The Asian Economic Crisis and the U.S. Economy: An Industry Perspective

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Preface

The Asian crisis has created a substantial source of uncertainty and risk. The Manufacturers Alliance, in a joint project with the Interindustry Forecasting Project at the University of Maryland (INFORUM), has published a report on the effect of the Asian economic crisis on the U.S. economy. The report quantifies the impacts on the U.S. economy in general, and on industries in particular, using a macroeconomic, interindustry, econometric model of the U.S. economy. The results are summarized here.

Introduction and Methodology

In late 1997, observers predicted that the Asian crisis would have serious implications for the U.S. economy. To date, signs of weakness in the economy are difficult to discern. In fact, the Asian crisis has probably assisted recent U.S. economic growth by contributing to low inflation and low interest rates. Nevertheless, as 1998 progresses and moves into 1999, the implications of the crisis will become more noticeable.

While several sectors of the U.S. economy will be affected visibly and negatively by the crisis, other sectors will experience more favorable outcomes. For example, while capital goods manufacturers will suffer from lower exports and enhanced import competition, residential construction will prosper from lower interest rates and increased real income. Therefore, the economy as a whole will be buffeted by divergent economic forces. On balance, the negative effects from changes in international trade resulting from the Asian economic crisis will outweigh the positive aspects of the crisis. Nevertheless, even under rather extreme assumptions of the East Asian recession, the economic crisis, by itself, is unlikely to undermine the lively U.S. economic expansion. Rather, the most important consequence will be an alteration in the nature of this expansion. Specifically, the Asian crisis will shift the current emphasis of economic growth from business investment, exports, and manufacturing, to personal consumption, housing, and services. The negative consequences of Asian currency depreciation and economic recession will be felt the most within tradable goods markets (including those for agricultural goods and raw materials, as well as manufactured items). Services, distribution, and construction will experience little direct impact, and the net indirect effect on these sectors could actually be positive in some cases.

The analysis is accomplished by introducing different assumptions for industry-specific Asian import volumes and Asian export prices into INFORUM's dynamic, macroeconometric, interindustry model of the U.S. economy. The model is particularly suited to analyze the effects of international trade shocks on industries, since it captures not only the direct impacts of trade changes on individual sectors, but also the indirect impacts due to the interrelationships among them and the changing macroeconomic environment. It is simulated for three different scenarios of East Asian economic fortunes from 1998 through 2002. The results provide an evaluation of the implications of the crisis on U.S. economic growth, employment, and trade. They also furnish impacts on production, exports, imports, and employment for individual industries.

For the purposes of this study, the countries impacted by the Asian crisis are 10 countries in East Asia: Japan, South Korea, China, Hong Kong, Taiwan, Indonesia, Malaysia, the Philippines, Singapore, and Thailand. Assumptions about changes in each country's Gross Domestic Product (GDP), inflation, and exchange-rate forecasts for 1997-2002 are taken from the April 1998 and April 1997 editions of *Asia Pacific Consensus Forecasts* published by Consensus Economics, Inc. The worst hit economies are those of Thailand, South Korea, and Indonesia. These countries, each of which required a substantial emergency-financing package from the International Monetary Fund (IMF), will experience severe recessions in 1998 and, most likely, into the first half of 1999. Japan, Malaysia, and the Philippines also have been hard hit. For now, it appears that China, Singapore, and Hong Kong will escape relatively unscathed, although growth in each will be measurably slower. Taiwan is expected to experience little impact. The current exchange-rate projections also are consequential. Not only are current levels enormously different from those projected last year, but the devaluations of 1997 are expected to be more or less permanent.

Implications of the Asian Crisis For the U.S. Economy

The most important effects of the Asian crisis on the U.S. economy will work through international trade. U.S. trade with East Asia is significant. In 1996, it accounted for 30 percent of the U.S. market for exported goods, while it supplied 40 percent of U.S. imports. The impacts on the economy can be traced via several intertwined channels: exports, imports, and general prices. Each channel is discussed below.

Export growth to Asia will fall.—Exports to the Asian region will suffer from both the sharp drop in regional domestic demand and the appreciation of the U.S. dollar against Asian currencies. Suppliers to exporters are likely to be hurt. On average, every dollar of exports generates 96 cents of indirect demand from domestic suppliers.

Import growth from Asia will accelerate.—The strengthening of the dollar vis-à-vis the Asian currencies makes products produced in the region more price-competitive in the United States. So far a flood of cheap imports from Asia has not materialized because Asian exporters have been severely constrained by credit shortages and enormous increases in the domestic currency cost of imported inputs. Once credit and cash-flow bottlenecks are relieved, however, the promised surge of Asian imports should arrive.

General U.S. inflationary pressures will be reduced.—A strong dollar and falling import prices help maintain already meek U.S. domestic price pressures, especially for tradable foodstuffs, raw materials, manufactured goods, and foreign travel. Lower prices benefit consumers, whose real incomes are effectively boosted. In turn, consumer products enjoy higher sales. Moreover, the expected moderating impact of the Asian crisis on prices has prompted the Federal Reserve to eschew increased interest rates even as the U.S. economy continues to grow robustly. Continued low rates benefit interest-rate-sensitive sectors such as housing and finance.

Quantitative Assessment of the East Asian Economic Crisis on The U.S. Economy

Because the implications of East Asia's problems are varied, it is difficult to use partial analysis to assess the impact of the crisis on individual U.S. industries or on the U.S. economy as a whole. For instance, to quantify the aggregate impact of the crisis, we could not simply compute the loss of Asian exports and the increase in imports from Asia for each industry and then deduct these totals from GDP. This simple method ignores the effects on the up-stream suppliers to exporting- and import-competing firms. Moreover, such an analysis does not include the positive impacts on the economy of lower prices and lower interest rates. Indeed, to date, these effects seem to have dominated the negative trade consequences of the crisis.

This report quantifies the diverse industrial impacts of the crisis-induced changes in trade with East Asia through simulations of the INFORUM LIFT model, a dynamic, macroeconometric, interindustry representation of the U.S. economy. LIFT produces annual forecasts for a variety of industry indicators such as output and employment, as well

as macroeconomic totals such as exports, imports, and GDP. The model contains an interindustry accounting (input-output) framework embedded in the structure of the National Income and Product Accounts (NIPA). The input-output accounting ensures that industry output is determined not only from final demand (personal consumption, government spending, investment expenditures, and exports) but also from intermediate demand (sales of goods and services used as inputs to other sectors). Combining the interindustry formulation with the behavioral modeling of economic variables, LIFT employs a "bottom-up" approach where macroeconomic totals are computed from the sum of industry quantities. For example, total investment, total imports, and total wage income are not projected directly, but are computed from the sum of their parts: investment by industry, imports by industry, and labor compensation by industry.

The LIFT model is particularly suited to analyze the effects of an international trade shock on individual industries and on the economy as a whole, for several reasons. First, since it contains industry accounting for exports, imports, and import prices, trade changes can be modeled by industry. For example, East Asia is a relatively important partner for U.S. apparel, machinery, and electronics trade. With the LIFT model, the implications of the crisis on these sectors can be explored at the sectoral level. Second, the model captures not only the direct impacts of trade changes on individual sectors, but also the indirect impacts on sectors due to the interrelationships among them. Effects on the ferrous-metal industry, for instance, will include not only lost export business, but also the lost sales to domestic customers who themselves are experiencing lower export volume. Finally, the model's general-equilibrium (economy-wide) structure ensures that the important macroeconomic consequences of a trade shock, such as changes in inflation, interest rates, and income, are fed back into the determination of domestic demand and sectoral supply. In this way, the Asian crisis' indirect, but nonetheless significant, stimulus to personal consumption and residential construction is charted.

Assumptions for Export Volumes and Import Prices

For simplicity, the goal of these simulations is a focused one: to examine implications for the United States of changes in East Asian merchandise trade. To assess the response of the U.S. economy to changes in the international trade environment, the LIFT model was simulated from 1998 to 2002 for three scenarios using different assumptions for exogenized exports and for exogenous import prices for the 50 sectors of tradable goods in the model. The three scenarios simulated were the following.

1. The No Asia Crisis Case—Assumes that the financial crisis in Asia never occurred and that economic growth, inflation, and exchange rates for 1997-2002 will evolve as indicated by the April 1997 Consensus Forecasts. The exogenous demand for U.S. exports from Asia and the exogenous U.S. import prices for this scenario are roughly the same as the INFORUM international system forecast in spring 1997.

2. The Expected Case—Posits an outcome for each East Asian country as indicated by the current (April 1998) Consensus Forecasts for Asia. Specifically, real imports to each country and for each industry are projected to be reduced by a multiple of the difference in GDP implied by the difference in the April 1997 and the April 1998 forecast GDP growth rates. Generally, this multiple is 3. These import assumptions are transmitted to the U.S. model by reducing U.S. exports in each industry by the decrease in each country's imports times the 1995 sectoral share of that country's imports in total U.S. exports. U.S. sectoral import prices are assumed to fall by the depreciation of the real exchange rate for each country times the sectoral share of that country's exports in total U.S. imports in 1995.

3. The Severe Case—Assumes that the ultimate economic contraction in the region has been underestimated by current forecasts. Specifically, the scenario assumes that the contraction in Asian imports for each sector is double that of The Expected Case. Prices of U.S. imports are the same as in The Expected Case.

Electronics equipment and components were treated somewhat differently than the other industries. This industry accounts for the highest volume of both exports and imports with East Asia. More than in other sectors, U.S. electronics exports to Asia are intermediate goods such as microprocessors. To the extent that Asian demand falls for electronics equipment, U.S. exports to the region will be negatively affected. On the other hand, if currency shifts allow Asia to expand its position in the world electronics equipment and components market, its demand for intermediate components from the U.S. will be largely maintained. For Electronics, we assumed more moderate reductions for exports than were assumed for other goods.

Table 1 provides an estimate of the aggregate exogenous impact (or trade shock) on U.S. exports and import prices of adjusting the sectoral exports and import prices as described above. Relative to The No Asia Crisis Case, U.S. real exports are reduced by 2.1 percent in 1998, 3.9 percent in 1999, and 4.2 percent in 2000 for The Expected scenario. For The Severe Case the figures are -4.2 percent in 1998, -7.7 percent in 1999, and -8.5 percent in 2000. For both scenarios, aggregate import prices (on a NIPA basis) are assumed to be reduced by around 4.3 percent in 1998, 4.1 percent in 1999, and 3.4 percent in 2000.

Table 1. Trade Shocks Applied in Expected and Severe Scenarios

		1997Growth	Percentage deviation from No Asia Crisis Case				
	Scenario	Rate(%)	1998	1999	2000	2001	2002
Underlying Assumptions							
Exports,goods&services	expected	12.3	-2.1	-3.9	-4.2	-4.3	-4.3
	severe		-4.2	-7.7	-8.5	-8.6	-8.6
Import price deflator	expected	-4.0	-4.3	-4.1	-3.4	-3.4	-3.5
	severe		-4.4	-4.0	-3.4	-3.4	-3.6

For 2001 and 2002, the percentage value of the trade shocks are roughly equivalent to the 2000 figure. This outcome reflects forecasts of a restrained recovery in Asian growth over 2000-2002. The modest expansion prevents Asian import demand and export prices from making up lost ground. A stronger recovery, which would hopefully materialize subsequent to 2002, would push the trade shocks toward zero.

Impact on the U.S. Economy—An Aggregate View

Changes in Asian international trade will have a generally adverse impact on the U.S. economy in 1998 and 1999. Results in percentage deviations for economy-wide variables are displayed in Table 2. In The Expected Case, the level of GDP is reduced from The No Asia Crisis Case level by 0.7 percent in 1998. In 1999 and 2000, GDP rebounds to stand at only 0.4 percent less than in the No Asia Crisis Case. In The Severe Case, the reduction of GDP in percentage terms is almost twice that of The Expected Case. Inflation is reduced significantly in both crisis scenarios. Consumer prices are reduced by 0.5 percent in 1998 and by 1.0 percent in 1999 in The Expected Case, and by slightly more than these figures in The Severe Case.

Table 2. Macroeconomic Results: Expected and Severe Scenarios

		1997	Deviation from No Asia Crisis Case				
	Scenario	Growth	1998	1999	2000	2001	2002
Macroeconomic Aggregates		Rate(%)	------ Percentage deviation -----				
Real GDP	expected	3.8	-0.7	-0.4	-0.4	-0.5	-0.6
	severe		-1.2	-0.8	-0.8	-0.9	-1.1
Personal consumption	expected	3.3	0.0	0.8	0.7	0.6	0.6
	severe		-0.2	1.0	1.0	0.9	0.8
Residential structure	expected	2.8	0.6	2.3	1.6	0.9	0.0
	severe		-0.2	2.3	2.1	1.0	-0.1
Non-resid. structures	expected	3.6	-0.8	0.1	-0.7	-0.5	-1.0
	severe		-1.8	-0.5	-1.5	-1.1	-1.7
Producers' durable eq.	expected	12.5	-0.2	0.3	0.3	0.4	0.2
	severe		-1.1	-0.3	-0.3	-0.2	-0.3
Exports, gds. & serv.	expected	12.3	-1.9	-3.5	-3.8	-3.9	-3.9
	severe		-3.8	-7.1	-7.7	-7.8	-7.9
Imports, gds. & serv.	expected	14.2	2.2	2.3	1.4	1.3	1.5
	severe		1.5	2.0	0.7	0.5	0.9
Employment and Income							
Employment (thousands)	expected	2.2	-463	-438	-294	-308	-463
	severe		-871	-807	-656	-696	-926
Real disposable income	expected	2.9	0.0	0.3	0.2	0.1	0.0
	severe		-0.3	0.1	0.0	-0.1	-0.3
Prices and Interest Rates							
GDP deflator	expected	1.9	0.0	-0.5	-0.7	-0.6	-0.6
	severe		0.0	-0.7	-1.0	-1.0	-0.9
Consumer prices	expected	2.0	-0.5	-1.0	-1.2	-1.1	-1.0
(Nat'l. Acct. based)	severe		-0.6	-1.2	-1.5	-1.5	-1.4
Export prices	expected	-2.2	-1.6	-1.8	-1.5	-1.0	-0.9
(Nat'l. Acct. based)	severe		-1.6	-1.8	-1.8	-1.3	-1.2
Import prices	expected	-4.0	-4.3	-4.1	-3.4	-3.4	-3.5
(Nat'l. Acct. based)	severe		-4.4	-4.0	-3.4	-3.4	-3.6
		1997Level	Deviation in rate, percentage points				
3-mos interest rate	expected	5.1	-0.2	-0.2	-0.3	-0.3	-0.1
	severe		-0.3	-0.3	-0.4	-0.4	-0.2
10-yr. interest rate	expected	6.4	-0.1	-0.5	-0.4	-0.4	-0.2
	severe		-0.3	-0.8	-0.7	-0.6	-0.4
External Balance (gds&serv)		1997Level	--- Billions of current dollars ---				
Trade balance	expected	-113.7	-18.0	-43.1	-41.9	-37.2	-44.9
	severe		-31.9	-80.1	-85.3	-83.1	-96.7
Exports	expected	931.6	-39.7	-65.7	-70.0	-69.2	-72.6
	severe		-62.6	-107.3	-124.0	-127.5	-136.3
Imports	expected	1045.2	-21.7	-22.6	-28.1	-32.0	-27.7
	severe		-30.7	-27.2	-38.7	-44.4	-39.6

Obviously, the results for both alternatives show a large loss of exports and a strong increase in imports. In The Expected Case, other effects are favorable, however. Notably, real personal income is enhanced because a loss of nominal income is more than offset by increases in purchasing power brought about by lower consumer prices. This increased income, combined with lower inflation and lower interest rates, propels personal consumption and residential investment to levels well above The No Asia Crisis Case throughout the simulation horizon. Business investment also is largely maintained slightly above The No Asia Crisis levels because stronger domestic consumption, lower interest rates, and more attractive machinery prices offset any loss of investment demand due to a weakening of net exports. In fact, the reduction of GDP in The Expected Case scenarios expands slightly to 0.5 percent and 0.6 percent in 2001 and 2002, from 0.4 in 1999, because the stimulus to personal consumption and business investment winds down in these years. In The Severe Case, the magnitude of lost exports has a much greater direct effect on other parts of the economy. For instance, the fall in producers' durable equipment investment due to decreased output outweighs any stimulus from lower equipment prices and lower interest rates.

The negative effects of the Asian crisis could not, by themselves, be sufficient to throw the U.S. economy into recession. Particularly, the overall economic environment must be considered in evaluating the employment impacts of the Asian crisis. In The Expected Case, jobs are reduced by 463,000 (0.4 percent of the total number of private sector jobs in the economy in 1997). While some of these lost jobs would result from direct layoffs, most are new positions that would have been created otherwise. Indeed, several economists have noted that, given the current tight state of the labor markets and of capacity usage, macroeconomic effects of the Asian crisis such as those shown here may be exactly what the economy needs to continue to grow without overheating. The reduction of employment in The Severe Case, however, is more consequential, approaching the one-million-jobs level. Such a loss would undoubtedly involve a more significant amount of layoffs, bringing the Asian crisis home to many more communities.

Finally, the nominal external balance worsens in each crisis simulation. Relative to The No Asia Crisis Case, the goods and services trade deficit deteriorates by $18 billion in 1998 and by $43 billion in 1999 in The Expected Case, and by $32 billion and $80 billion in The Severe Case. In the crisis scenarios presented here, the Asian crisis stimulates a widening of the trade deficit through 2002.

Impact of the Asian Crisis on the U.S. Economy - An Industry Perspective

The most important implications of Asia’s crisis will be its effects on the structure of U.S. economic growth in the coming years. These structural consequences of the crisis are revealed by examining the industry results of the Asian crisis simulations. Table 3 summarizes the impact on real output by broad industry group. Manufacturing and Agriculture bear most of the adverse impact of the shock. Several trade-orientated manufacturing sectors, such as electronics, machinery, apparel, miscellaneous manufacturing (toys and sporting goods, jewelry, office supplies), metals, metal products, and chemicals experience falls (relative to the "no Asia crisis" case) that exceed 3 percent to 4 percent. Though manufacturing, mining, and agriculture account for less than 22 percent of persons employed in the private sector, these industry segments bear 68 percent of the 1998 employment loss under The Expected Case.

Obviously, a trade shock hits these industries disproportionately, because trade is more important to the goods-producing sectors of the economy. The output consequences depend on the changes in sales to intermediate customers as well as the direct effects of trade changes. Therefore, several sectors that do not have a significant direct participation in international trade, such as ferrous metals, transportation services, and utilities, experience important indirect output effects from the Asian economic crisis. Conversely, other service sectors with little direct or indirect participation in trade, such as health and education, escape relatively unscathed. Retail trade activity (the single largest sector of the economy) actually expands due to increases in personal consumption.

Once again, these figures must be judged in the context of recent developments. While electronic parts and communications equipment is the hardest hit in terms of output percentage, the effect will be rather marginal given the sector's recent rapid growth. Other industries where the negative impact

Table 3. SUMMARY RESULTS: REAL OUTPUT BY AGGREGATE INDUSTRY

(Percentage deviations of Expected (e) and Severe (s) cases from No Asia Crisis case)

		1998	1999	2000	2001	2002
Agriculture, forestry, and fisheries	e	-1.5	-1.5	-1.6	-1.7	-1.8
	s	-2.7	-2.9	-3.1	-3.3	-3.4
Mining	e	-1.1	-0.8	-0.8	-0.9	-1.0
	s	-1.8	-1.5	-1.5	-1.6	-1.8
Construction	e	-0.3	0.3	0.1	0.0	-0.4
	s	-0.8	0.1	-0.1	-0.3	-0.7
Nondurables manufacturing	e	-1.8	-1.6	-1.4	-1.6	-1.7
	s	-2.7	-2.6	-2.4	-2.6	-2.7
Durables manufacturing	e	-3.1	-2.8	-2.6	-2.7	-2.8
	s	-4.6	-4.4	-4.2	-4.3	-4.5
Transportation	e	-0.7	-0.5	-0.7	-0.9	-1.0
	s	-1.3	-1.0	-1.4	-1.7	-1.9
Utilities	e	-0.7	-0.4	-0.4	-0.5	-0.6
	s	-1.2	-0.8	-0.8	-1.0	-1.1
Trade	e	-0.2	0.4	0.3	0.1	-0.1
	s	-0.8	0.2	0.0	-0.3	-0.5
Finance, insurance, and real estate	e	-0.3	-0.2	-0.1	-0.1	-0.3
	s	-0.6	-0.6	-0.5	-0.5	-0.7
Services, nonmedical	e	-0.6	0.0	0.0	-0.2	-0.3
	s	-1.1	-0.2	-0.2	-0.4	-0.6
Medical Services	e	-0.2	0.1	0.1	0.3	0.3
	s	-0.4	0.1	0.2	0.4	0.3

on production is small relative to 1997 growth includes aerospace, computers, and agricultural equipment. On the other hand, the shock will take a heavy toll on the apparel and consumer electronics sectors which were already experiencing decline. Most industries, however, could perceive that the weakened demand resulting from the Asian crisis will be largely offset by increased domestic demand. On balance, actual production levels for 1998 and 1999 could be close to those of 1997. Few industries are slated to endure significant production declines as a result of the Asian economic crisis.

Conclusion

For the U.S. economy, the crisis will be felt through lower exports, greater imports, decreased inflationary pressures, and changes in relative prices. So far, the economy has had only hints of these effects. While export growth is starting to slow and price pressures are subdued, an import surge from Asia has yet to materialize. The beneficial effects of lower import prices have helped support rapid economic growth and low interest rates. Nonetheless, economists expect a more visible negative impact from Asia later this year.

On balance, the U.S. economic expansion will be slowed, but should not be derailed by the Asian crisis. Rather, the most important consequence will be an alteration in the nature of the expansion. Specifically, the Asian crisis will shift the current emphasis of economic growth from business investment, exports, and manufacturing, to personal consumption, housing, and services. Production and employment growth in tradable goods sectors will be reduced over the next two years. On the other hand, consumers will be buoyed by reduced inflation, lower interest rates, and elevated real income. This shift in the composition of economic growth will contribute to a widening, or at least a persistence, of the U.S. trade deficit. Ultimately, the willingness of foreigners to finance this deficit may determine whether strong U.S. economic growth can continue.

The complete report includes tables with results (production, exports, imports, and jobs) for 50 industry sectors. It is available from The Manufacturers Alliance. Single copies of **The Asian Economic Crisis and the U.S. Economy: An Industry Prespective** are $10.00 for Alliance member company executives and $15.00 for all other purchasers. Contact Jeff Werling at The Manufacturers Alliance, 1525 Wilson Boulevard, Arlington, Virginia, 22209, 703-841-9000 (phone), 703-841-9514 (fax).

The Manufacturers Alliance (MAPI) is a policy research organization with approximately 450 member companies including leading producers in heavy industry, automotive, electronics, precision instruments, telecommunications, computers, chemicals, oil and gas, aerospace, and other high-technology industries.

The Interindustry Forecasting project at the University of Maryland (INFORUM) dedicated to improving business forecasting and government policy analysis. For over 30 years, its forecasts, models, and consulting services have been used by business and government.