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Effect of Foreign Aid on Development: Does More Money Bring More Development?

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Abstract

Developing countries face challenges of massive poverty, slow GDP growth, high mortality rates from illnesses, and low levels of education. The governments in these countries do not have sufficient financial resources to fight these challenges effectively. Foreign aid has played an instrumental role in the implementation of development programs to combat poverty. The purpose of this paper is to examine whether foreign aid has a positive impact on development. Development in this paper is measured using the human development index that incorporates a knowledge index, health index, and standard of living index. Social aid is used to capture foreign aid towards development purposes. The hypothesis that foreign aid has a positive effect on HDI is tested using ordinary least squares regression. Regression results show that foreign aid has a negative relationship with development. The findings of the study indicate that foreign direct investment and domestic investment play a significant role in a country's development.

Contents

1. Introduction

Developing countries face massive poverty, slow GDP growth, high mortality rates, and low levels of education. In the year 1999, 1.2 billion people lived on less than $1 (in PPP US$) a day, and another 2.8 billion people lived on less than $2 a day (World Bank, 2003). The majority of the people in the least developed countries cannot read or write. Over 854 million adults in this world are illiterate, and 543 million of them are women (Human Development Report, 2000). Similarly, many people in developing countries do not have access to health treatment. According to the United Nations Children's Fund (UNICEF), more than 10 million children under five years of age die each year from preventable diseases in these countries. At the end of the year 2000, 34 million people were living with HIV/AIDS (Human Development Report, 1998).

These statistics reflect the extent of low human development in poor countries. A low level of human development means miserable, sub-standard living for the country's poor. The governments in these countries do not have a large budget to eradicate poverty, prevent deaths from curable diseases, and increase the literacy rate. Hence, developed countries and multilateral organizations such as UNICEF and the World Bank have been providing financial assistance to developing countries for over half a century in an attempt to improve living conditions.

The results of such assistance are mixed. In some cases, it has neither reduced poverty nor contributed to overall development. It has actually worsened the situation by increasing corruption as well as income inequality. One such instance is the increase in poverty in the Philippines under President Marcos' rule (Congressional Budget Office, 1997). Although the Philippines received $33 billion between 1966 and 1986 as foreign aid, a great proportion of

assistance was simply channeled by President Marcos and his family to their private foreign bank accounts (CBO, 1997). Consequently, poor people in this country did not benefit from the inflow of foreign aid. In other cases, some countries have improved both their GDP and human development index. For example, Bangladesh received $1766.6 thousand in bilateral social aid from the OECD (Organization for Economic Cooperation and Development) countries in the years 1998 and 1999. Statistics on the illiteracy rate and GDP show that the social aid Bangladesh received was effective. Its adult illiteracy rate decreased from 61.1% to 58.9% from 1998 to 2002 (World Bank). In the same period, GDP grew from 44.1 billion dollars to 47.3 billion dollars (in 2000 US$). Although the increases in literacy rate and GDP are slight, they move in a favorable direction.

Even though the effect of foreign aid is different among various countries, development economists agree that the fundamental role of development aid is to help minimize the levels of misery and deprivation in poor countries (Clemes, 2003). Foreign aid can be used to meet basic human needs such as food, shelter, education, and health. In the absence of foreign aid, the magnitude of poverty, illiteracy, and mortality rates may worsen because governments do not have adequate funding to promote the standard of living, education, and health.

Several studies in the past have noted that foreign aid has a positive effect on the economic growth of poor countries. Burnside and Dollar (2000), Chenery (1960), Chenery and Strout (1966), Papanek (1972), Balassa (1978), Murthy (1994) and Giles (1994) empirically show that foreign aid has a positive impact on economic growth. On the other hand, other studies by Bauer (1984), Griffen (1970) and Weisskoff (1972) have found that foreign aid has a negative effect on economic growth. Most of these papers use economic

growth to measure development, and little research has been done to investigate the effect of aid on human development. One of the very few papers that study the effect of aid on human development is by Clemes and Gani (2003), and they find that aid for education and health have a positive correlation with human development in lower-middle income countries.

This paper explores the effect of foreign aid on human development. The reason for looking at human development instead of economic growth is that the former captures a broad meaning of development. Although economic growth implies the increase in GDP per capita, it ignores several aspects of development such as levels of education, health, and the standard of living. According to the United Nations Development Program (UNDP), development is much more than "the rise or fall of national incomes". If people's standards of living worsen despite the increase in the national GDP, economic growth will not reflect the true improvement in development. Human development implies the increase in basic human capabilities such as the ability to lead long and healthy lives, to be educated, and to have an acceptable standard of living, and to be able to participate in community life (Human Development Report 2001). Development in this paper is thus measured using the human development index (HDI), which incorporates a measure of the increase in standard of living, health and education.

This paper consists of six sections. Section II briefly summarizes some of the most important studies that have been conducted in this field and states their relevance with respect to this paper. Section III presents the empirical model relating development to bilateral social aid, foreign direct investment (FDI), domestic investment, military expenditure, and GDP per capita. Section IV provides a general overview of the data. Section V discusses the results

obtained from the ordinary least square regression. Section VI explains the most important findings of the study and suggests policies towards development.

2. Literature Review

There has been a substantial amount of research in the field of foreign aid and its effects. Most of the research has been undertaken by academics and economists from international organizations such as the World Bank and the International Monetary Fund (IMF). According to analyses conducted by these multilateral agencies, foreign aid projects yield favorable rates of return overall (CBO, 1997). More specifically, their assessments show that two-thirds to three-quarters of their projects broadly achieved their objectives of promoting education, health, and economic growth.

Critics of foreign aid argue that foreign aid discourages domestic saving in developing countries and is simply diverted into consumption instead of investment (CBO, 1997). Since these countries do not have the technical ability to use the aid effectively, it gets spent on nonproductive activities and poorly-conceived projects. Boone (1996) concludes that there exists no significant correlation between aid and GDP growth because the majority of foreign aid is spent on consumption. In fact, many other studies on foreign aid have failed to find a link between foreign aid and economic growth. Griffin and Enos (1970) find that receipt of aid seems to reduce domestic saving and thus does not add to investment. Weisskopf (1972) finds a similar result, in which the inflow of foreign capital has a significantly negative impact on domestic savings. From a sample of 44 developing countries, he concludes that foreign aid substitutes for domestic savings. Moslye (1987) concludes that there is no significant

correlation between foreign aid and economic growth when factors such as private capital flows and domestic savings are taken into account.

On the other hand, some analysts have obtained a positive correlation between aid and growth. Heller (1975) finds a positive and significant relationship between foreign aid and investment (CBO, 1997). Gustav Papanek (1972) suggests that foreign aid does influence development, and the negative results of studies of foreign aid can be attributed to statistical biases. Since the target of foreign aid is towards poor countries, the measured correlation between domestic saving or growth rates and the amount of aid received is biased. In other words, the poorer the country is, the more likely it will receive aid. Consequently, it seems that countries that receive more aid are poorer. Recently, Gregory Mankiw (1995) from Harvard argues the empirical evidence of foreign aid and development is too limited to arrive at strong conclusions. The availability of data, limited to roughly 100 nations over a few decades, is insufficient to analyze various factors that influence foreign aid.

The presence of differing viewpoints by different economists has made the topic of the effectiveness of foreign aid very debatable. Some development economists believe that aid in itself does not bring a spectacular success, since the outcome is determined by the political and economic environment (Pronk, 2003). Furthermore, wrong policies formulated by the donor or the recipient exacerbate the effects of aid negatively (Pronk, 2003). According to a study by World Bank economists Burnside and Dollar (1997), foreign aid is more effective in increasing the growth rate of a country if a country has better fiscal, monetary, and trade policies. They, nevertheless, find that the adverse effects of shocks, such as extreme negative export price shocks, can be mitigated by providing an increased amount of aid.

Most of the research conducted in the area of foreign aid concentrates on the effect of foreign aid on economic growth. Nevertheless, there have been some recent contributions in the area of human development. Ranis and Stewart (2001) emphasize the importance of the interrelation between economic growth and human development. They suggest that economic growth provides financial resources to allow sustained human development, while sustained human development contributes to economic growth by increasing the quality of human capital. Anand and Sen (2000) find that economic growth does not necessarily bring human development. Some countries such as Sri Lanka, China, Jamaica, Costa Rica, and the state of Kerela in India have high levels of human development and relatively low levels of GDP per capita. They contend that increasing national GDP helps the poor in a developing country, only if the additional income is used towards public expenditures on health and education. Anand and Sen (2000) also argue that human development is intrinsically important towards the sustainability of economic growth because improvement of people's health, education, and nutrition will lead to an increase in their human capital. This improvement will raise their productivity, and they will be able to contribute towards the generation of higher GDP. Hence, sustainability of economic growth can be achieved through the improvement in human well-being.

This enormous importance of human development towards sustainable development has provided the motivation for the research undertaken in this paper. Developing countries have been receiving foreign aid for several years, and it is important to investigate empirically whether aid has impacted human development. Clemes and Gani (2003) examine this relationship using a sample of 65 developing countries for the years 1991, 1992, 1993, 1994, and 1995. They use OLS regression to test whether educational aid, health aid, food aid, and

water supply aid have a positive effect on human development. Their study finds that health aid and food aid have negative effects on human development, while water aid has positive effects in lower income countries. The coefficient of education aid is positive in their study, but it is not statistically significant.

This paper also attempts to investigate the relationship between human development and foreign aid, but it is different from Clemes and Gani's (2003) paper in two important ways. First, this paper uses social aid to capture education aid, health aid, and water supply aid. The reason for looking at social aid instead of its individual components is to test whether social aid as a whole has a positive impact on human development, especially in the light of Clemes and Gani's (2003) findings that health aid has a negative effect and education aid has a positive but statistically insignificant effect. Second, this paper considers a broader time period between 1975 and 2001 because this helps determine the effect of foreign aid not only in the early 1990s but also in the 1970s and 1980s. The period between 1970 and 1990 should not be ignored because the values of human development indices (HDI) were very low for several countries in the early 1970s. Some countries such as Nepal have shown large improvements in human development from 1975 to 2001. For instance, Nepal's HDI increased from 0.287 in 1975 to 0.499 in 2001, which is an increase of 73.95%. Development takes time, and analyzing data from half a decade only may be insufficient to generalize the effect of foreign aid on human development.

3. Empirical Model

As stated above, the purpose of this paper is to examine the impact of foreign aid on human development. This will be done empirically through ordinary least squares regression

analysis. The empirical model consists of HDI as a dependent variable, and social aid, foreign direct investment, domestic investment, military expenditures and GDP per capita as independent variables. HDI is a composite index that measures human development. A further explanation of the HDI will be presented later in the section. On the other hand, social aid is the foreign aid provided for human development. There are different types of foreign aid, but not all of them go towards poverty reduction or social development. Social aid is used to isolate the type of aid that may have a positive impact on human development. Since social aid is not the only factor that impacts human development, foreign direct investment, domestic investment, military expenditure, and GDP per capita are also included in the model. Expenditures towards factories provide jobs, and this improves the HDI by increasing the income of people. The expenditure towards these factories can come in the form of foreign direct investment. Similarly, domestic investment towards social and economic programs influences HDI by improving health conditions, and educational levels. Military expenditure reduces HDI by diverting funds away from social purposes. GDP per capital represents an increase in income, which helps the poor to afford basic amenities in life. Foreign direct investment, domestic investment, military expenditure, and GDP per capita are thus added as control variables.

The actual model that is used to test the impact of social aid on development is as follows:

$$HDI=a_1 + a_2*Social\_Aid_{t-2} + a_3* FDI_{t-1} + a_4*Domestic\_Investment_{t-1} + a_5*M\_Expenditure_t + a_6*GDP_{t-1}$$

Table I lists the dependent and independent variables with their expected signs. The justification for the inclusion of each variable and the expected signs of their coefficients are explained below.

The HDI is a composite index that takes into account various aspects of development other than economic growth, such as longevity, knowledge, and standard of living. If people in a country die at a very young age due to preventable diseases, a country cannot be regarded as a developed country. Similarly, if most people in the country cannot read or write, and if their income is not high enough to afford basic amenities of life, the country cannot be considered to have high human development. These three factors are considered to be end products of development, since citizens of a developed country should be able to live a long, healthy life, get a good education, and afford a high standard of living. The HDI is calculated by averaging three indices – a health index, a knowledge index, and an income index (UNDP, 2001). The health index is measured by life expectancy at birth; the knowledge index is measured by a weighted average of the adult literacy rate, and the primary, secondary and tertiary school enrolment ratios; and the income index is measured by the logarithm of GDP per capita (PPP US$). For further details on the calculation of HDI, please refer to Appendix III. The value of the HDI ranges from 0 to 1, where 0 represents the lowest level of human development and 1 represents the highest level of human development.

The most important independent variable is social aid (as a percentage of GDP). This category of social aid covers all kinds of financial aid that help ameliorate the living conditions in developing countries. It consists of bilateral foreign aid on education, health, and sanitation. Previous research has shown that life expectancy is dependent on spending on health per person (Anand and Ravallion, 1993). Similarly, spending on education is positively

correlated with an increase in adult literacy rates (Anand and Sen, 2000). Since different components of social aid such as health aid, water aid, and education aid play a positive role in influencing the health index and education index part of HDI, social aid is hypothesized to have a positive impact on human development.

Foreign direct investment or FDI (as a percentage of GDP) represents the net inflows of private investment received by a developing country to obtain 10 percent or more of voting stock in a business enterprise (World Bank Indicators, 2001). Borensztein et al. (1998) empirically demonstrate that foreign direct investment is positively correlated with economic growth in least developed countries. Using a dataset that consists of a sample of 69 developing countries, Borensztein et al. (1998) conclude that FDI brings new technologies to these countries and thus helps increase the growth rate. Since investment from other countries is used to promote businesses in a developing country, it can generate several jobs for local people. This results in the rise of income of these people as well as the standard of living, and consequently the level of HDI improves. Multinational companies (MNC's) bring advanced technologies and managerial experience that have not developed properly in poor countries (Townsend, 2003). Moreover, these MNC's train local people and increase their human capital stock. Therefore, the sign of the coefficient of FDI is expected to be positive.

Domestic investment (as a % of GDP) is calculated by subtracting foreign direct investment from gross capital formation. According to the World Bank Indicators (2001), gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. It is the investment on land improvements (fences, ditches, drains, etc), plant, machinery, construction of roads, railways, schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Since gross

capital formation includes foreign direct investment, FDI must be subtracted. This variable is important in the model because investment on roads, schools, hospitals, and so on directly and indirectly contribute to human development. Schools play an important role in the education of children. If the number of schools increases and children start attending these schools, the value of the education index goes up. Similarly, if there are more hospitals in a country, patients will have access to treatment and the health index will improve. In a recent study by Jones (1998), it is found that the economy prospers if the economy encourages production and investment. He also argues that this prosperity will lead to higher human development. Hence, the expected sign of the coefficient of domestic investment is positive.

Military expenditure (as a % of GDP) is defined as all current and capital expenditures on the armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; and paramilitary forces (World Bank, 2001). This expenditure represents unproductive government expenditure in the sense that it does not contribute to human development. According to the UNDP (1996), government expenditure on health, education, social security, and water supply and sanitation has a positive effect on human development. However, if the government increases spending towards non-development purposes, human development can suffer. In fact, increased spending towards non-development sectors such as the military will have a regressive effect on development (Clemes and Gani, 2003). Clemes and Gani (2003) find that higher military expenditure is inversely related with human development in low-income countries. They argue that unproductive government expenditure such as military expenditure diverts government spending from public issues. Therefore, a negative sign is expected for the coefficient of military expenditures.

GDP per capita plays an instrumental role in human development. If the income level of individuals in a country is high, these people can be expected to have a higher standard of living. They will also be able to afford education and health services. Anand and Ravallion (1993) show that GDP per capita and human development have a positive statistic correlation. They suggest that an increase in GDP per capita lowers poverty and increases public expenditure on health and education. So the coefficient of GDP per capita is expected to be positive.

In this empirical model, social aid, FDI, domestic investment, and GDP per capita are lagged. Social aid is lagged by two years, while the other three variables are lagged by one year. The justification for lagging social aid is that aid provided in a given year will not increase human development in the same year. The effect of foreign aid on human development is not instantaneous, as it takes time to increase the education level, and improve health conditions (Clemes, 2003). Similarly, foreign direct investment, domestic investment and GDP per capita are lagged because their effects will also not be captured in the same year. All of them need some time to influence HDI, whether it be building factories, providing education, or implementing health programs. The number of years lagged is longer for social aid because it takes more time to observe returns to education and improvement of health. For example, implementation of immunization programs may take at least two years to reduce the mortality rate of children from preventable diseases. Implementation of literacy programs will take more than one year to change the literacy rate of the country. It is also important to note that the results of this study do not depend on the actual number of years lagged. For instance, the regression results do not change significantly when social aid, FDI, domestic investment,

and GDP per capita are each lagged by five years. Similarly, when these variables are lagged in various combinations of two, three, or four years, the results do not alter significantly.

Table 1 – Dependent and Independent Variables

Variable	Definition	Expected Sign
Dependent HDI (Human Development Index)	Average of life expectancy index, knowledge index and GDP index.	
Independent Social_Aid$_{t-2}$ (% of GDP)	Aid to develop the human resource potential and ameliorate living conditions in developing countries. (It includes education aid, health aid, water supply aid, and other aids that influence human well-being.)	+
FDI $_{t-1}$ (% of GDP)	Net inflows of private investment received by a developing country to obtain 10 percent or more of voting stock in a business enterprise.	+
Domestic_Investment $_{t-1}$ (% of GDP)	Gross capital formation as a percentage of GDP – FDI as a percentage of GDP (Gross capital formation consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories.)	+
M_Expenditure$_t$ (% of GDP)	All current and capital expenditures on the armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces.	-
GDP$_{t-1}$ (constant 1995 US$)	GDP per capita or Gross Domestic Product divided by midyear population.	+

Source of Definitions: Human Development Reports 1990-2003, and Geographical Distribution of Financial Flows to Aid Recipients 2001.

4. Data

The set of countries considered in this study consists of 120 developing countries which had an HDI lower than 0.8 in the year 2001. According to the UNDP, a country with an HDI value of over 0.8 represents a country with high human development. So countries with medium human development (HDI range: 0.5-0.8) and low human development (HDI range: 0-0.5) comprise the sample in this paper. These countries span various regions in the world such as Africa, Asia, South America, Eastern Europe, and the Caribbean. A complete list of the countries included in the sample is listed in Appendix I of this paper.

This study focuses on the HDI values of the above sample of countries for the years 1975, 1980, 1985, 1995, and 2001 to observe how development has taken place over a span of 26 years. One of the reasons for choosing the sample period (1975, 1980, 1985, 1990, 1995, and 2001) is the availability of comparable data across time. According to the UNDP, different methodologies were used to calculate the HDI in various years, and the only comparable data the UNDP has published are for the years specified above.

The data for the HDI are obtained from the Human Development Reports published by the UNDP. The source of data for social aid is the International Development Statistics (2001) published by the OECD. The other variables such as FDI, domestic investment, military expenditure, and GDP per capita were obtained from the World Bank Indicators published by the World Bank.

The sample size consists of 720 observations. However, due to lack of data on some of the independent variables as well as dependent variable, the sample size is reduced to 196. It is interesting to note some observations on the demographics of the data collected. The mean, minimum, maximum, and standard deviation of each variable are listed in Table 2.

Table 2-Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Dependent					
HDI	516	.23	.81	.5603	.15444
Independent					
Social Aid (% of GDP)	509	.00%	21.09%	1.174%	2.278%
FDI (% of GDP)	530	-28.62%	31.62%	1.46%	3.55%
Domestic Investment (% of GDP)	497	-4.34%	55.80%	19.98%	8.54%
Military Expenditure (% of GDP)	243	.20%	27.50%	3.395%	3.85%
GDP per capita	582	$91.62	$11315.63	$1288.76	$1429.85
Valid N (listwise)	196				

Burkina Faso in 1975 had the lowest HDI in the sample, and its HDI has increased over several years from .23 to .33 in 2001. In 2001, Burkina Faso ranked as the third poorest country in terms of human development. Nepal has shown the largest improvement in HDI among the countries in the sample. Its HDI increased from 0.287 to 0.499 from 1975 to 2001, which is an increase of 73.95%. Every year Nepal received on average $13.56 aid per capita from 1970 to 2000. The least improvement in HDI occurred for Zambia, where its HDI decreased from 0.462 in 1975 to 0.386 in 2001. This represents a 0.16% decrease in HDI over a span of 26 years. Zambia received $48.94 aid per capita every year from 1970 to 2000. Despite the greater flow of foreign aid, Zambia's decrease in HDI is probably due to the death toll from AIDS. Bollinger and Stover (1999) point out that AIDS has affected Zambia's economy by increasing health care costs, reducing the labor force, and decreasing the number of experienced productive workers. Costs to treat AIDS are very expensive, and the death toll

from AIDS adversely affects human development by reducing average life expectancy and standard of living.

Some of the countries that had the least HDI in 2001 were Sierra Leone (0.275), Niger (0.292), Burkina Faso (0.330), Mali (0.337), and Burundi (0.337). The HDI of all these countries improved from 1975 to 2001. For example, Niger, Burkina Faso, Mali, and Burundi showed an increase of HDI by 20.16%, 39.24%, 45.88%, and 17.42% respectively during this period of time. In the sample, countries with the highest HDI in 2001 were Malaysia (0.790), Panama (0.788), Colombia (0.779), and Brazil (0.778). The HDIs of these countries were 0.65, 0.710, 0.667, and 0.643 respectively in 1975, and these values increased by 14%, 7.8%, 16.7%, and 0.20% respectively from 1975 to 2001.

Several countries such as Gambia, Haiti, Mali, Mozambique, Nicaragua, and Panama received no social aid at all in 1975. Mali received on average 0.0021% of its GDP in social aid over the years 1973 to 1999, and its HDI rose from 0.231 in 1975 to 0.337 in 2001. Sao Tome and Principe received the largest amount of aid as a percentage of GDP (21.09%) in 1999, and its HDI in 2001 was 0.64. The HDI values of Sao Tome and Principe for the years before 2001 are missing in the dataset.

Sierra Leone received the lowest FDI as a share of GDP (-28.62%) in 1984, while Equatorial Guinea received the largest percentage of FDI (31.62% of GDP) in 1994. Sierra Leone is one of the countries with very low HDIs. Equatorial Guinea's HDI in general is much higher than Sierra Leone's. For example, Equatorial Guinea's HDI was 0.664 in 2001, while Sierra Leone's HDI in the same year was 0.275. Similarly, Niger in 1994 had the least domestic investment (-4.34%) as a percentage of GDP, while its HDI in 1995 was 0.27.

Moldova in 1994 had the highest domestic investment (55.8%) as a percentage of GDP, and its HDI in 1995 was 0.7.

Comoros spent the least on military expenditure in 1994. It spent only 0.2% of GDP towards the military that year, and the value of its HDI the following year was 0.515. Eritrea in 2000 had the highest military expenditure (27.50%) as a share of GDP, while its HDI in 2001 was 0.446. Although the difference in military expenditures between these two countries seems much higher than the difference in their HDIs, the country with the least military expenditure does have a higher level of human development.

In 2000, Congo had the least GDP per capita ($91.62), and its HDI in 2001 was 0.502. It received on average 0.00031% of its GDP in social aid during the period between 1973 and 1979. Its HDI increased by 8.65% from 0.462 in 1975 to 0.502 in 2001. On the other hand, Saudi Arabia in 1979 had the highest GDP per capita ($11315.63) with an HDI value of 0.66 in 1980. It is interesting to note that Saudi Arabia received 0.006% of its GDP and 0.0057% of its GDP in social aid in 1993 and 1998 respectively, but it did not receive any social aid in the years 1973, 1978, 1983, and 1988. Its HDI increased from 0.66 in 1980 to 0.76 in 2001.

5. Results

The results for the ordinary-least square regression are presented in Table 3.

Table 3: Regression Results (Dependent Variable=HDI)

Variable	Coefficient	t statistics
$Social\_Aid_{t-2}$	-.0151**	-2.751
	(.005)	
FDI_{t-1}	.00435*	2.415
	(.002)	
$Domestic\_Investment_{t-1}$	.0035**	3.420
	(.001)	
$M\_Expenditure_t$	-.00614*	-2.358
	(.003)	
GDP_{t-1}	0.000082**	11.033
	(.0001)	
Adjusted R^2	.534	
F-Statistic	45.673	

** Significant at the 0.01 level. *Significant at the 0.05 level. The numbers in parenthesis represent the standard errors corresponding to each coefficient.

The OLS regression of the model yielded an adjusted R^2 of .534, so 53.4% of the variation in the dependent variable is explained by the empirical model. The coefficients of all the variables except social aid have the expected signs, and all of them are significant at the 0.05 or 0.01 level. The coefficients of FDI, domestic investment, and GDP per capita have a positive impact on HDI as expected. Military expenditure has a negative coefficient, which supports the hypothesis that unproductive government expenditures do not bring development. The coefficient of social aid however turns out to be negative.

The presence of the negative coefficient of social aid does not necessarily imply that social aid has a detrimental effect on human development. The reason for this result may be due to the statistical bias from reverse causation. Generally, if a country is poor, it is likely to receive more aid. Aid is allocated by several international organizations such as the World

Bank and the IMF by calculating the difference between the total savings and total required investment to achieve a certain economic growth rate (Easterly, 2001). As a result, countries receive a greater amount of aid if its total savings are low. Poorer countries usually have some of the lowest savings rates, and thus they receive more aid on the basis of such a calculation of aid allocation. Indeed, data show that countries with lower HDI values received more social aid than countries with higher HDI values. For instance, the HDI values for Sierra Leone, Niger, and Burkina Faso were 0.275, 0.292, and 0.330 respectively in 2001, and they received 3.5%, 1.8%, and 7.7% of their GDP respectively in social aid in 1999. On the other hand, some of the countries with high human development in the sample received less social aid. The HDI values for Antigua and Barbuda and Belize were 0.798 and 0.776 respectively in 2001, and they received 1.1% and 0.5% of their GDP respectively in social aid in 1999. These examples clearly illustrate that poorer countries receive a larger amount of aid, so the negative coefficient of social aid can be attributed to the statistical bias due to reverse causation.

The results show that FDI positively influences human development. When FDI as a share of GDP increases by one percentage, HDI increases by 0.00435, *ceteris paribus*. The value 0.0035 may seem very small, but recall that the value of the HDI ranges from 0 to 1. So, for example, if the HDI of a particular poor country rises from 0.1 to 0.10435, the HDI increases by 4.35%. Furthermore, development takes time and there are several factors that influence it. Careful examination of the sample shows that it is very rare to encounter an increase of HDI by at least 0.1 in less than a decade. So it is reasonable that the FDI received in the previous year contributes to the development process, even if the effect is small.

Similarly, the regression results suggest that domestic investment has a positive impact on development. Specifically, an increase in domestic investment by one percentage increases the HDI by 0.0035. The t-statistic for this variable is 3.420, which indicates that this coefficient is significant at the 0.01 level. Therefore, domestic investment towards schools, roads and hospitals plays a significant role in promoting the well-being of people.

The sign of the coefficient of military expenditure is negative as expected. If military expenditure increases by one percentage, the HDI falls by 0.00614. This coefficient is significant at the 0.05 level. Thus, military expenditure does not contribute to overall development, and if a country spends more on this category than social programs, people in the country are not going to experience an increase in the quality of their lives.

When GDP per capita rises by one dollar, HDI increases by 0.000082. This coefficient is also significant at the 0.05 level. It is interesting to note that the coefficient of GDP per capita is relatively small compared to other coefficients. This suggests that factors such as presence of foreign direct investment and domestic investment have a stronger impact on human development than GDP per capita. Rising GDP levels do help a developing country, but its effect is minute compared to other factors.

6. Conclusions

The important finding of this paper is that foreign direct investment, domestic investment, and GDP per capita positively impact human development, while social aid and military expenditure have a negative effect. Although social aid apparently reduces the HDI according to the regression results, the negative sign could be due to statistical biases. Generally, countries with lower HDI values receive more aid than those with higher HDI

values. Hence, it may seem that foreign aid is linked to lower values of HDI, even though social aid might have been effective in raising the HDI value. Hence, instead of allocating aid on the basis of the difference between savings and desired investment, bilateral and multilateral organizations should create incentives for developing countries to develop (Easterly, 2001). The current system of aid allocation encourages developing countries to keep their savings rate lower in order to receive more foreign aid. Donors should give the governments in these countries incentives to increase their savings by encouraging them to cut unproductive private government consumption. They should give incentives to lower corruption and implement effective policies. Donors could then reward these governments with an increasing amount of aid, if they meet all these targets of increasing savings, lowering corruption, and implementing good monetary, fiscal or trade policies.

Developing countries should create a favorable environment to attract foreign direct investment because multinational companies play a crucial role in bringing technical expertise and providing jobs to these countries. These countries should also promote domestic investment. This may be achieved by maintaining a strong banking system, and these banks should create incentives for people to save. One way to create such an incentive is to increase the rate of interest on savings. Governments should encourage local businessmen to invest in industries and factories, which can be done by lowering taxes for profits which are reinvested in new factories, technologies, or machines.

As high military expenditure reduces the value of HDI, governments should cut back on military spending. While it is important to maintain the strength of the military, unnecessary expenditures towards this will divert much-needed funding for education, health and several social programs. Purchasing missiles and high tech defense equipment may not be

justifiable, when most of the people in the country are living a sub-standard existence. If instead governments spend a higher proportion of GDP on development programs, development may actually take place in the country.

Since this paper attributes the negative coefficient of social aid to statistical biases, future research exploring the effect of foreign aid on human development should be undertaken. This issue could be addressed by running a two stage least squares regression analysis. Foreign aid may have a positive impact on human development, but there are several factors that donors take into consideration when allocating aid. Based on these factors, some countries receive more aid than others. Some such factors may be trade policy and savings rate, and these factors can be used as instrumental variables in the two stage least squares regression. This might eliminate the statistical bias in which richer countries receive less foreign aid and poorer countries receive a huge amount of aid.

There are numerous other reasons why a country is not developing despite receiving massive amounts of foreign aid. Foreign aid by itself may not bring human development if civil unrest, natural disasters, corruption, and poor trade and fiscal policies are present. For instance, civil unrest in countries like Sierra Leone has a negative impact on human development. Most people are likely to die at a relatively young age due to violence from civil unrest, and this directly affects the health index. Violence on the streets may also deter children from going to school, especially if the school is farther from home, and this affects the education index as well. In this case, even a huge amount of social aid may fail to bring human development in such countries. Hence, control variables such as civil unrest, corruption, natural disasters, trade policies, and fiscal policies can be included in the empirical model to take into account these others factors that affect development.

There are certain econometric issues that could be addressed in the future. The sample size was reduced from 720 to 196 because of missing data points. If a data point is missing for a certain country in a given year, all the data points for that particular year for that country are removed during OLS regression. However, the panel data set becomes unbalanced when only a few years for a particular country are included, and this could bias the results. In the future, if any missing data points exist for a certain year, the country with the missing data points should be excluded entirely from the dataset. Such elimination will depend upon the improvement of the availability of data because it will otherwise reduce the sample size from 196 to less than 50 with the data that is currently available. Another econometric issue to be considered is the presence of non-stationary time series variables in the regression. It is important to make all the variables stationary in order to increase the reliability of the results. This can be done by taking the first order differences of the logarithm of the variables to make their variances stationary in the mean.

In conclusion, human development should be a priority for governments and donors alike. Instead of just implementing programs that help increase or decrease the rate of economic growth, they should stress the importance of educating people and fulfilling their basic human needs. Governments and donors should realize that the national income may rise or fall; but if citizens in a country are healthy, educated, and happy, they can have a lasting influence in the future of the country.

Appendix I

Countries Considered in this Study

Albania
Algeria
Angola
Antigua and Barbuda
Armenia
Azerbaijan
Bangladesh
Belize
Benin
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Bulgaria
Burkina Faso
Burundi
Cambodia
Cameroon
Cape Verde
Central African Republic
Chad
China
Colombia
Comoros
Congo
Congo, Dem. Rep. of the
Côte d'Ivoire
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Ethiopia
Fiji
Gabon
Gambia
Georgia
Ghana
Grenada
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Honduras
India
Indonesia
Iran, Islamic Rep. of
Jamaica
Jordan
Kazakhstan
Kenya
Kyrgyzstan
Lao People's Dem. Rep.
Lebanon
Lesotho
Libya
Macedonia, TFYR
Madagascar
Malawi
Malaysia
Maldives
Mali
Mauritania
Mauritius
Moldova, Rep. of
Mongolia
Morocco
Mozambique
Myanmar
Namibia
Nepal
Nicaragua
Niger
Nigeria
Occupied Palestinian Territories
Oman
Pakistan
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Romania
Russian Federation
Rwanda
Saint Lucia
Saint Vincent and the Grenadines
Samoa (Western)
Sao Tome and Principe
Saudi Arabia
Senegal
Sierra Leone
Solomon Islands
South Africa
Sri Lanka
Sudan
Suriname
Swaziland
Syrian Arab Republic
Tajikistan
Tanzania, U. Rep. of
Thailand
Togo

Tunisia
Turkey
Turkmenistan
Uganda
Ukraine
Uzbekistan
Vanuatu
Venezuela
Viet Nam
Yemen
Zambia
Zimbabwe

Appendix II

Acronyms

CBO	Congressional Budget Office
GDP	Gross Domestic Product
FDI	Foreign Direct Investment
HDI	Human Development Index
HDR	Human Development Report
IMF	International Monetary Fund
MNC	Multinational Corporation
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares
PPP	Purchasing Power Parity
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund

Appendix III

Calculation of HDI

1) Calculation of the Life Expectancy Index

The life expectancy index measures the life expectancy at birth. It is calculated using the following formula:

Life expectancy index = (Life expectancy at birth – 25)/(85-25).

2) Calculation of the Education Index

The education index measures a country's achievement in adult literacy and combined primary, secondary, and tertiary gross school enrolment. It is a weighted average of the adult literacy index and the gross enrolment index. The formulas are given below:

Adult Literacy Index=(Adult Literacy Rate-0)/(100-0)

Gross Enrolment Index=(Gross enrolment ratio in percentage-0)/(100-0)

Education Index=2/3(Adult Literacy Index)+1/3(Gross Enrolment Index).

3) Calculation of the Income Index

The income index represents the standard of living of people in a country. It is calculated using the logarithm of GDP per capita (PPP US$). This index is calculated using the following formula:

GDP Index=(logarithm of GDP per capita – log (100))/(log (40,000)-log (100)).

4) Calculation of the HDI

The HDI is an average of the life expectancy index, the education or knowledge index, and the income index:

HDI=1/3(Life Expectancy Index) + 1/3(Education Index) + 1/3 (Income Index).

(Source: Human Development Report (2001), UNDP, United Nations, New York, NY)

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