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THE ASIAN FINANCIAL CRISIS: IMPACT ON HUMAN DEVELOPMENT

Sharmistha Self [*] ***& Richard Grabowski*** [**]

The Asian financial crisis surprised the world and resulted in steep economic downturns in parts of East and Southeast Asia. Its apparent quick recovery however would imply that there was negligible impact on human development. This paper challenges this notion. Using cross-country data from various Human Development Reports, this paper examines what factors were responsible for affecting overall human development in the pre-crisis and post-crisis period. The results indicate that structural changes have occurred and significant social problems persist in the post-crisis period in Southeast and East Asia, which are apparent through declining human and gender development for the region.

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The countries making up East and Southeast Asia have indeed experienced an economic miracle over the past two decades. Growth rates within the 6% to 8% range have been achieved and significant reductions in poverty have occurred. However, in 1997 most of these countries were hit by a financial crisis which swept through the region. Exchange rates tumbled, output fell, unemployment rates increased, and political instability ensued. At the time there was great concern over two issues. First, what caused the financial crisis? This was a particularly intriguing question given the fact that the economic fundamentals of most of the countries at the time were very good. The second issue concerned the impact that the crisis would likely have on human development. It was feared that the economic downturn instigated by the financial collapse would negatively impact the health, education, and standard of living of the people involved, especially the poorest and weakest.

The recovery from the crisis has been quite rapid. Of the eight East Asian economies five experienced strongly negative growth rates the year after the crisis, 1998. These were Hong Kong, Indonesia, Korea, Malaysia, and Thailand. Two experienced moderately negative growth rates, Philippines and Singapore. One country was relatively unscathed and was able to maintain a moderately positive growth rate, Taiwan. However, by 1999 all of these countries had resumed positive rates of growth, with Indonesia's growth rate only slightly positive. By 2000 all these

* Department of Economics, Missouri State University, Springfield, Missouri, *E-mail: sself@missouristate.edu*

** Department of Economics, Southern Illinois University, Carbonadale, Illinois, *E-mail: ricardo@siu.edu*

countries' growth rates were robustly positive. With this rapid recovery, concern about the impact of the crisis on human development had faded.[1]

This paper will seek to analyze whether or not the financial crisis and the ensuing economic slowdown significantly harmed human development. While it is established that the financial crisis had an impact on the economic growth and income levels in the countries affected, what has been less discussed is the impact on human development in these regions. There have been several studies in recent years which have highlighted the importance of human development as being more important than income for assessing countries' development (World bank, 1990, 1991; Anand and Ravallion, 1993; Sen 1977, 1984, 1985a, b, 1987a, b). The first section of the paper will discuss the impact of the financial crisis. Existing literature on the social impacts of the crisis will also be reviewed.

Section two of the paper will discuss the data that will be utilized and the methodology that will be applied. Cross-sectional data on the human development index (HDI) and the gender development index (GDI) for a large sample of developing countries (for several years before and after the crisis) will be used as measures of human or social development, the left-hand side variable.[2] On the right-hand side indicators of the financial, economic, and social condition of the economy will be used as explanatory variables. In addition, dummy variables for East and Southeast Asia, Latin American and Africa are used. The hypothesis is that prior to 1997, the financial crisis, the East Asia dummy variable will have no discernable effect on the human or gender development indexes. However, after 1997 it is hypothesized that the East and Southeast Asia dummy variable will have a significant negative impact. The results of the analysis will be presented in section three of the paper. Finally, section four will summarize the paper, draw conclusions, and discuss avenues for future research.

OVERALL VIEW

The Asian financial crisis of 1997 caught the world by surprise. In the period prior to this the economic fundamentals for this region looked very good. Looking at Table 1, one can see that from 1990 to 1995 growth rates, savings rates, investment rates, and the current account balance as a percentage of GDP all looked quite good. The financial panic which ensued in 1997 brought economic growth to an end as investment and other forms of spending collapsed.

Table 1
Fundamentals: 1990-1995

Economy	*Growth Rate (Annual Average)*	*Savings/GDP*	*Investment/GDP*	*Current Account/GDP*
South Korea	7.8	35.6	36.8	-1.2
Indonesia	8.0	31.0	31.3	-2.5
Malaysia	8.9	36.6	37.5	-5.8
Philippines	2.3	16.6	22.4	-3.7
Singapore	8.6	47.0	34.9	0.6
Thailand	9.0	34.4	41.0	-3.9
Hong Kong	5.0	33.6	29.6	—
Taiwan	6.4	26.9	24.0	4.2

Adapted From: Mehta (2003).

This was exacerbated by IMF promoted policies aimed at contraction which generated significant interest rate increases. The economic collapse was both sudden and steep.

The economic crisis seemed to affect households in four ways: falling labor demand, sharp price shifts, a squeeze on public spending, and an erosion of the social and political fabric.[3] In Thailand unemployment initially increased by fifty percent to 1.5 million. In South Korea unemployment reached 7 percent while in the Philippines 1 million people initially became unemployed, raising the unemployment rate to 13.3 percent. Perhaps Indonesia was the hardest hit with an estimated 10 million people initially losing their jobs. In developing countries unemployment rates are notoriously unreliable indicators of labor utilization, given the large size of the informal sector. Underemployment is a common phenomenon and anecdotal evidence seemed to indicate that this increased throughout the region. For example, some information suggested that workers were returning to their rural villages in places like Jakarta and Bangkok.

With the decline of their economies the countries in the region experienced declines in tax revenues, posing budget difficulties. Policies aimed at promoting macroeconomic adjustment led to cuts in spending. Higher interest rates, driven by the crisis and monetary tightening, all acted to enhance this process. Thus government investment in infrastructure and education was negatively effected.

There were also social and political stresses brought about by the crisis. These countries and their governing elites had basically earned legitimacy in the eyes of their population by promising and delivering rapid economic growth. When this growth stalled, political unrest often came to the surface. This was most apparent in Indonesia.

A number of studies were performed shortly after the onset of the crisis to actually try and measure some of the social impacts of the crisis. For example, the Asian Development Bank sought to examine the impact of the Asian financial crisis on the health sector in Thailand. They found that the proportion of the population below the poverty line increased from 11.4% in 1996 to 13% in 1998. Household expenditures on health care decreased by 41% compared with 1996 levels. The 1998 budget of the Ministry of Public Health was almost 10% lower than the 1997 budget. The HIV/AIDS control budget was reduced by 33% in real terms.

Using a relatively new survey of households in rural Central Java, Block, *et al.* (2002) sought to analyze the impact of the financial crisis of 1997/1998 on nutrition. While they found that there was no significant decline in child weight-for-age measures, mean weight-for-height declined. Further, blood hemoglobin concentration (an indicator of quality of the diet) also declined sharply during the crisis. They conclude that the crisis significantly reversed what had been a decade long improvement in nutritional status in Indonesia.

As was pointed out in the introduction, subsequent to 1997/1998 the region made a rapid economic recovery in terms of traditional economic measures. As a result, the extent of research on the social impact of the financial crisis has declined dramatically. Thus this paper seeks to reexamine the issue once again. The rest of the paper will be concerned with construction and estimation of the statistical model that will allow the following proposition to be tested. Was there a structural change in 1997 in the relationships between human development (as measured

by HDI and GDI) and a variety of explanatory variables for the East and Southeast Asian region? If so, does this structural change persist through time since the financial crisis?

The emphasis in this paper is on human development. Economists have long made the distinction between economic growth and improvements in human well being. Although the two are highly correlated, there are regions that have achieved relatively high GDP per capita, but have lagged behind in other measures of well being. Thus economists have often augmented their analysis by considering various measures of health (life expectancy, infant mortality, incidence of disease, AIDS cases, immunization, etc.) or education (enrollment rates, average years of education, literacy rates) or poverty (poverty rates, measures of inequality, child labor, unemployment rates). These measures are often seen as measuring various dimensions of development as opposed to growth, which focuses only on income growth. The Human Development Index is one of the most commonly used measures of human development. The Gender Development Index is a recent development which seeks to adjust the HDI so as to reflect gender inequalities. Both of these measures are used in this paper.

In the above, it was pointed out that the approach taken here is macroeconomic in nature. Obviously, microeconomic studies of the phenomenon would be a necessary complement. Lacking such data, however, it is hoped that this macroeconomic study might further stimulate additional and more up-to-date microeconomic analysis.

DATA AND METHODOLOGY

The hypotheses being proposed in this paper are quite simple. This paper hypothesizes first, that human development is broader than economic development and second, the impact of the financial crisis that, apparently only briefly affected Southeast and East Asia, was not that brief in terms of impact on human development. This paper challenges existing literature on the claims that the crisis was a temporary phenomenon. Most of the countries affected by the crisis had stable economic structures before the crisis and so they soon recovered from the brief shock and the structure remained intact. This paper attempts to look deeper to find whether or not there were some structural changes that took place, which might have escaped notice or might not have been apparent immediately.

With the above objectives in mind, this paper takes a "before and after" approach in a cross-country framework. The analysis covers the period 1992 to 2000 and picks specific years as target years. Here we target three years prior to the crisis, 1992, 1993, and 1995 (determined by data availability), the crisis year, 1997, and three years following the crisis, 1998, 1999, and 2000.[4] In order to represent human development, the UNDP's human development index (*HDI*) and the gender-related development index (*GDI*) are chosen. The country sample includes 135 countries that comprise the middle-to-low income and low-income countries, as categorized by the World Bank. The sample size varies between years and between variables due to data limitations. Particularly when the *GDI* is used as the dependent variable, the sample size gets relatively smaller since *GDI* values are not available for a number of countries.

It is hypothesized here that human development is much broader than economic development. It is a combined result of the economic, social, financial conditions and the stability of the economy, along with certain country-specific factors. This relation is given by:

$$\textit{Human development} = f(\textit{financial condition, economic condition, social condition, country-specific factors}). \quad (1)$$

Based on the above rationale, the model is given by:

$$\textit{Human Development} = a_0 + a_1(\textit{financial condition}) + a_2(\textit{economic condition}) + a_3(\textit{social condition}) + a_4(\textit{country-specific factors}) + e^{hd} \quad (2)$$

The above explanatory variables of human development are in very broad terms. Each of these has to be further redefined to arrive at the final model to be tested.

In order to explain the financial condition of the economy, two variables are chosen. The first is the inflation rate, measured by the annual growth rate of the GDP implicit deflator, which shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency. The second variable is the change in net reserves (which is the net change in a country's holdings of international reserves resulting from transactions on the current, capital, and financial accounts) divided by GDP.[5] These include changes in holdings of monetary gold, SDRs, foreign exchange assets, reserve position in the International Monetary Fund, and other claims on nonresidents that are available to the central authority. The measure is net of liabilities constituting foreign authorities' reserves, and counterpart items for valuation changes and exceptional financing items. Data are in current U.S. dollars. Neither of these variables is uncommon in the literature. The inflation rate has been used in the literature to explain the financial condition of countries (Mishkin, 1999; Loungani and Sheets, 1997; Demetriades and Luintel, 1996) as has the net flow of reserves (Mishkin, 1999). Thus,

$$\textit{Financial condition} = b_0 + b_1(\textit{inflation rate}) + b_2(\textit{net reserves ratio}) + e^f \quad (3)$$

In order to measure the economic condition of the country, again the motivation for choice of variable/s is influenced by the objective of the paper. Variables that essentially measure the economic stability of the country are chosen, particularly those variables that might have been especially important during the time-period being studied. Typically used measures such as GDP or per capita GDP could not be used since they are included in the dependent variable index. The economic condition of the country is partly measured by foreign aid as a share of GDP. Several studies have looked at the relation between foreign aid and economic growth, though there has been disagreement in terms of its effect (Burnside and Dollar, 2000; Easterly 2003). Here foreign aid includes the actual international transfer by the donor of financial resources or of goods or services valued at the cost to the donor, less any repayments of loan principal during the same period. Grants by official agencies of the members of the Development Assistance Committee are also included, as are loans with a grant element of at least 25 percent, and technical cooperation and assistance. Aid dependency ratios are computed using values in U.S. dollars converted at official exchange rates. The second economic variable is the degree of openness measured by the amount of exports and imports as a share of GDP. A measure of trade has also commonly been used to assess the economic condition of countries (Edwards, 1997; Krueger, 1980; Frenkel and Romer, 1999). The equation for economic condition/stability is given by,

$$Economic\ condition = c_0 + c_1(aid) + c_2\ (openness) + e^e \quad (4)$$

The next category of variables is the social variables. Here too the choice of specific variables was driven by the basic objective of the paper and data availability. Only one variable was picked for this purpose. One needs to remember that the dependent variables are socio-economic variables and caution has to be exercised to avoid any multi-collinearity problems. A number of studies have looked at the relation between economic inequality and social inequality (Loury, 1981; Lindert, 1986; Partridge, 1997). However, inequality measures are not consistently available for the years and countries in this sample. Poverty too has been commonly used as a measure of social condition (Jorgenson, 1998; Stevens, 1999) as has education (Waines, 1963; Lang, 1994; Fershtman *et al.*, 1996). However poverty measures are also not consistently available for this sample. Moreover, since the *HDI* and *GDI* include a measure of income in their index, there is a possibility of introducing multi-collinearity into the equation by including poverty as an explanatory variable. Any measure of education too will run into a similar problem since literacy rates are included in the *HDI* and *GDI* index. The variable chosen as an influence on the social fabric of the country is the age dependency ratio. The age-dependency ratio has been used in the past as a measure of social well-being (Self and Grabowski, 2003). This ratio measures the burden that society must bear in terms of supporting the unproductive share of its population. This group is also likely to be more susceptible to social and health problems that arise in a society. Thus,

$$Social\ condition = d_0 + d_1(age\ dependency\ ratio) + e^s \quad (5)$$

In order to measure the country-specific characteristics, we used three dummy variables to represent East and Southeast Asia, Latin America, and Africa. Most growth related studies use the Africa dummy and this will be included here. However, our purpose is to look for any structural changes that might have occurred within the countries affected by the Asian Crisis. Thus the East and Southeast Asia dummy includes those countries and is included in this paper. The Latin America dummy was introduced because Latin America has also been affected by different financial crises and we wanted to see if there had been any structural changes that had taken place at the developmental or human level.[6]

Obviously, there are a number of additional variables that are likely to influence social, economic, and financial conditions and thus in turn influence human development. However, data limitations greatly constrain our choices in terms of explanatory variables. In addition, the dummy variables are utilized to try and capture some of the effects of these other factors.

For measuring human development, this paper looks at two different variables, where each focuses on a particular aspect of human development. Both variables are taken from the UNDP's Human Development Reports for the relevant years. As mentioned earlier, these are the human development index (*HDI*) and the gender-related development index (*GDI*). *HDI* is a summary measure of human development and is given by,

$$HDI = 1/3\ (life\ expectancy\ index) + 1/3\ (education\ index) + 1/3\ (GDP\ index) \quad (6)$$

The life expectancy index measures the relative achievement of a country in life expectancy at birth. The education index is a weighted index of the adult literacy rate and the gross enrollment index. The GDP index is calculated using adjusted GDP per capita (PPP US$).

The *GDI* adjusts the average achievement calculated by the *HDI* to reflect gender inequalities. It first calculates separate indices for male and female achievements in life expectancy, education, and income. Second, the male and female indices for each of the above categories (dimensions) are combined in a way that penalizes differences in achievement between men and women. Finally, the *GDI* is calculated by combining the three resulting indices in an un-weighted average.[7] As the *GDI* rises this implies that the inequality between men and women, in terms of social development, has been reduced.

The final form equation, which is estimated, is given by

$$log(HDI) = a_0 + a_1(b_0 + b_1(inflation\ rate) + b_2(net\ reserves\ ratio) + e^f)) + a_2(c_0 + c_1(aid) + c_2(openness) + e^e)) + a_3(d_0 + d_1(age\ dependency\ ratio) + e^s)) + a_4(f_0(East\ and\ Southeast\ Asia\ dummy) + f_1(Latin\ America\ dummy) + f_2(Africa\ dummy)) + e^{hd} \quad (7)$$

or

$$log(HDI) = g_0 + g_1(inflation\ rate) + g_2(net\ reserves\ ratio) + g_3(aid) + g_4(openness) + g_5(age\ dependency\ ratio) + g_6(East\ and\ Southeast\ Asia\ dummy) + g_7(Latin\ America\ dummy) + g_8(Africa\ dummy) + e^{HD} \quad (8)$$

A parsimonious version of this model, also estimated in this paper, can be written in which only the inflation rate is utilized as the financial variable. Although this excludes a variable it has the advantage of enjoying greater degrees of freedom.

The above model is formulated using GDI as the dependent variable. This can be written as

$$Log(GDI) = j_0 + j_1(inflation\ rate) + j_2(net\ reserves\ ratio) + j_3(age\ dependency) + j_4(aid) + j_5(openness) + j_6(East\ and\ Southeast\ Asia\ dummy) + j_7(Africa\ dummy) + j_8(Latin\ America\ dummy) + e \quad (9)$$

Results in the next section will present this version.[8]

Data relating to the Human Development Index (*HDI*) and the Gender-related Development Index (*GDI*) are taken from various Human Development Reports of the UNDP. All the other explanatory variables are taken from the World Development Indicators (2002) published by the World Bank. The data set includes only those countries classified low and middle income by the World Bank.

EMPIRICAL RESULTS

The results relating to equation (8), with *HDI* for selected years as the dependent variable, are presented in Table 2. The equation is tested using a simple OLS regression method and the results are consistent with White's heteroscadasticity-consistent standard errors. These results have very interesting implications for this paper. Some of the expected results, reflected in the table below, relate to the variables on foreign aid and the variable on openness. It can be seen from the table that the amount of foreign aid a country received had a significant negative impact on its *HDI*. This implies that the amount of dependence on foreign aid is a clear reflection

of the reduced human development in the country, regardless of whether or not the country went through a crisis or not. These results echo those of Easterly (2003) where he finds a similar relationship between aid (as a percentage of GDP) and per capita GDP growth. Another expected result relates to the amount of trade as a share of GDP (*openness*). This shows that the degree of openness had a significant positive impact on the level of human development of the country. Moreover, these results show that the inflation rate, which was one of the most commonly used indicators of the crisis, while having a negative impact on human development for almost all years, was statistically significant in terms of its negative impact on human development in the crisis year and in 1993, 1999, and 2000. It is interesting to note that inflation was not significant in terms of its impact in 1998, when it was mostly believed that the crisis was over, but it re-emerged as a negative force on human development thereafter. Another variable of interest is the change in net reserves as a share of GDP. This variable had a positive impact on human development for several years prior to the crisis and this changed to a negative impact following the crisis, though significant only in 1999. In terms of the country-specific structural impact on human development, Latin America consistently had a positive impact while Africa had a significantly negative impact.

The most interesting implication for the purpose of this paper is the behavior of the East and Southeast Asia dummy. The results in Table 2 show that this dummy was insignificant and positive in terms of its impact on *HDI* in the pre-crisis as well the crisis year, but thereafter it has a significant negative impact on human development. This is particularly strong evidence when one considers that there were only eight East and Southeast Asian countries in the sample and that for several years data for a couple were only intermittently available. It is not possible to ascertain what particular country-characteristic is responsible for this structural change from the pre- to post-crisis period, but clearly there was a structural change within this region following 1997.[9]

Table 2
Impact on *HDI*

Dependent variable: HDI	*Post crisis years*			*crisis year*	*Pre-crisis years*		
	2000	*1999*	*1998*	*1997*	*1995*	*1993*	*1992*
constant	0.01	0.03	0.01	0.003	0.13	0.19*	0.21
inflation	-0.05**	-0.03**	-0.03	-0.01*	-0.003	-0.002**	0.01
net reserves ratio	-0.01	-0.78**	-0.09	-0.01*	-0.57	0.32	0.81
age dependency	-0.72**	-0.75**	-0.80**	-0.74**	-0.97**	-1.02**	-0.98**
aid	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**	-0.01**
openness	0.001**	0.001**	0.002**	0.001**	0.001**	0.002**	0.001
East and Southeast Asia	-0.06*	-0.06**	-0.08*	0.004	0.03	0.02	0.07
Latin America	0.07**	0.10**	0.09**	0.10**	0.20**	0.13**	0.21**
Africa	-0.13**	-0.15**	-0.12**	-0.13**	-0.14**	-0.13**	-0.16**
# observations	104	98	95	111	116	108	99
R square	0.86	0.85	0.79	0.79	0.76	0.75	0.69
Durbin-Watson	1.73	1.58	1.57	1.65	2.20	2.05	2.02

Note: ** implies significance at 95% while * is significance at 90%.

Next, the focus shifts towards gender and how the above results fare when we adjust the dependent variable to reflect gender inequality. These results are presented in Table 3. Two apparent differences between the *HDI* results and the *GDI* results emerge. First, the *GDI* sample size is relatively much smaller, due to limited data. Second, for the pre-crisis period, the results are available only for 1995 and 1993 due to data limitations. The results below follow the general pattern of the results above, but there are some minor differences, which do not necessarily take away from the basic implications. As with *HDI*, these results also show that foreign aid had a significant negative relation with *GDI*, as did the Africa dummy, while the openness variables and the Latin America dummy had a positive impact. The impact of inflation and the net change in reserves as a share of GDP are statistically significant for a few. The structural change that was apparent in East Asia during and after the crisis is seen in these results as well, though the negative impact is statistically significant only in year 2000. Thus, the basic implication of the results remain unchanged when the dependent variable additionally reflects gender inequality, but they differ in terms of statistical significance.[10]

Table 3
Impact on *GDI*

Dependent variable: GDI						
	Post crisis years			*crisis year*	*Pre-crisis years*	
	2000	*1999*	*1998*	*1997*	*1995*	*1993*
constant	0.03	-0.02	-0.05	-0.01	0.10	0.30**
inflation	-0.008	-0.015	-0.16	-0.006**	0.01	-0.001**
net reserves ratio	0.30	-0.59*	-0.29	-0.01**	-0.60*	-0.04
age dependency	-0.77**	-0.77**	-0.83**	-0.82**	-1.04**	-1.28**
aid	-0.01**	-0.01**	-0.003	-0.01**	-0.01**	-0.01**
openness	0.001**	0.002**	0.002**	0.001**	0.001**	0.001**
East and Southeast Asia	-0.09*	-0.05	-0.04	0.01	0.06*	0.04
Latin America	0.11**	0.13**	0.10**	0.14**	0.18**	0.13**
Africa	-0.14**	-0.15**	-0.11**	-0.09**	-0.10*	-0.09
# observations	86	86	75	94	108	91
R square	0.84	0.86	0.66	0.81	0.78	0.78
Durbin-Watson	1.73	1.71	2.10	1.81	2.13	1.92

Note: ** implies significance at 95% while * is significance at 90%.

Since both the HDI and the GDI indexes include per capita GDP, one might cast doubt on the reliability of the results presented above as reflecting simply the effect of the GDP per capita variable instead of the quality of life. The other two components of HDI and GDI are life expectancy and literacy rate which tend to be less volatile compared to the changes in GDP. Thus the negative results for the East Asia dummy in the post-crisis period may be simply a reflection of the fall in GDP per capita following the crisis. To dispel such doubts an examination of post-crisis per capita GDP of the South and East Asian countries was carried out. The results show that for all the South and East Asian countries in the sample, the per capita GDP showed an increasing trend following the crisis. Hence the negative sign on the East Asia dummy for the post crisis regressions can be interpreted as a negative impact of the crisis on overall human development.

SUMMARY AND CONCLUSION

The Asian financial crisis surprised the world and resulted in steep economic downturns in parts of East and Southeast Asia. The great concern was that such economic decline would have dramatic negative consequences on human development. However, the crisis ended quickly, most countries resumed economic growth, and concern over the social consequences waned. This paper sought to determine whether or not the financial crisis had a social impact (human development) and whether that impact persisted.

The analysis was cross-country in nature, looking at the pre- and post-financial crisis years and periods. The left hand side variables utilized were *HDI* (human development index) and *GDI* (gender development index). The right hand side (explanatory) variables comprised financial, economic, and social indicators along with country specific regional effects captured through regional dummies for Africa, Latin America, and Southeast and East Asia. The analysis indicated that prior to the financial crisis the dummy variable for Southeast and East Asia was not statistically significant. However, in the post-crisis period it became significantly negative. Thus a structural change occurred, corresponding to the post-crisis period, indicating that human and gender development significantly declined for this region. The results imply the financial crisis had a significant negative impact on human and gender development. More importantly, this has persisted for the post-crisis period for which data is currently available. The results show that in the years following the Asian crisis, the conditions which shape the quality of life or what is referred to as human development in this paper, worsened, and the worsening was particularly more severe for females.

The main limitations to this paper relate to the data and the time periods covered. The data for both *GDI* and *HDI* have not been readily and consistently available for the countries in the sample. In addition, the analysis ends with the year 2000. Further research would involve extending the data set to include additional, more recent years, to see if the effects of the Asian Crisis have persisted through time.

NOTE

1. The data referred to in this and the following paragraph comes from the Asian Development Bank website (*www.adb.org*).
2. The Human Development Report has its conceptual roots in Amrtya Sen's work cited above.
3. Much of the following few paragraphs is drawn from Atine and Walton (1998).
4. It would add to the robustness of the results if we carried out a panel data analysis including only East and Southeast Asian countries. This was considered, but rejected due to data limitations. There are only eight such countries in our sample. Some of these do not have data available for all of the years. Thus, the pre-financial crisis and post-financial crisis samples have very few observations. The results of such an analysis would not have been reliable.
5. An alternative variable that could have been used was the rate of change in net reserves. Unfortunately this variable could not be calculated since the data made available is the absolute change in net reserves. This explains why the *Net Reserves Ratio* was used instead.
6. A complete listing of the countries is provided in Appendix I.
7. For detailed discussion on the formulation of these indices, see technical notes to UNDP's Human Development Report, 2002.

8. A slight variation of the above equations was also estimated. Specifically, the left hand variable in equation (8) and equation (9) was replaced by the change in human development and the change in gender development respectively. The results were very similar to those obtained form utilizing the level of human development and the level of gender development. These results are available from the authors upon request.
9. In order to test the robustness of the above results, the model is tested in its parsimonious form by taking the net change in reserves ratio out of the equation. These results (available from the authors) are very similar to the results above, with a few minor differences.
10. As in the case using the *HDI*, the robustness of the results is tested by considering a parsimonious formulation of the above model. These results are available from the authors and are very similar to those in Table 3.

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Appendix I
Countries in the Data Set

Africa		*East and Southeast Asia*	*Latin America*		*Others*	
Algeria	Malawi	Indonesia	Argentina	St. Vincent	Albania	Maldives
Angola	Mali	Hong Kong	Belize	Suriname	Antigua Baruba	Maldova
Benin	Mauritania	Republic of Korea	Bolivia	Trinidad and Tobago	Armenia	Mongolia
Botswana	Mauritius	Malaysia	Brazil	Uruguay	Azerbaijan	Myanmar
Burkina Faso	Morocco	Philippines	Chile	Venezuela	Bahrain	Nepal
Burundi	Mozambigue	Singapore	Columbia		Bangladesh	Oman
Cameroon	Nambia	Thailand	Costa Rica		Bhulan	Pakistan
Cape Verde	Niger	North Korea	Cuba		Bulgaria	Papua New Guine
Central African Republic	Nigeria		Dominica		Cambodia	Poland
Chad	Rwanda		Dominican Republic		China	Romania
Comoros	Sao Tome and Principia		Ecuador		Czech Republic	Russia
Republic of Congo	Senegal		El Salvador		Egypt	Samoa
Cote d'Ivoire	Seychelles		Grenada		Estoria	Saudi Arabia
Djibouti	Sierra Leone		Guatemala		Fiji	Solomon Islands
Equatorial Guinea	Somalia		Guyana		Georgia	Sri Lanka
Ethiopia	South Africa		Haiti		Hungary	Syria
Gabon	Sudan		Honduras		India	Tajikistan
The Gambia	Tanzania		Jamaica		Iran	Turkey
Ghana	Swaziland		Mexico		Iraq	Turkmenistan
Guinea	Togo		Nicaragua		Jordan	Ukraine
Guinea-Bissau	Tunesia		Panama		Kazakhstan	Uzbekistan
Kenya	Uganda		Paraguay		Laos	Vanuatu
Lestho	Zambia		Peru		Latvia	Vietnam
Liberia	Zimbabwe		St. Kitti		Lebanon	Yemen
Madagascar			St. Lucia		Lithuania	