East Asian Crisis and Capital Flight

Chander Kant*

Abstract

This paper relates the 1997-98 East Asian crisis to capital flight from these countries. The presumption is that residents would know the changing nature of risks and rewards earlier than non-residents. Residents' attempt to be the first ones to exit may have therefore precipitated the crisis. Capital flight is estimated by the Hot Money (that includes only the short term flows) method since only this direct and volatile measure of capital flight could be linked to currency crisis. Restricting capital flight to that by residents is ensured by including changes in only the private assets (i.e., excluding assets held by government and monetary authorities) parts of Capital and Financial Accounts of the Balance of Payments, rather than in both assets and liabilities.

Due to data limitations, Korea, the Philippines, and Thailand of the crisis countries and India, Pakistan, Sri Lanka, and Turkey of the non-crisis Asian countries are included. Quarters in which the composite of percentage decreases in exchange rates and reserves is greater than defined critical values are identified as crisis quarters. Credit growth, inflation, real GDP growth rate, and fiscal deficit are used as control variables.

The relationship of capital flight to currency crisis is studied by polynomial distributed lag estimation of logit models. Lagged capital flight by residents is found to be acting as a leading indicator of the impending crisis. Further, the trigger for currency crisis seems to be capital flight by residents.

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*Correspondence Information: Chander Kant, Associate Professor, Department of Economics, and Faculty Fellow, Institute of International Business, Seton Hall University; South Orange, NJ 07079; telephone and fax: 973-258-0956; e-mail: kantchan@shu.edu

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1. East Asian Crisis

One of the puzzling phenomena in 1997-1998 was the sudden drop of confidence in five East Asian economies: South Korea, Indonesia, Malaysia, Thailand and the Philippines. This lack of faith spread in varying degrees to other "miracle economies" like Singapore, Taiwan, and Hong Kong. The abrupt change in fortunes is still shocking because even as late as June 1997, policy makers and economists were trying to imitate these miracles. Now, the attempt is to learn how to avoid such a pointed discontinuity in economic performance.

East Asian crisis manifests itself first by a sharp decline in exchange rates and asset values. Five countries stand out as having extreme exchange rate and stock and real estate value depreciation. These are Indonesia, Korea, Malaysia, the Philippines, and Thailand. Private flows to these countries in 1997 decreased by $107b. from the 1996-level primarily because of a gigantic drop of $77.1 b. in short term commercial bank credit (and decreases of $15.8b. in non-bank private credits and of $15.4b. in portfolio equity investment).[1] The severe reversal of commercial bank short term lending, rather than the reverse flow of securitized international finance, predominantly explains sharp declines in their exchange rates/other asset values.

The conventional wisdom is that the 1990s decade has been "the decade of globalization." In fact, during the past decade, regional economic links have intensified more than extra-regional ones. The crisis persisted and spread because these strong regional

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[1]Please see Institute of International Finance (1999) for these data.

linkages were not sufficiently well recognized. For example, despite strong export to non-Asian trading partners, intra-Asian trade an1ong developing countries has grown even more rapidly so that intra-regional exports as a percentage of total exports increased from 27.4 to 38.3 between 1987 and 1998.[2]

We may also ask what was wrong, if any, with these countries' economic performance that was being held up as a model for other countries as late as April 1997. All these countries had high savings and investment rates, were applying modem scientific thought and technology to industry, and had highly trained labor force. Yet, the recent turmoil faced by them seems to be due to "relationship banking" and highly leveraged pyran1idal inter-locking firms within conglomerates and because the earlier rapid growth may have resulted from excessive investment whose marginal productivity could have reached quite low in some countries.[3]

The Asian experience lends some support to Minsky's (1986) financial instability hypothesis that a country's economic success carries the seeds of a later financial crisis. Minsky argued that economic booms cause both lenders and borrowers to take risks they otherwise would not. Such risk taking results in financial instability as borrowers seek cash to finance acquisition of additional capital goods and lenders willingly provide it. Any shock to the system can easily push the borrowers into insolvency.

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[2]In the pre-crisis year of 1996, intra-Asian developing countries' exports were 40.4% of its total exports. Similarly, between 1987 to 1998 intra-regional exports as a percent of total exports increased from 15.2 to 22.2 for Latin America and from 34.6 to 36.4 for developing countries in Europe (after falling, due to 1989-91 turmoil in these countries, to 23.0 in 1991). This information is calculated from IMF's Direction of Trade Statistics 1996-Yearbook and June 1999-Quarterly.

[3]Please see Young (1994), Kim and Lau (1994), and Krugman (1994) who argue that most of East Asia's remarkable success (except maybe in Hong Kong) was attributable to factor accumulation rather than to miraculous achievements in productivity.

There may have also been financial liberalization without adequate financial regulation. Chile is one country where financial liberalization was taken to mean no regulation. Chile privatized its banks and liberalized exchange rates in 1974 and removed capital controls completely by 1980. During this period several banks and whole saving and loan system collapsed. Some banks had no capital, and the incidence of connected lending within financial-industrial groups was high. Recession and serious deterioration in the terms of trade in early 1980s led to large reversals of capital flows. That in turn caused exchange rate linked losses, and bad debts of banks accelerated rapidly. The whole banking system collapsed and the government had to socialize losses by taking over all private banks by 1974.

2. Capital Flight

Any analysis of the relationship of the East Asian crisis to capital flight from these countries has to confront with different definitions of capital flight used in the literature. Some authors have restricted it to mean "money that runs away" or "flees". For example, Kindleberger (1937, p.158) defines it as "abnormal" flows" propelled from a country...by ...any one or more complex list of fears and suspicions." The emphasis in this definition is on the volatile and abnormal nature of these outflows. Others have included long-term movements also on the grounds that many long-term flows are also quite liquid. The widest definition is by Tornell and Velasco (1992) and Collier (1999) who term all flows of productive resources from poor (Tornell and Velasco) or civil war ravaged countries (Collier) to rich countries as capital flight.

The various measures or definitions of capital flight follow one of the following two approaches: direct and indirect. Under the former approach, specific variables that constitute capital flight are identified, and data are directly sought for these variables from the balance

of payments statistics.[4] Direct measures identify capital flight as one or more categories of short- term capital outflows, and view it as rapid response to investment risks. That is, they involve "hot money": funds that respond quickly to political or financial crisis, expectations of tightening of capital controls or devaluation of the domestic currency or changes in after-tax real returns.

Cuddington (1986, 1987) defines capital flight as short-term 'speculative' capital exports by the private non-bank sector, although in some cases banks and official entities may also engage in it. He starts with the "errors and omissions" line in the balance of payments statistics. This is the difference between credit and debit entries in the balance of payments, and is taken as a proxy variable for concealed or unrecorded short-term capital outflows (net of any concealed or unrecorded capital inflows). To this line, in the measure called here Hot Money 2, data on flows of "other investment, short-term" of the non-official sector (i.e. of banks and other sectors) are added.

There have been some criticisms of the direct measures. The main criticisms are as follows. An investor, reacting to unfavorable conditions at home, is free to acquire different types of assets abroad: short-term, long-term, real (including real assets), and financial. The motivations for all such acquisitions as well as their effects on the investor's home country will generally be identical. ii) Even if one wishes to restrict oneself to components of these assets that can outflow and inflow quickly, it seems best to look beyond short-term capital flows. For example, long-term foreign financial assets are close substitutes to short-term assets since active and deep secondary markets in long-term assets exist. Lastly, the errors

[4]Balance of payments statistics record exchange of value (rather than of payments) between residents and non-residents of a country. The concept of residence used in compiling the BOP statistics is the same as used in the System of National Accounts to compile GDP. (Please see BOP Manual, 5th Ed. Sections 57 and 58). Capital flight concept is also based on residence. Further, Sections 313,314, and 318 of the Manual, prescribe that the compiler of BOP data must know identities of both parties to a financial flow and creditor and debtor of these transactions must be residents of different countries.

and omissions item includes not only unrecorded capital flows but also true measurement and rounding errors, unreported imports, and registration delays.

In view of these criticisms, various authors have followed the indirect approach to capital flight in which it is a residual of some other variables. In one version of this definition, capital flight is taken as a residual of the following four balance of payments components: increase in debt owed to foreign residents, net inflow of foreign direct investment, increase in foreign exchange reserves and the current account deficit. The premise is that the first two inflows finance the latter two "outflows" so that any inability of the first two "sources of funds" to finance the latter two "uses of funds" is indicative of capital flight. Note this view of capital flight does not identify it with sudden response to policy changes or exogenous changes. [5]

3 .East Asian Crisis and Capital Flight

World Bank has reported that outflow of capital by domestic investors played a major role in the East Asian crisis.[6] There is evidence that a depreciation of investor confidence preceded the crisis. Stock markets in Thailand and Korea had been under pressure since the beginning of 1996. In Malaysia and the Philippines, the pressure began in early 1997, and stock prices declined by about 50% and 60%, respectively in local currency terms by the crisis month.[7] Because of strong home bias in most stock markets, these declines are likely to have been primarily caused by residents.[8] Similarly, Cooper (1996) points out that in

[5]Three of these measures are by the World Bank (1985), Morgan Guaranty Trust Company (1986), and Cline (1987).

[6]Please see World Bank's Global Development Finance (1998), p. 31.

[7]Please see Asian Development Bank's Annual Report, 1997, p.6.

[8]See French and Poterba (1991) and Tesar and Werner (1995) for evidence on home bias.

1994, it was Mexican residents, rather than foreigners, who dumped Mexican securities first, and sold in large volumes.

It appears that resident investors facing heightened risks and fears sought to be the first to exit these markets. In spite of the information revolution and global communications, residents are better aware of the changing nature of risks and rewards of loans/investments in a country than non-residents.[9] In fact, capital flight by residents itself may make the non-residents pull their funds out of a country. East Asian crisis was caused not by the traditional macroeconomic variables but by structural and microeconomic problems such as weak banking supervision, poor corporate governance, and corruption. It is possible that residents were more aware of these problems than non-residents like Moody's and Standard and Poor rating agencies. Residents may have already been exporting their capital while the foreign rating companies were still giving these countries good grades.

There has recently been considerable work to discover, if possible, leading indicators of financial, balance of payments, or currency crisis. Some of the important variables are the level of international reserves, real exchange rates, credit growth, inflation, real GDP growth and price level, fiscal deficit, and credit to the public sector. However, capital flight has not been considered as one of the leading indicators in anyone of these studies.[10] Similarly, the academic literature on the East Asian crisis has not analyzed the relationship of the crisis to capital flight from these countries.[11] The objective of this research is to perform this analysis.

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[9]See Gordon and Bovenberg (1996) for similar hypothesis.

[10]See Kaminsky, Lizondo, and Reinhart (1998), Goldfajn and Valdes (1998), Sachs, Tornell, and Velasco (1996), and Frankel and Rose (1996) for some of the studies of leading indicators or causes of currency crises.

[11]Some of this literature is Corsetti, Pesenti, and Roubini (1999), Mishkin (1999), Sarno and Taylor (1999), OECD (1999), Chote (1998), Radelet (1998), Eichengreen (1998), Julius (1998), Goldstein (1998), Kawai (1998), and Edison (1998).

We first estimate the amount of capital flight from the affected East Asian countries in recent years by considering the Hot Money measure (that includes only the short term flows) of capital flight. Only this direct and volatile measure of capital flight could be linked to currency and financial crisis. At the same time, we carefully ensure that the capital flight measure we use reflects primarily (if not only) capital flight by residents. We ensure this by including changes in only the private assets (i.e., excluding assets held by government and monetary authorities) parts of Capital and Financial Accounts of the Balance of Payments, rather than in both assets and liabilities. Hot Money 2 variant of the direct measure is employed because data for this measure are available for the longest period for each of the countries considered. For it, we add to the Net Errors and Omissions (series 998 in IMF's Balance of Payments - BOP) the following lines of Other Investment, Assets, Short-Term: Trade Credits, Other Sectors (series 712), and the following investments abroad by Banks and Other Sectors: Loans (series 724 and 727), Currency and Deposits (series 733 and 734), and Other Assets (series 745 and 748).

We obtain quarterly estimates for capital flight. This requires detailed quarterly BOP statistics unavailable in IMF's BOP Yearbook or the monthly or quarterly International Financial Statistics. Nevertheless, affected East Asian countries' central banks, other than that for Malaysia, publish in their monthly or quarterly[12] publications the country's detailed BOP on a quarterly basis consistent with IMF's BOP 5th Manual. These data are available in

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[12]According to the widely accepted definition given by the International Finance Corporation (IFC), emerging markets are those countries in which foreigners can invest in stocks and other financial instruments with relative freedom. On this basis, IFC includes the following Asian countries also in its definition of emerging markets: China, India Jordan, Pakistan, Turkey, and Sri Lanka. Of these, detailed quarterly BOP statements from national sources are available for India, Jordan, Pakistan, Turkey, and Sri Lanka.

IMF's BOP CD-ROM. Data on exchange rates and reserves and other variables were obtained from IMF's International Financial Statistics.

Similar to Kaminsky, Lizondo, and Reinhart (1998), we identify a currency crisis as when the weighted average of quarterly percentage depreciations in the exchange rate and quarterly percentage decline in reserves exceeds its mean by more than a critical value.[13] Weights are calculated so that the variances of the two components of the index are equal. Three critical values are chosen: -1.96, -1.645, and -1.44. These values help us isolate the 2.5%, 5%, and 7.5%, respectively, of the worst cases of composite depreciations and reserve losses. In order to have sufficient observations and sufficient crisis periods, data since the beginning of 1980 as available will be used. The crisis periods are listed in Table 1. 7.5% worst cases for external pressures is used for further analysis to have a reasonable number of crisis-quarters for all countries.[14]

We follow binary probit and logit analysis. Under these approaches, the dependent variable is unity for quarters with crisis and zero when it did not face crisis. The probit model is associated with the cumulative normal probability function. The residuals from each country's probit regression failed the Jarque-Bera test for normality. Failure of the normality assumption is not surprising since the dependent variable takes the value of one when the composite standardized deviation (of reserves and exchange rates) falls in the negative critical region only. As a result, the logit model was used further. The logit model is based on the cumulative logistic probability function and is specified as:

$$P_i = \Phi(Z_i) = \Phi(\alpha + \beta X_i) = 1/(1 + e^{-Zi}) \qquad (1)$$

[13]This definition of a currency crisis is similar in spirit to that used in Sachs, Tornell, and Velasco (1996).

[14]Jordan had only one crisis period (90III) even with -1.44 as the critical value, and its data are not analyzed further. Thus, the countries for which analysis is performed are: Korea, the Philippines, Thailand, India, Pakistan, Sri Lanka, and Turkey.

In this notation, e represents the base of natural logarithms, P_i is the probability that a quarter will experience crisis in period i, given the independent variable(s), X_i. The logit formulation is quite similar to the probit or cumulative normal function, except that it does not require normality and has flatter tails. The slope of the cumulative logistic distribution is greatest at P = ½. This implies that changes in independent variables will have their greatest effect on the probability of choosing a given option at the midpoint of the distribution. The low slopes near the endpoints imply that large changes in X are necessary to bring out small changes in probability.

We will include capital flight and the following as explanatory variables: domestic credit growth rate, real GDP growth rate, inflation rate, and fiscal deficit - since these other variables have been found significant in the early-warning literature.[15] Although coefficients of a binary choice model cannot be interpreted as the marginal effect on the dependent variable, the ratios of coefficients provide a measure of the relative changes in the estimated probabilities, in this case of a currency crisis. We would examine these relative changes with both contemporaneous and lagged values of explanatory variables paying particular attention to the role of capital flight.

4. Estimation and Results:

Of the five regressors considered, only two are in levels: capital flight and fiscal deficit. Stationarity tests indicated that both these variables were stationary, i.e. they were mean-reverting and had no underlying trend. Thus, it was not necessary to normalize them, say, by the respective GDPs. The binary choice models are usually employed to study individual or consumer choice. But, they can be applied to macroeconomic outcomes or states of nature, i.e. whether a crisis occurs or not. The models are estimated by the

[15]Quarterly data on the real variables are not available for Indonesia.

maximum likelihood method. This procedure has a number of desirable properties. The ratio of the estimated coefficient to the estimated standard error approximates the normal distribution asymptotically so that the usual normal or t tests can be applied. The estimated coefficients are consistent and efficient asymptotically.[16] The likelihood ratio statistic is asymptotically distributed as a χ^2 distribution with (k-1) degrees of freedom. Higher real GDP growth is expected to reduce the likelihood of the crisis. The other right hand side variables are anticipated to affect the crisis index positively. Due to these sign expectations, one-tailed tests of significance are employed for the coefficients.

We adopt general to specific approach in testing, and analyze each country separately. First, regressions were run with all the five regressors (and a constant term). Then, regressors found redundant with the redundant variable test on the coefficients were dropped one at a time. This test was then applied to the dropped variables jointly. The test is whether a subset of variables in an equation all have zero coefficients and can thus be deleted from the equation. Since the model was estimated with the non-linear maximum likelihood method, the log likelihood ratio statistic was used to test H_o that the coefficients on the specified variables are jointly zero. The degrees of freedom for this LR test is equal to the number of specified variables. For each country, the dropped variables were not significant statistically.

Similar test was adopted for models with direct lagged values. Up to three lags of explanatory variables were tried. Generally, models with more than one direct lagged value of regressors were not estimable, presumably due to mulicollinearity between additional lagged values and one-period lagged/contemporaneous values. Then polynomial distributed lags model was employed to reduce the number of parameters requiring estimation and to impose restrictions on the lag coefficients. Polynomials of order up to four and up to five

[16]Capital flight numbers were multiplied by –1 to ease interpretation of coefficients.

lags were used. A far end constraint was used in each case for the effects of the regressors on the crisis index to die off beyond the number of specified lags.

The residuals from each regression were tested for autocorrelation. The Ljung-Box Q-statistics was used to test whether there is autocorrelation up to order k. Except for the polynomial distributed lag model for Turkey, the Q-Statistics was significant for all final and most intermediate equations. The order of autocorrelation was three except for the contemporaneous model for Turkey where it was two. The presence of autocorrelation can be explained by the fact that crisis quarters do not occur randomly: once one quarter meets the definition of crisis, the succeeding few quarters will also generally exhibit crisis. Estimation under autocorrelation was done by choosing robust standard errors procedure, i.e. using a general error-covariance structure (the generalized linear model) when the equation itself was significant.[17]

The final selected models are all polynomial distributed lag models. These and the corresponding models without lags are reported in Tables 2 to 8 for the seven countries. Following Lutkepohl (1991) and Enders (1994), the model with the lowest AIC (Akaike information criterion) statistics is selected. An information criterion strikes a balance between measures of goodness of fit and parsimonious specification of the model: the more parsimonious a model, the better its forecasting performance is likely to be. The values of AIC, LR statistic (used to test the overall significance of the model, i.e. test the joint null hypothesis that all slope coefficients are zero), and McFadden R^2 are also reported for each model.[18]

[17]It is well known that GLM and generalized error-covariance structure does not affect the goodness of fit and significance of the equation itself; it only affects the significance of the individual estimated coefficients.

[18]McFadden R^2 is the LR index defined as 1-Log Likelihood/Restricted Log Likelihood where Restricted Log Likelihood is the maximized Log Likelihood Value when all slope coefficients are restricted to zero. It is analogous to R^2 of the linear regression

Six of the equations without lags are siginificant: three at 1% level and three at 10% level. However, with PDLs, all seven equations become significant: five at 1% level and two at 5% level. In addition, all the PDL equations satisfy the selection criteria to a better extent: the AIC decreases for all the equations, and the McFadden R^2 increases for six out of seven equations.[19] The regressors generally have the right signs.[20] In the equations without lags, the variable most often significant is inflation (every time it is included), followed by capital flight (five out of six times it occurs with the right sign), and real GDP growth rate (four out of five times it is included). Inflation's significance deceases in equations with lags (significant three out of four times) while those of the other two variables increases to 100% of the relevant cases. What is remarkable is that resident capital flight is found to be a more common variable explaining an external crisis than either credit growth rate, or fiscal deficit, or the inflation rate.

Now we compare the relative magnitudes of the effects. As stated above, in a binary choice model, although the coefficients do not give the marginal effects, the ratios of coefficients provide a measure of the relative change in the estimated probabilities of the dependent dummy occurring. The two main variables affecting external crisis are a decline in the real GDP, i.e. a negative real GDP growth rate, and capital flight. Since the latter's unit of measurement is a million dollar, we compare the affect on the probability of crisis of a 100 million dollars of capital flight to that due to a one percentage point decrease in the real

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model and always lies between zero and one.

[19]The PDL equation for Korea has a slightly lower McFadden R^2. However, its AIC value is lower. Due to its AIC lower value, it can be expected to have better forecasting performance.

[20]The only variable with the wrong sign is hot money for Pakistan in both its equations reported. However, even for Pakistan, the significance of the wrong-signed capital flight and the absolute value of the estimated coefficient decrease when distributed lags are introduced.

GDP. These ratios of coefficients are provided in Table 9 for all countries except Pakistan for all significant equations in which these variables' estimated coefficients are also significant.[21] For Sri Lanka, the comparison is to coefficient for the inflation rate since the real GDP growth rate is not a part of its equation.

Capital flight in all these equations increases the probability of crisis. The relative increase in probability varies from 4.7% to 1952.5%. Excluding Sri Lanka (since the comparison there is to one percentage point increase in the inflation rate rather than to one percentage point decrease in the real GDP), the range of the relative increase in probability is from 4.7% to 136.8%. Further, including the distributed lag terms always increases the relative role of capital flight. For India, the role of capital flight in increasing the relative probability of crisis for the distributed lagged equation is 1.6 times that for the contemporaneous equation; for Korea it is 2.5 times; for Sri Lanka it is 4 times; for Thailand it is 4.2 times; and for Turkey it is 16.7 times. This strongly suggests that distributed lagged capital flight is more important in explaining a crisis than distributed lagged decline in real GDP (or, for the case of Sri Lanka, distributed lagged inflation): resident capital flight is a more important leading indicator of a crisis than a decline in real GDP, and unusual capital flight by residents can indicate impending or forthcoming crisis.

Now we offer some suggestions for the different experiences of some of these countries. First, the numbers presented above for Sri Lanka and Turkey are not comparable to those for other countries. The reason for Sri Lanka is given above: the comparison in Sri Lanka is to one percentage point increase in inflation rather than to one percentage point decrease in real GDP. Turkey's numbers are not comparable due to its unusual exchange rate experience during this period: its exchange rate fell by a factor of about 5000 from the beginning (1984Q1) to the end of the estimation period (2004Q2). Among the remaining

[21]This ratio is not provided for Pakistan because its estimated coefficient for capital

three countries (India, Korea, and Thailand), India's relatively low ratio (1.6) can be explained by its more controlled capital account and relatively stable exchange rate change. Thus, the coefficient of variation of exchange rate changes was 1.04, 5.11, and 4.21 for the three countries, respectively; that is, India had a more stable exchange rate regime while Korea and Thailand had more floating exchange rate regime. Thus, we can conclude that when the exchange rates are more freely floating, capital flight by residents acts more of a leading indicator of balance of payments and currency crisis in emerging economies. The higher ratio for Thailand (4.2) than for Korea (2.5) is explained by the fact that the crisis started in Thailand and then spread to Korea and other countries. This is consistent with the view that it is capital flight by residents that triggers a currency crisis (which may then spread to other countries due to contagion).

5. Implications and Significance

During the debt crisis of 80's, it was often feared that providing external funds to cash- starved developing countries could be futile if a large part of increased lending flows right back out in the form of capital flight. Cuddington (1987) and Pastor (1990) confirm such erosion of external inflows by capital flight. For example, Cuddington (1987) finds that roughly 31 cents out of each additional dollar of new long-term loans to Mexico over the 1974-84 period flowed back out in the form of capital flight. Similarly, Loukine (1998) conjectures that massive help received by Russia from abroad increased resources available for capital flight. Thus, it is important to know whether similar phenomenon may have occurred for some of the affected East Asian countries that received external assistance.

However, this paper goes beyond nullification of external assistance by capital flight by residents. It examines whether capital flight predates a currency crisis (that, in turn,

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flight is negative.

requires a bail-out and external assistance). The general conclusion of this paper is that capital flight by residents of a country with more floating exchange rates acts as a leading indicator of the impending crisis. In fact, a currency crisis may be precipitated and triggered by capital flight by residents. Capital flight, a rational behavior by an individual-investor, becomes myopic and self-defeating if copied by every body. It is often argued that it takes a crisis for substantial economic reforms to be adopted.[22] Crisis makes reforms of policies palatable to the interest groups that had been their beneficiary for so long. However, if crisis results from capital flight by the very beneficiaries of existing distortions, then it is ironic that the crisis-induced reforms go against the interests of the very people who had tried to "beat" the crisis by capital flight. This paper supports the general hypothesis that to look for the origins of a currency crisis, one should look at internal causes rather than external.

[22]See, for example, Olsun (1982), Hirschman (1987), and Krueger (1993). Further, Rodrik (1996) argues that a crisis may permit the sneaking-in of price reforms with macroeconomic stabilization needed to end the crisis.

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Table 1

Crisis Quarters

COUNTRY	NO. OF OBS.	CRISIS QUARTERS		
		2.5% (A)	5.0% (B)	7.5%
Korea	94	81III, 97IV-98III	(A)	(A) + 81I-81II, 97I-97II, 01II
The Philippines	54	97IV-98III	(A) + 01I	(B) + 01II-01III
Thailand	94	81II-81III, 85I, 97III-98III, 01II	(A) + 85II, 97II, 00IV-01I	(B)
India	94	91II-91III	(A) + 81III-81IV, 89I-89II	(B) + 82I, 85I, 88IV, 89III, 93II, 98III
Pakistan	80	93III, 96IV, 01II	(A) + 85I-85II, 97I-97II	(B) + 93IV, 01I, 01III
Sri Lanka	90	83III-83IV, 89II-89IV, 00IV-01II	(A) + 89I	(B) + 00III, 01III
Turkey	82	94I-94IV, 01II-01IV	(A)	(A) + 91IV

Table 2, Korea

VARIABLE	W/O LAGS	PDL 2, 1
CONSTANT	-4.04244* (0.39231)	-4.58584* (0.43015)
CREDITG	0.22505* (0.02054)	0.24139* (0.02294)
GDPG	-0.37933* (0.03034)	-0.37496* (0.03207)
HM2	0.00018* (4.98E-05)	0.00044* (7.7E-05)
LR STATISTIC	29.93132* (3 df)	25.10163* (3 df)
AIC	0.60840	0.58853
MCFADDEN R^2	0.37829	0.35231

Notes for Tables 2 to 8: The second column in these Tables is for the model without any lags; the third is for the corresponding polymonial distributed lags model; the numbers after the third-column's heading refer to the lag-length and order of the polymonial, respectively. One-tailed test for the coefficients is used. *, **, *** denote a coefficient/test statistic significant at 1%, 5%, and 10% levels, respectively. The numbers in parenthesis below the estimated coefficients are the standard errors. For the PDL models, the coefficients and standard errors are presented for the sum of the distributed lags.

Table 3, The Philippines

VARIABLE	W/O LAGS	PDL (MIXED)
CONSTANT	-1.23919** (0.60687)	-1.77039* (0.31406)
GDPG	-0.25774 (0.19419)	-0.94862* (0.13036)
HM2, 5, 4	6.08E-05 (0.00024)	0.00079* (0.00015)
LR STATISTIC	2.03739 (2 df)	18.51664* (5 df)
AIC	0.85539	0.69506
MCFADDEN R^2	0.04924	0.46431

Table 4, Thailand

VARIABLE	W/O LAGS	PDL 4, 3
CONSTANT	-2.68419* (0.20041)	-4.31049* (0.44043)
INF	0.23123* (0.03153)	0.15287** (0.07565)
GDPG	-0.09825* (0.00915)	0.11549* (0.01296)
HM2	0.00032* (0.00011)	0.00158* (0.00033)
LR STATISTIC	32.67166* (3 df)	46.30571* (9 df)
AIC	0.65293	0.53608
MCFADDEN R^2	0.38259	0.62560

Table 5, India

VARIABLE	W/O LAGS	PDL 2, 1
CONSTANT	-3.54355* (0.55369)	-4.22259* (0.66011)
CREDITG	0.09295* (0.02662)	0.10882* (0.03092)
GDPG	-0.15803* (0.03303)	-0.15772* (0.03824)
INF	0.15896* (0.03234)	0.21178* (0.03802)
HM2	0.00034** (0.00015)	0.00055** (0.00027)
LR STATISTIC	9.03666***(4 df)	9.95160**(4 df)
AIC	0.95922	0.96144
MCFADDEN R^2	0.10829	0.12042

Table 6, Pakistan

VARIABLE	W/O LAGS	PDL 4, 3
CONSTANT	-1.66380* (0.13123)	-2.42113* (0.18655)
DEF	1.96E-05* (5.51E-06)	8.2E-05* (1.4E-05)
HM2	-0.00313* (0.00067)	-0.00207 (0.00156)
LR STATISTIC	4.76114***(2 df)	12.72466**(6 df)
AIC	0.98776	0. 93926
MCFADDEN R^2	0.06199	0.18396

Table 7, Sri Lanka

VARIABLE	W/O LAGS	PDL 3, 2
CONSTANT	-3.56185* (0.31535)	-3.45251* (0.34689)
INF	0.10635* (0.02157)	0.04584** (0.02625)
HM2	0.00524* (0.00117)	0.00895* (0.00274)
DEF	8.15E-05* (1.47E-05)	0.00023* (2.5E-05)
LR STATISTIC	7.26151*** (3 df)	17.72917* (6 df)
AIC	0.75086	0.71624
MCFADDEN R^2	0.10864	0.26844

Table 8, Turkey

VARIABLE	W/O LAGS	PDL 3, 2
CONSTANT	-3.76767* (0.45592)	-8.39989 (5.33250)
INF	0.01993* (0.00575)	0.05370 (0.06165)
HM2	0.00017* (8.46E-05)	0.00317** (0.00154)
GDPG	-0.30024* (0.02007)	-0.33958** (0.16154)
LR STATISTIC	26.6724*(3 df)	38.66224* (6 df)
AIC	0.41166	0.34353
MCFADDEN R^2	0.50873	0.74635

Table 9,
Increase in Relative Probability of Crisis
From $100m. of Resident Capital Flight

COUNTRY	W/O LAGS	PDL MODEL	COL. 3/ COL. 2
KOREA	4.7%	11.7%	2.5
PHILIPPINES	-	8.3%	-
THAILAND	32.5%	136.8%	4.2
INDIA	21.5%	34.8%	1.6
SRI LANKA	492.7%	1952.5%	4.0
TURKEY	5.6%	93.3%	16.7

Note: Numbers in columns 2 and 3 are ratios of 100 times the capital flight coefficient divided by the absolute value of the real GDP growth rate coefficient from the estimated equations for all countries except Sri Lanka. For Sri Lanka, the inflation rate coefficient is used in the denominator. (For the Philippines, the said ratio is not computed for the contemporaneous model because the equations and the coefficients are not statistically significant).