 18b$
$\lambda = \frac{1}{2}$	$(a - 8c_1 + 4c_2)(19a - 8c_1 + 4c_2) / 144b$	$(a - 8c_1 + 4c_2)(7a - 8c_1 + 4c_2) / 144b$	$(a - 8c_1 + 4c_2)^2 / 144b$ *

The maximax value is indicated by ** and the maximin value is indicated by *. A risk-averse domestic producer will choose the maximin value and assume that there will be a downward parametric shift in demand. But if there is no particular reason to assume that this is a zero sum game and if the systemic environment has encouraged risk-loving behavior, the maximax value will be chosen. The domestic producer's behavior is then predicated on the assumption that there will be an expansion in demand. The gap between the maximax and maximin values varies positively with a and c_2 and inversely with c_1 and b . In that sense, the premium on risk taking is higher if the foreign marginal cost is high or if the domestic marginal cost is low. But if foreign marginal costs decline or if domestic marginal costs rise, the premium on risk taking goes down.

The producer can of course be a revenue maximizer rather than a profit maximizer. It is easily checked that even in that case, a risk-averse domestic producer will assume a contraction in demand (with a payoff of $(a + 4c_2)^2 / 144b$) and a risk-loving domestic producer will assume an expansion in demand (with a payoff of $(5a + 2c_2)^2 / 36b$). In this case, the premium on risk varies positively with a and c_2 and inversely with b .

K and L Inputs

To develop a capital market argument, let us now visualize two inputs, capital (K) and labor (L). As before, the domestic producer is subscripted 1. With profit-maximizing behavior on the part of the domestic producer, we have the following conditions on L_1 and K_1 :

$P(1 - 1/e)dq_1/dL_1 = w_1(1 + 1/e_L)$ and $P(1 - 1/e)dq_1/dK_1 = k_1(1 + 1/e_K)$, where e is the elasticity of market demand, w_1 is the wage rate, k_1 is the price of capital, e_L is the elasticity of wages with respect to labor input, and e_K is the elasticity of the price of capital with respect to capital input.

Let us now assume perfect competition in product and factor markets. With increasing returns to scale, it is possible to pay labor wages that are greater than the value of the marginal product of labor, without paying capital at a price lower than the value of the marginal product of capital. However, if there are nonincreasing returns to scale, this is no longer possible. In such circumstances, state intervention can lead to a price of capital that is lower than the value of the marginal product. With revenue-maximizing behavior, the labor input will be up to the point where the marginal product of labor is zero.

However, perfect competition in product and factor markets is not a plausible assumption. With imperfect competition, the link between say, wages and value of marginal product of labor, breaks down. However, even if there is imperfect competition in product markets (with perfect competition in factor markets), we still have $\delta q_1 / \delta L_1 / \delta q_1 / \delta K_1 = w_1 / k_1$. The point is a simple one. Assume that conditions in the foreign country do not change, but there is an increase in wages relative to the marginal product of labor in

⁵This cell's payoff is interesting because depending on demand conditions, it shows that the payoff from being wrong can sometimes be greater than the payoff from being right.

the home country. This requires exogenous changes in the price of capital,⁶ or increases in K_1 . Consider investment given by the expression $\Delta K_1/K_1$. This is a direct function of the rate of profit or Π_1/k_1K_1 . Capital input increases can contribute to a fall in the rate of profit because of diminishing returns to capital input. These effects are accentuated if the domestic producer maximizes revenue rather than profit. As the rate of profit declines, it may become difficult to finance investment through equity. However investments can also be driven by borrowing and $\Delta K_1/K_1$ is also an inverse function of the rate of interest, r_1 .⁷ Thus interpreted, capital market distortions through reductions in the rate of interest to below equilibrium levels are not inadvertent distortions, but the only way to sustain competitive advantage. These arguments also hold if there are imperfections in factor markets, with the caveat being the relevant elasticities become additional variables.

⁶Exogenous because of perfect competition in factor markets. TFP increases is another possibility to neutralize wage increases.

⁷Had intermediation possibilities not existed, retained earnings would have been the only option.

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