# IMPACT OF THE ASIAN CRISIS ON TRADE FLOWS: A FOCUS ON INDONESIA AND AGRICULTURE

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## INTRODUCTION

In the recent Asian crisis, large exchange rate adjustments and, for the case of Indonesia, a currency depreciation occurred that dwarfs most previous depreciations observed under conditions of modest inflation levels. From its value prior to the onset of the Asian crisis in June 1997 (Rp. 2400 per U.S. dollar) to its March 1999 level (Rp. 8800), the Indonesian Rupiah lost almost 80 percent of its value. At its low point it had lost about 85 percent (Rp. 15,000 in July/August 1998). This caused an increase in traded goods prices of 3.7 times or 270 percent at the March exchange rate. Furthermore, this depreciation was abrupt in its timing in that most of the fall took place from October 1997 to May 1998. Devaluation was experienced under conditions of relative balance in the prior macroeconomic situation which is not only unusual in historical context but is somewhat unique among other Asian countries experiencing this crisis.

The Indonesian experience is unique in a number of ways, including the extent of the crisis. Furman and Stiglitz (1998) wrote... "The depth of the collapse in Indonesia, if not unparalleled, is among the largest peacetime contractions since at least 1960 (excluding the experience of the Transition economies)." This raises the question of what is the impact of such a dramatic exchange rate movement and economic collapse on important economic variables such as the level of exports and imports? Examining such questions may offer guidance as to what kind of policy responses can minimize the economic turmoil from exchange rate instability. This has become more relevant now, given that exchange rates have become so much more unstable in many countries in the three decades since the abandonment of the Bretton Woods agreement in 1971 (Orden, 1999).

The focus of this paper will be the effect of the Asian crisis on Indonesian trade flows. Discussion begins with the conditions that led to the crisis, followed by an examination of effects of massive currency depreciation on a variety of Indonesia's trade flows. Aggregate exports and imports (excluding the oil and gas sector), and agricultural exports and imports (at the aggregate and the specific commodity level) are used to illustrate impacts. This focus is used because we have more ready access to detailed trade data and, in some cases, detailed commodity market and policy knowledge. We also have cost data for a sample of commodities which were used to simulate the likely production or trade effects of the currency depreciation. For reasons discussed later, Indonesia's circumstances may be unique enough that the results may not be easily generalized to other countries in Southeast Asia. The situation for wheat, Canada's largest export to Indonesia, is also examined. Finally the effect of these changes in Indonesia on prospective trade flows with Canada, and

the effect these changes are likely to have on Canada's exchange rate, are considered. The data used are from the Indonesian Central Bureau of Statistics, monthly import and export revenue data from January 1997 before the crisis to December 1998.

## BACKGROUND

There are some important features of Indonesia's economy and that of other Association of South East Asian Nations (ASEAN) countries that preceded the crisis (Flatters, 1998). These countries had unusually high growth rates during the 1980s and 1990s, and high domestic savings and investment rates, increasingly open trade and industrial policies. This followed more than a decade of gradual trade deregulation, rapid expansion of labour-intensive manufactured exports, some balance between taxation and subsidy in the agricultural sector, prudent macroeconomic policies (i.e., disciplined non-inflationary monetary policy, non-deficit fiscal policy and relatively appropriate exchange rates). Increasingly, capital markets were better developed and opened up. From the experience of previous macro crises, one would not have expected these Asian economies to be likely candidates for economic collapse.

However, there were policy areas and circumstances in some sectors that created problems. For example, there were some sectors with considerable protection, with supporting import restrictions, investment licensing restrictions, and sector-specific or firm-specific tax exemptions. The banking sector had grown substantially under programs of liberalization, but the enforcement of prudential regulations and financial supervision was often weak. This was sometimes combined with small capital bases, pressures on banks to lend to risky and dubious ventures of state owned enterprises and privileged investors, and a rapid increase in foreign debt held by some banks. The result was a set of banking systems with poor balance sheets and unusual leverage that would be acceptable only in times of rapid growth when most loans would be repaid and lending errors were few. But the system was ill-prepared to deal with a major reduction in economic growth or currency depreciation.

Despite differences across countries, the similarities in this crisis were: (i) underlying structural problems in the financial and real sectors, and (ii) excessive exposure to short term capital flows. Then in 1997 there was a massive reversal of capital flows. Using data from the Institute of International Finance[2], net private investment to the five countries most affected (Indonesia, Malaysia, Philippines, South Korea and Thailand) ... "fell from $93.8 billion in 1996 to -$6.0 billion in 1997, implying a net reduction of $99.8 billion. Equity investment accounted for $17.6 billion of this drop, and private credit for $82.1 billion. This is a huge reversal of capital flows, and could not help but have serious implications for the economies involved, despite the offsetting increase in official capital flows of $33.5 billion" (Flatters, 1998).

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[2] As reported in the Asian Wall Street Journal, September 30, 1998.

A third common factor that inhibited recovery is that the crisis lowered incomes in all five economies. This resulted in negative economic growth in the five countries, and lowered growth in the whole region. Given the heavily integrated trade flows within the region, particularly with Japan which has had its own economic difficulties to deal with, this has meant a major loss of export demand among the five worst-hit countries.

In Indonesia, there were some additional elements that should be noted to help understand trade flows. First, the extent of currency depreciation, loss of income and export demand, and lingering domestic recession were more substantial in Indonesia than in any of the other Asian countries. Second, there was the issue of a large build-up of foreign debt in the non-bank private sector. This has introduced a major debt restructuring problem that is still plaguing the private sector and its ability to resume production. Third, at the start of the crisis, Indonesia was in good shape in terms of macroeconomic soundness. The currency was judged to be somewhat overvalued, but probably by no more than 20 percent, and there was no fiscal deficit or serious inflation problem. So the depreciation introduced a large disequilibrium in the prices between traded and non-traded goods that is being worked out in 1998 and 1999 with a high level of inflation. The inflation level in 1998 was roughly 80 percent although inflation levels in 1999 have become much lower. Fourth, there is now even greater competitiveness in many sectors where Indonesia's costs are internationally lower and where there is substantial know-how and skills. There remain some heavily protected sectors where Indonesia is uncompetitive, particularly firms that were associated with Suharto's children and a small number of closely allied interests.

Fifth, Indonesia's policy response to the crisis, although initially sound, was mixed during late 1997 and the first half of 1998. This created considerably lower levels of credibility in the government's commitment to reform as well as in the soundness of government policy responses. In the second half of 1998 there also was a major increase in political uncertainty and social unrest, creating even more economic uncertainty and investment risks. The end result was a sharp decline in investor confidence that appears still to be inhibiting new investment and external financing (Flatters).

Another issue is that the crisis has not affected Indonesia in a homogeneous fashion across the country. The crisis is worst in those industries where there are many non-tradeable goods being produced and where domestic demand is critical, where imported raw materials are important, and where credit or external financing is important. More idiosyncratically, the crisis also affects those firms that had been most highly levered and that had incurred large levels of foreign currency debt. In general this means that the outer islands (outside Java) and resource-producing sectors with relatively large value-added, like a large part of the agricultural sector, are not badly hurt. Most of the agriculture sector produces tradeable goods, either exported or import-competing goods, and for such producers, output prices have increased markedly. It is also the case that for farm production, traded inputs account for a small percentage of total revenues (less than 20 percent), and credit

accounts for an even smaller proportion of total revenue. So net incomes in this sector have grown substantially with the crisis.

The Asian crisis as it affected Indonesia can be summarized as follows. Mid-year 1997 brought about a major liquidity outflow in private capital which started a depreciation of the Rupiah. That depreciation accelerated so that currency value fell by roughly 80 percent in the period from August 1997 to February 1998. Asset markets, notably land and stock market values deflated sharply. A major banking crisis followed with the capital outflows, shrinking collateral values and rapidly depreciating currency values. This sector was very vulnerable to these changes due to many poor balance sheets, weak levels of capitalization, and high levels of foreign debt exposure. The end result was a collapse in the provision of credit.

High levels of foreign debt exposure also affected a number of private sector firms that became technically insolvent. With the increased cost of foreign debt service, many such firms were crippled by an inability to service this debt and obtain further credit. Heavy layoffs and increased unemployment followed, with consequent declines in labour income. With this widespread loss of purchasing power, domestic consumption declined and import demand dropped. Raw material imports also fell with the combination of higher Rupiah costs and the disappearance of short-term financing. Despite the favourable exchange rate, exports also were reported to have declined in many industries along with the fall in imported raw materials and the decline in offshore demand for Indonesia's exports throughout Asia. All of this combined to generate a real GDP decline in 1998 of 15 percent. Following the fall of the Suharto regime there has also been an increase in political instability plus widespread social unrest during 1998, making it even more difficult for the economy to return to normal.

The purpose of this elaborated background is to give some appreciation for the circumstances that contributed to and arose from Indonesia's dramatic exchange rate depreciation. It is also to show that the currency depreciation was only a part of the substantial changes that have comprised this crisis. More variables than the exchange rate have been changing to affect trade flows.

## EFFECT OF EXCHANGE RATE CHANGES ON INDONESIA'S TRADE FLOWS

### Expectations In Relation to the Aggregate Data

With a Rupiah depreciation of the magnitude Indonesia has experienced, one might expect a large effect on trade flows. For traded goods, the output price facing Indonesian producers roughly tripled, although the costs of imported raw materials also tripled. Over whatever margin there is for domestic value-added, profits should have increased to increase production for export or to compete with imports. This supply response should occur with some lag and may not be observed for more than a year for some products like tree crops with long gestation periods. Consequently export response, even to a tripling in output price, may be lagged enough so as not to be observed within our relatively short data period of less than a year and a half.

On the import side, prices also increased roughly three-fold and demand would also be expected to fall. The extent of this response would depend on the demand elasticity, and its speed dependent on how quickly demand can be reduced in response to sharp price increases. But on the consumption good side it can be expected that import demand would decline faster than exports could increase if production expansion were involved. So on this basis, exports can be expected to be increasing with more of a lag than imports would decline, which should be occurring quickly.

### Other Factors

Actual trade data will incorporate the influence of other variables, noted above, that have changed in addition to the Rupiah depreciation. First, the financial sector was substantially shut down in 1998. Many banks were struggling to maintain solvency. There was reportedly little trade finance available, and credit generally was difficult to obtain. This would have the effect of limiting production and import financing for those firms requiring bank finance. It would act as a heavy tax upon export expansion for operations relying upon imported raw materials but without the capacity to self-finance. Most primary agricultural sectors would avoid this constraint because of the small share of purchased raw materials in farm operations (Barichello *et al*, 1998). Therefore, the effect of these financial sector difficulties would be to reduce observed export response except in the agricultural sector where credit would seem to be less important and where exports should show more rapid growth.

A related financial issue in the non-agriculture sector is that a number of private firms had large levels of foreign debt and their situation has been like that of the many banks described above. Many have reportedly been effectively shut down as they deal with restructuring their overhanging foreign debt. Until their foreign debt restructuring is resolved, there is unlikely to be any export response from these firms.

Second, export demand for some commodities is reportedly down, specifically those whose markets are largely in Asia, especially Japan. As well as lowering sales, this may have lowered world market prices, so export revenues would drop on both accounts. It is unclear exactly which *agricultural* commodities would be affected by the fall in Asian demand, because most Indonesian agricultural exports face a broader world demand. Further, the demand for most food products is relatively income-inelastic, meaning a more modest reduction in demand from Asian markets. The broader effect of this demand factor would be to reduce observed export response, but this is unlikely to be particularly important for agricultural exports.

Third, within Indonesia the fall in domestic demand should mean lower sales to the domestic market. The only effect this is likely to have on trade flows would be to generate additional supplies for export sale (i.e., an outward shift in the excess supply curve), which would increase export response. However, a related domestic issue is the increase in political and social unrest observed since mid-1998. The unrest would increase the uncertainty associated with a variety of economic functions, from

input supply availability to transportation and storage, increasing costs in all these elements of the supply chain. This would have the effect of raising costs and decreasing export supplies to world markets. To the extent that investor confidence also falls, as is widely claimed, these negative export effects would be greater through raising the cost of capital to Indonesia during these times.

A final matter that would affect aggregate trade data for agricultural commodities is the gestation period of the product. Many Indonesian agricultural export commodities are perennials where production cannot be expanded quickly. Tree crop exports such as coffee, palm oil, rubber, cocoa and tea are all examples. In these crops, there may be no supply response within the time period of our data, and export revenue data will only reflect world market price movements. If those movements are negative (for long run trend reasons or short run increases in supply due to other countries in the region trying to export more under these conditions) it will appear as if exports have declined in response to the currency depreciation.

Several other issues that could have an effect can be discounted. The considerable initial lending from the International Monetary Fund (IMF) and the World Bank is mostly being used to recapitalize banks, or is not yet significantly disbursed. Also, there are numerous deregulation measures that are also being undertaken, but these measures will have their impact in several years time, not in the present.

## Potential Agricultural Exports

To anticipate the impact of Indonesia's currency depreciation on agricultural profitability and potential exports for different commodities, a series of partial budgets were constructed and examined for this purpose (Barichello et al, 1998). This study was built on field work done over recent years using the Policy Analysis Matrix approach, and had the benefit of relatively up-to-date farm cost and revenue data. Output prices were adjusted up to 1998 values for both traded and non-traded outputs and inputs, and the input-output coefficients were kept the same as in the original studies. The commodities examined were rice, corn, soybeans, sugar, dairy, crude palm oil, and cashew nuts. The results show that *all* commodities become export competitive. Some of this was borne out in 1998 field work (eg., corn).

But there are some caveats that must be considered before accepting such results. First, the export response as calculated will be overstated in some cases. There is an additional constraint on export response in agriculture, namely the competition across traded agricultural goods for common inputs such as land. All export commodities will become more profitable, but after the general equilibrium effect of rising land prices, only some of the increased exports will be profitable. This will mean simply that observed export response will be less than what would have been predicted by partial equilibrium budgets for these commodities calculated without increasing land prices.

Second, some commodities may not have been exported previously, in which case there are issues such as product grading and quality levels that previously may

not have been important on the domestic market. Also, changing trading, storage and transportation patterns from serving only the domestic markets to serving overseas markets can take some time to work out. These factors may delay export response in the short run from what one would expect from making longer run calculations.

## RECENT INDONESIAN TRADE DATA

We start with aggregate data on non-oil/gas export revenues from Indonesia for the period from January 1997 to December 1998. The data were obtained from the Central Bureau of Statistics reported in U.S. dollars. Oil and gas exports are subtracted from total exports because they are a significant part of the total and often conform to longer term contracts rather than current conditions.

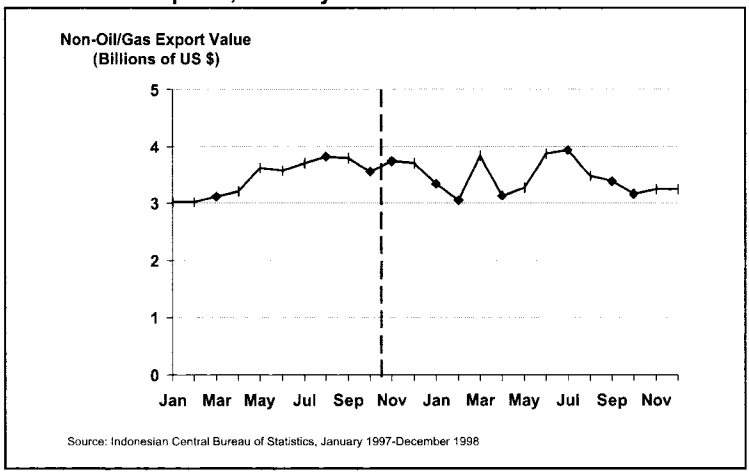
### Non-Oil/Gas Exports

Non-oil/gas exports are displayed in Figure 1. To interpret this pattern of exports, note that the currency began to depreciate in August 1997, but the real decline did not occur until October, and the most precipitous fall was from December 97 to February 98. Over that latter period the US dollar value of the Rupiah fell from about Rp. 4000 to Rp. 12,000. To help interpret these data, a vertical dashed line is drawn in all figures at October 1997 to indicate the time period when the Indonesian exchange rate began to fall significantly.

The striking feature of this export performance is its lack of a trend since October 1997.

Exports grew strongly in the first half of 1997, peaked in August, then levelled off and declined slightly to December 1997. From December 1997 to December 1998, exports have shown a somewhat erratic pattern but without trend. From December 1997 to February 1998, non-oil/gas exports fell by 17 percent, rebounded fully in March, and continued up and down to August in the range of $3.1 to $3.9 billion per month. From August to December 1998 exports stabilized with a small decline to about $3.2 billion per month. A time trend fitted to the post-October 1997 data is highly insignificant statistically and it explains almost none of the variation.

**Figure 1: Non-Oil/Gas Exports, January 1997 to December 1998**

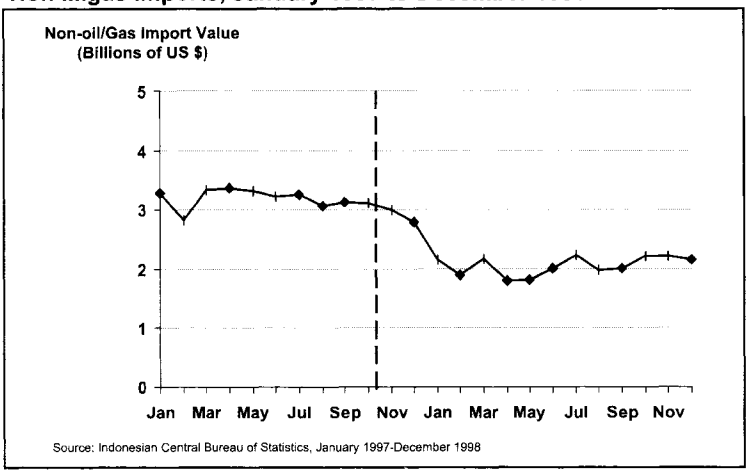



Evidence of an exchange rate-induced export boom since the largest part of the depreciation is not yet seen in these data, even after 14 months. The last time Indonesia significantly devalued its currency (by about 40 percent in September 1986) the dramatic export growth that followed began to be revealed in the aggregate data in about 8 months time. Then, as now, we could find specific sectors where exports were booming at an early stage, particularly in local medium-scale firms and industries with large amounts of value added, such as (in the current case) textiles, wood and rattan furniture production and some parts of agriculture. This time the depreciation was much larger but, aside from the large fluctuations in the actual exchange rate, an export response is being constrained by the many other factors outlined above that appear to be affecting a different but large set of firms.

## Non-Oil/Gas Imports

The situation for aggregate imports is displayed in Figure 2. We anticipated that imports would be reduced by the depreciation more quickly than exports would be increased, and the evidence of Figure 2 supports this expectation. Non-oil/gas imports were following a slight decline during most of 1997 until October. Then they fell by 40 percent from October to February 1998. Subsequently they have bounced along between $1.8 and $2.2 billion per month, and have stabilized at $2.2 billion during the last quarter of 1998. The import decline is statistically significant using a time trend, either measured from January or August 1997, and it explains about two thirds of the variation in import values.

**Figure 2: Non Migas Imports, January 1997 to December 1998**



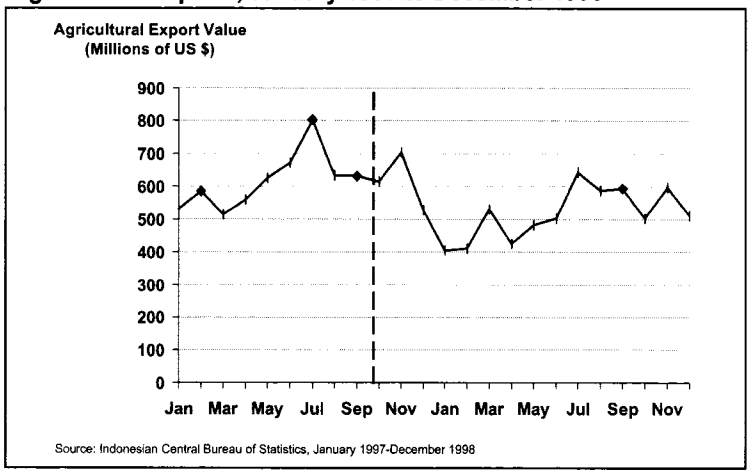

This pattern in imports is consistent with their exchange rate sensitivity, but several other factors occurring would give similar results. One such factor is domestic income, although it would seem unlikely that incomes would have fallen as quickly as imports did. The collapse of the banking sector and drying up of credit would also produce this result, given that import financing through bank credit is widely used. Further, a reduction in investor confidence or any other factors that would damage export activity would also have a negative effect on imports to the extent that those exports would use imported raw materials.

## Agricultural Exports

The data on Indonesia's agricultural exports are shown in Figure 3. Similar to the case of aggregate exports, it is not easy to detect the effect of the currency depreciation in agricultural exports. This is a little surprising, given that on *a priori* grounds there is reason to expect that agricultural exports would be more responsive to the depreciation than would manufactured or non-agricultural exports. Agricultural exports are dominated by raw or primary products, and the production of these primary commodities involves few few imported raw materials in contrast to most manufactured exports.

Looking at the data more closely, there is substantial pre-depreciation growth in exports, from January to July 1997, of at least one third over the half year. This growth is followed by a sharp decline that more than erased the gains in the first half of the year, particularly the November 1997 to January 1998, similar to that observed for aggregate non-oil/gas exports. In 1998, there is a fairly steady increase from January-February to year end of about 50 percent again. But given the time pattern of the depreciation, the general chaos in exchange rate movements and financial markets that reigned in the December 1997 to February 1998 period, and some lagged response in expanding farm exports, the 1998 pattern of exports is quite consistent with moderate growth in exports in response to the depreciation.

**Figure 3: Agricultural Exports, January 1997 to December 1998**



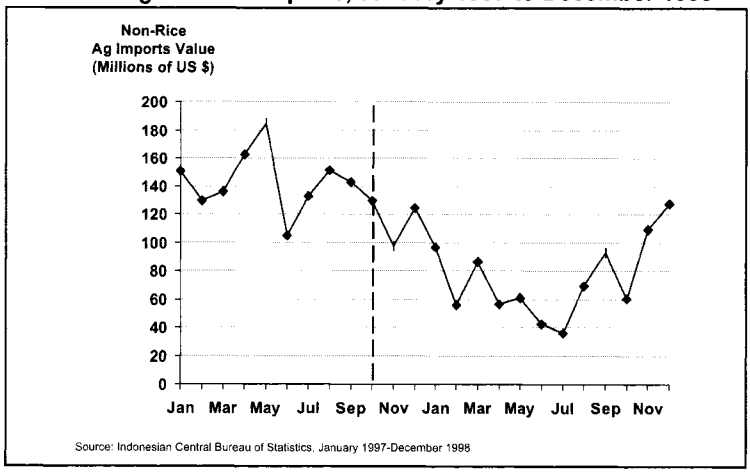

## Agricultural Imports

The picture of agricultural imports is given in Figure 4. The data in this figure are calculated to exclude rice imports. The rationale for this omission is somewhat like that used for removing oil and gas trade from the aggregate export and import data - rice is a very large category among agricultural imports that often responds to political circumstances more than direct economic conditions and does so erratically, so including it will often conceal how other import markets are responding to the depreciation. The pattern of imports for the first eight months of 1997, prior to the currency depreciation, is erratic but trendless (and statistically highly insignificant). However, from August 1997 to July 1998 the pattern is clear - agricultural imports are declining[3] but these imports bottomed out in July 1998 and have increased almost all months to the end of the year.

These results are similar to those for aggregate imports in terms of the apparent responsiveness of imports to exchange rate changes. In both cases imports (aggregate and agricultural) appear to respond significantly and rapidly to exchange rate changes. However there is a differences. First the decline in agricultural imports following the currency depreciation was more gradual and extended than was observed for aggregate non-oil/gas imports. Second, in the last five months of 1998 agricultural imports actually increased which is an unexpected result.

[3] A negative time trend through the import data is highly significant and such a simple equation explains two thirds of the variation in imports.

**Figure 4: Non-Rice Agricultural Imports, January 1997 to December 1998**




These patterns of agricultural export and import responses to exchange rate changes in Indonesia are also consistent with those patterns observed by Orden (1999) in examining U.S. trade data. He finds that U.S. agricultural exports to Asia fell by nearly one-third in 1998. From the data above, the decline would likely be even greater for U.S. exports to Indonesia. He also finds that, historically, U.S. imports respond less clearly to exchange rate changes, and that too is consistent with the exports from Indonesia in the current Rupiah depreciation. However, the mixed effect of the depreciation on Indonesian exports may be a "temporary" situation, given the intermediate-term unravelling of the banking system and other domestic economic uncertainties.

## DISAGGREGATED EXPORT DATA

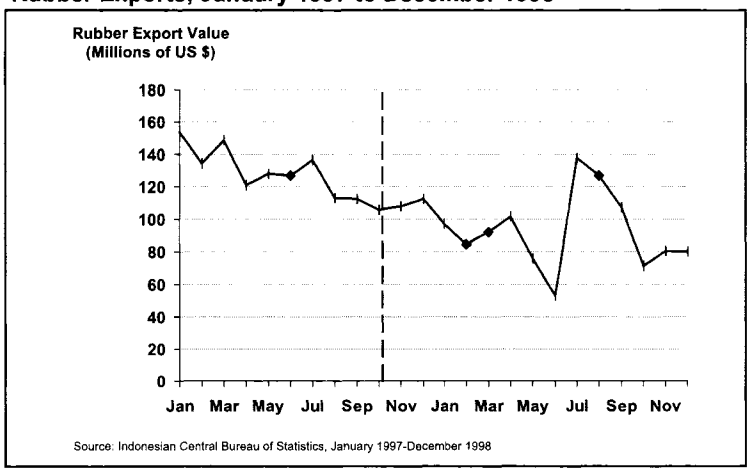
More insight into the export response from agriculture can be obtained from disaggregated commodity-specific export value data. These are found in Figures 5-8 and cover rubber, palm oil, fruits and vegetables, and a residual category - "other agricultural commodities". This latter category includes all agricultural exports other than fish, shrimp, rubber, fats and oils, coffee, cocoa, processed fish, processed fruits and vegetables, other processed foods, fruit and vegetables, animal feed and tea.

Of particular interest are Figures 5 and 6, covering rubber and palm oil. Both are traditionally major agricultural exports from Indonesia and both are tree crops. It takes about 3-4 years from the time of a new planting until there is significant production from the new investment. In addition, both are subject to quite large price movements and cycles in the respective world markets. These two commodities accounted for about 40 percent of Indonesia's agricultural exports in the last 2 years.

## Rubber

In the case of rubber, exports decreased steadily from January 1997 to June 1998 so that by the end of this period, exports were only about 35 percent of what they were at the start. With the increase in plantings and production over the last decade, it is unlikely this decline represents a reduction in export quantities, but rather it is likely a reflection of declining world prices. Then, in July 98, exports more than doubled, following which exports declined again. Because this is a tree crop, another factor might be that rubber farmers, in observing the shift in the exchange rate, decided to undertake more replanting to increase future production. This would normally involve taking down some rubber trees to make room for the new trees, losing some production in the process. But more market-specific knowledge is needed to explain this unusual export revenue pattern, coupled with data on export quantities from Indonesia over the period. One point is clear, however, that this steady decline in exports from rubber will affect the level of aggregate agricultural exports. In fact, it will be offsetting increases in exports from the aggregate of non-rubber agricultural commodities to yield the basically flat pattern of all agricultural exports. More market-specific knowledge is needed to explain this unusual export revenue pattern, coupled with data on export quantities from Indonesia over the period in order to follow exactly what occurred. One point is clear, however, that this steady decline in exports from rubber is large enough to affect the level of aggregate agricultural exports. In order to yield the basically flat pattern of "all agricultural exports", the decline in rubber exports must have been offset by increases in exports from the aggregate of non-rubber agricultural commodities.

**Figure 5: Rubber Exports, January 1997 to December 1998**

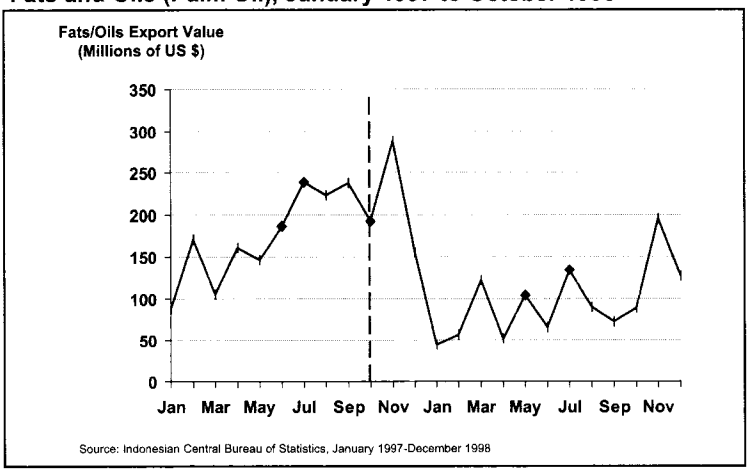



## Palm Oil

The case of palm oil is shown in Figure 6. This trade flow pattern is interesting because it is different from that of rubber and more consistent with what we observe for all non-oil exports. Exports were growing strongly from January to November

1997, after which there was a dramatic fall in exports, from $280 million in November to $50 million in January 98. Subsequently, exports have increased in an erratic fashion to December, tripling on trend from January to December 1998. Although this may seem like a large increase, it regains no more than half the export revenues achieved in the second half of 1997. This relatively modest increase is probably due to palm oil market prices declining during the post-depreciation period. A clearer understanding of these export revenue movements again requires more detailed knowledge of the palm oil market.

**Figure 6: Fats and Oils (Palm Oil), January 1997 to October 1998**




## Fruits and Vegetables

Fruits and vegetables are examined in Figure 7. They account for one-tenth the level of rubber exports but are cited by some as having good export potential. Their export pattern is also erratic. In fact, from what one can glean with only two years of data, export revenues appear to be roughly constant in U.S. dollar terms. January 1998 exports almost doubled from December 1997 but they then fell back to less than half in the subsequent 6 months. Since that time (July 98), exports have been increasing again back to a mean level over the 1997-98 period. If this pattern is exchange rate related, there is little in the data to indicate this is so.

## Other Agricultural Goods

This category captures a large number of categories "not elsewhere specified", including spices, and it is a reasonably large category. Over the July-December 1998 period, this category accounted for average monthly exports of about $62 million, about two thirds the value of monthly rubber exports. This category shows a time pattern that is only weakly consistent with an exchange rate-induced export increase. There is post-depreciation increase in this category of exports but the same observation applies to the first 10 months of 1997, prior to the major part of the Rupiah depreciation, perhaps because it is aggregated across so many individual

commodities that the idiosyncratic effects of individual markets are aggregated out. These exports clearly rose in the first half of 1997, but for the next year remained flat or even declining. Then, from June 1998, this category of exports increased by a factor of roughly 2 to September 1998 and promptly lost almost all of this in the last quarter of that year. The mini export boom seen in the third quarter of 1998 took a while to get going, but such a delayed output expansion would be consistent with the production circumstances of many types of farm products. However, it is a puzzle to explain why this category lost all its export growth in the last three months of 1998.

**Figure 7: Fruit and Vegetable Exports, January 1997 to December 1998**

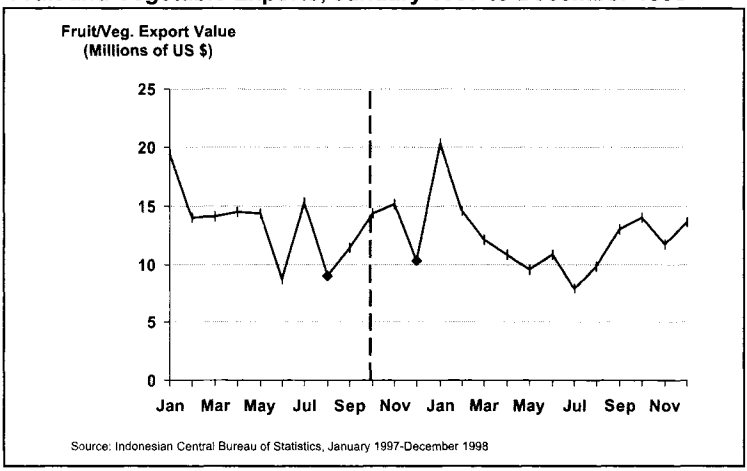
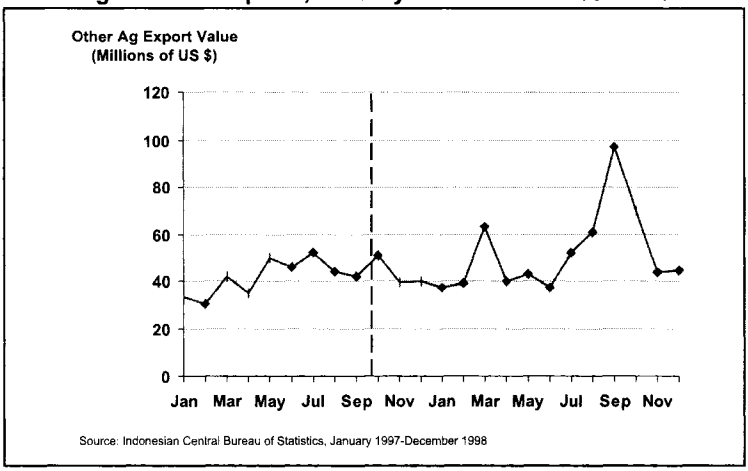


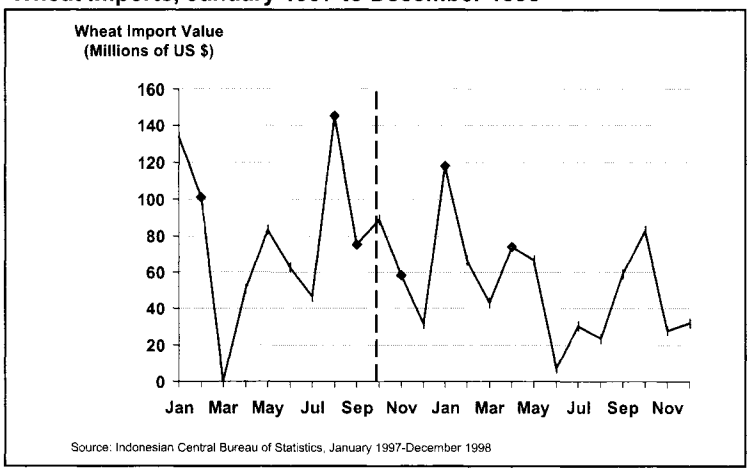

**Figure 8: Other Agricultural Exports, January 1997 to December 1998**



## Disaggregated Import Data: Wheat

An Indonesian import commodity of particular interest to Canada is wheat. It is by far Canada's most important export commodity to Southeast Asia and Indonesia (Kennedy and Vercammen, 1997), with exports to Indonesia valued at around $10 million per month over the 1992-94 period. The monthly pattern of wheat imports into Indonesia for 1997-98 is given in Figure 9 below. It is somewhat different from the pattern of all agricultural imports (excluding rice) in that wheat imports are more erratic and do not show as clearly a downward trend following the currency depreciation. The erratic nature of the data may only indicate that shipments are made less frequently than monthly. Still, a statistically significant negative time trend is found, and this explains one quarter of the variation in wheat imports. Like the case with aggregate agricultural imports, wheat imports have declined gradually over the whole time period since the currency depreciation began, unlike the more immediate and dramatic crash in imports experienced in the non-agricultural import data. This may indicate that wheat imports, at least from Canada and the United States, are commonly financed by the exporter with government loan guarantees and so do not rely upon the domestic Indonesian banking system.

**Figure 9: Wheat Imports, January 1997 to December 1998**




Over the period of 14 months from the start of the depreciation, wheat import values have declined considerably, from $90 million in October 1997 to about half of that value for the average of the last three months (October-December 1998), $48 million. However, one might have expected an even larger decline for a commodity which is something of a luxury among the hard-hit middle class in Indonesia and which has a reputation as being an income-sensitive food. The answer probably lies in the fact that wheat is not used solely for flour to make bread, but is used also to produce wheat noodles. And Indonesia (one firm in particular) is now the largest producer of wheat noodles in the world with large export markets. So a considerable volume of imported wheat may be being re-exported in the form of noodles. This

could explain why wheat imports have not fallen as much as might have been expected and why these imports periodically show substantial growth.

## EFFECTS ON CANADA'S EXCHANGE RATE AND TRADE FLOWS

One question that arises is the effect that the Asian crisis will have on the Canadian exchange rate and agricultural trade flows. On the first part of that question, Canada's trade with Southeast Asia is relatively small and on the agricultural side, our trade with Southeast Asia is tiny. In 1994, Canada's agricultural exports to Southeast Asia were valued at $235 million, and that same year, Canada's imports from the region were about twice as large, $476 million (Kennedy and Vercammen, 1997). Some perspective can be gained by comparing this trade with current trade flows with the United States of about $1 billion per day. We do not have the necessary data to answer this question with much accuracy, but it is difficult to see that the Asian crisis, restricted to the five main affected economies (Indonesia, Korea, Thailand, Malaysia and Philippines) will cause trade flows to change enough to cause more than minor effects on the Canadian dollar.

But we can say a little more about the *change* in trade flows, using Indonesian data as a guide. For Canada's exports to Indonesia (Indonesia's imports from Canada), we have already seen a fairly large drop in those exports and the Indonesian import picture appears to be stabilizing. It would seem that unless there are further declines in the Rupiah, there will be no more dramatic drops in their imports, and the adjustment that will now come about is in the other direction, a gradual increase in imports as incomes start to increase and the financial sector becomes more functional. In other words, the fall in Canada's exports to the region would appear to have bottomed out and there is the gradual prospect of a return to export growth. Within the agricultural sector, this would mostly affect wheat exports.

On the import side (imports from Indonesia), here the adjustment is quite incomplete as far as Indonesia is concerned. Exports from Indonesia have just started to grow in line with their new competitiveness, so increases in Canada's imports from Indonesia are likely. How much this will be at the expense of other country's imports and how much from direct competition with Canadian production will vary by sector. In agriculture there would appear to be few cases where there is direct competition with Canadian production, with a possible exception being competition in the cooking oils market.

## CONCLUSIONS

In examining the effect of currency depreciation on trade flows, few more dramatic examples of massive depreciation can be found than Indonesia in 1997/98. In fact, the serious shock received by that economy from the 80 percent loss in its currency value has led to a collapse in lending by the country's banking system, *de*

*facto* bankruptcy for the many firms that had engaged in heavy borrowing in U.S. dollar terms, and negative growth in 1998 of 15 percent.

On the surface, this would seem to provide an interesting case for looking at the response of trade flows to such a large currency depreciation, given the large effect increase in comparative advantage that would seem to be conferred. However, it has been our task in this paper primarily to document the trade flow response in the case of Indonesia within some 18 months of the beginning of the depreciation. Although some effort is made at interpreting the changes in trade flows that have followed the depreciation, these efforts are particularly difficult because there have been so many factors at work simultaneously. An appropriate model of this situation to predict or explain trade flows is much more complex than just the depreciation's direct effect on exports and imports. Also, a much more detailed data set is needed than that to which we had access for this research.

Having said that, here is a summary of what the data appear to show to the end of 1998. Following the currency depreciation there has been clear change in imports, both at the aggregate level and in the agriculture sector. This is a quick, relatively brief and significant reduction in import flows, particularly when the industrial sector is included. This is partly explained by the drying up of credit from the collapse of the banking system, not just the increase in the relative price of imports. In the agricultural sector, and wheat in particular, the decline has been more gradual and extended. This may reflect concessionary credit provisions which are common among food exporting countries.

The effect of the depreciation on exports has been much more delayed, erratic and difficult to discern. With a few exceptions, there has not been the strong increase in exports that one might expect from a tripling of export prices in local currency (Rupiah) terms. This is most clear for aggregate exports, where imported raw materials have been reduced significantly, having the effect of reducing output levels, not to mention any growth, in some export industries. These effects differ considerably across industry sectors, and depend in part on the extent of imported raw materials in total costs, and the ability of firms in that sector to self-finance or otherwise avoid the banking sector. In general, agricultural and local resource firms have little demand for imported raw materials, have therefore benefited substantially from the depreciation, and have increased export production.

Another general result is that the expansion of exports has been stretched out in time more than might have been expected. This may be due to the difficulties in getting other domestic inputs, including credit, due to economic uncertainties created by the social and political unrest of the last year, and in the case of tree crops, due to the long gestation period of getting new production from new trees. It is also commonly observed that exports actually fell in the period of fastest currency depreciation, November 1997 to February 1998. Apparently there was so much uncertainty or chaos at this time that simply maintaining past contracts and production levels was very difficult. This has further delayed the expansion of exports that would ultimately be expected in response to the large competitive

advantage that the depreciation has opened up. It is also likely that the export expansion will continue for some time, as wage adjustment will likely take some time to complete, notwithstanding the rapid rate of inflation in 1998.

To ascertain the direct effects of the Asian crisis on Canada, it is likely that the Canadian dollar exchange rate has been little affected, due to the small proportion of daily trading that has been changed by these events in Southeast Asia. But the data from Indonesia would suggest that most of the reduction in exports from Canada to the region have already occurred. The increase in low cost imports from Indonesia due to the depreciation, however, has only started to take place. For the most part this can be expected to affect competing exporters to Canada.

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