THE EFFECT OF HEALTH ON FOREIGN DIRECT INVESTMENTS INFLOWS IN KENYA

M.A. RESEARCH PAPER

BY

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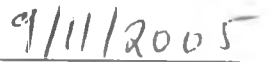SUPERVISORS: DR. S. NYANDEMO

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A research paper submitted to the Department of Economics, University of Nairobi in partial fulfillment of the requirements for the award of Masters of Arts degree in Economics.
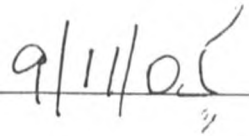
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DECLARATION

This paper is my original work and has not been presented for a degree in any other university.

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This research paper has been submitted for examination with our approval as university supervisors.

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_04. 11. 2005_

DATE

DEDICATION

To my parents John Enos and Clarice Were,
For always wanting the best for your daughters.

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First and foremost I wish to give thanks to God Almighty for seeing me through this course.

I would also like to express my sincere thanks to my supervisors Dr. S. Nyandemo and Dr. M. Mbithi, whose advice, corrections and patience helped to build this paper to what it is.

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ACRONYMS

AIDS	Acquired Immuno Deficiency Syndrome
CBS	Central Bureau of Statistics
FDI	Foreign Direct Investments
GDP	Gross Domestic Product
HIV	Human Immuno Deficiency Virus
IMR	Infant Mortality Rate
IPC	Investment Promotion Centre
PRC	People's Republic of China
SARS	Severe Acute Respiratory Syndrome
TB	Tuberculosis
UNCTAD	United Conference on Trade and Development

ABSTRACT

FDI is one of the development indicators in developing countries. Many of these countries (Kenya included) seek ways to improve on the foreign direct inflows. They do this by identifying the factors that influence FDI and controlling or improving on these factors so as to attract foreign investors. Some of the determining factors of FDI in Kenya have been identified to be; infrastructure, insecurity, openness of the economy to trade, legal framework and governance.

This study has examined the effect of health on foreign direct investment inflows in Kenya for the period 1970 – 2003. Life expectancy and morbidity rates are used as proxies for health. The results indicate that both life expectancy and morbidity rates influence FDI inflows into the country significantly, although morbidity has a greater impact on FDI than life expectancy. Other explanatory variables included in the model, apart from GDP per capita have also been found to significantly affect FDI. Infrastructure, openness of the economy to trade and education positively impact on FDI. While insecurity and GDP per capita influences FDI negatively.

The study has also made several policy recommendations including seeking ways to increase public investments on health, developing infrastructure, building more schools and institutions of higher learning so as to cater for the increasing number of students and lastly improving security in the country.

CHAPTER ONE: INTRODUCTION

1.1 Background

Human health has a major role to play in economic development. There is a direct link between the health of a population and its productivity, and this relationship has been demonstrated in industrial countries, which are now benefiting from years of investment in health services (Schultz, 1993). Provision of good health services satisfies one of the basic human needs and contributes significantly towards maintaining and enhancing the productive potential of the people. Improving health services reduces production losses caused by worker illness, permits the use of national resources that had been totally or nearly inaccessible because of disease increases the enrolment of children in school, and increases learning ability. (Kimalu, et al, 2004).

Healthcare is both a consumer good as well as an investment good. As consumption good, healthcare improves welfare, while as an investment commodity; healthcare enhances the quality of human capital and improves labour productivity, partly by increasing the number of days available for productive activities. (Kimalu, et al, 2004)

Health affects economic performance through direct and indirect mechanisms (Bloom and Canning, 2000). It has a direct effect on workers' productivity because healthy workers are generally more physically and mentally robust than those afflicted with disease or disability and are less likely to be absent from work because of personal or household illness.
Health can also affect economic performance through indirect mechanisms; for example, improved health can increase the return to other forms of human capital, such as education and worker experience. Healthier children have enhanced cognitive function and higher school attendance, allowing them to become better educated, higher earning adults (Bhargava, 2001). In addition, healthier workers, who have lower rates of absenteeism and longer life expectancies, acquire more job experience.

Health, viewed as a form of human capital, could affect foreign direct investment (FDI) through several mechanisms.

The World Health Organization's Commission on Macroeconomics and Health (2001) suggests that a healthy workforce is important when attracting foreign direct investment due to the effect of health on worker productivity. In addition, for fear of endangering their own health and that of their expatriate staff, foreign investors may shun areas where disease is rampant and where access to health care is limited.

A classic instance of disease interfering with investment was during the building of thePanama Canal. Yellow fever and other pathogens claimed the lives of 10,000 to 20,000 workers between 1882 and 1888, forcing Ferdinand de Lesseps and the French to abandon the construction project (Jones, 1990). More recently, the outbreak of Severe Acute Respiratory Syndrome (SARS) has exemplified how disease, or even the fear of disease, can dampen investment: FDI inflows into mainland China declined by US$2.7 billion during 2003 (Business Daily Update, 2003). Similarly, FDI inflows to Hong Kong fell by 62% in one quarter (Tam, 2003).

These trends quickly reversed once the outbreak was controlled, but they suggest that lengthier epidemics, such as HIV/AIDS or malaria, could have severe, long-term effects on FDI.

Figure 1. **Time Trend of FDI Inflows to the PRC,
Jan 2002-Jun 2004**
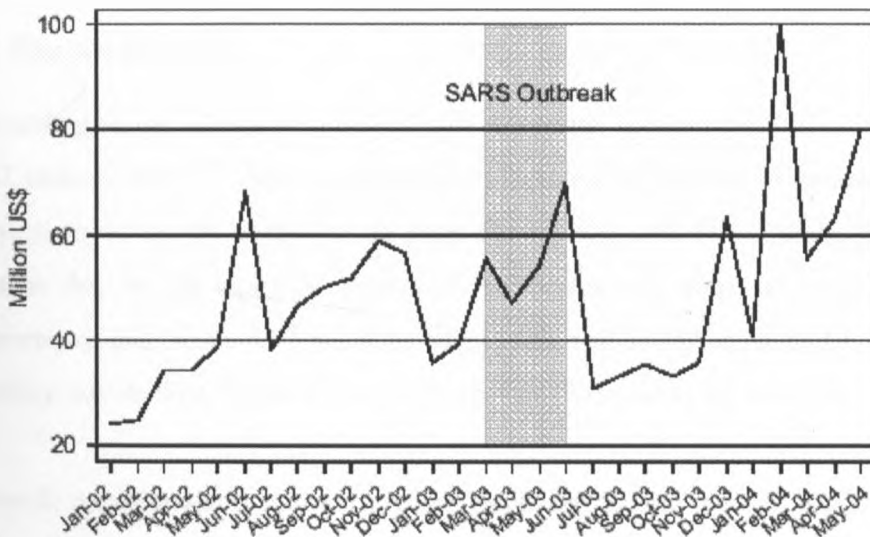
Source: *China Monthly Statistics* (CSICC various years).

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The role of FDI as a source of capital has become increasingly important to Sub Saharan Africa. This stems from the fact that income level and domestic savings in the region are very low. As a result, external capital is needed to supplement domestic savings in order to spur economic growth. Since most Sub Saharan African countries do not have access to international capital markets, they have to rely on other forms of foreign finance namely; FDI and official loans (Asiedu, (2001). While other sources of capital market flows and official development assistance to developing countries have steadily declined, FDI has continued to rise and now represents the largest component of net resource flows to developing countries (Miyamoto, 2003).

In addition to providing employment opportunities and financial capital, FDI can generate positive externalities, such as transferring technology and skills and increasing access to global markets (Lim, 2001; UNCTAD, 2003). These potential benefits are particularly relevant for developing countries and many are actively seeking to attract greater FDI inflows. Many countries have already implemented business facilitation measures, created investment promotion agencies, and liberalized their investment frameworks (Asiedu and Lien, 2004; UNCTAD, 1998).

1.2 Kenya's Scenario

According to the Kenya National Health Accounts, Kenya's population was estimated to be 31.2 million (2001/2). The population is projected to grow at an annual rate of 2.4%. Life expectancy is on the decline at 48 years for females and 47 for males and expected to fall further due to the rising incidence of AIDS. As well there is steady decline in the life expectancy rate from 57.7 years in the 1990's and is expected to be 44.6 years in 2005. Fertility rate declined from 8.1 in 1979to 5.4 in 1993 and to 4.7 in 1998.

Overall, morbidity and mortality remain high, particularly among women and children. An infant mortality rate (IMR) of 62 in 1993 increased by 19% to 74 in 1998 while the under-five mortality stood at 112 per 1,000 in 1998. IMR in 2003 was 77/1000 live births while under 5 mortality rate stood at115/1000 live births in 2003.

Table 1: Kenya's Life Expectancy

Year	1955	1960	1970	1980	1990	2000	2005 (prognosis)	2015 (prognosis)	2050 (prognosis
Life expectancy at birth (number of years)	40.9	43.4	48.3	53.3	57.7	50.7	44.6	45.0	54.1

Source: Kenya Demographic Health Survey (2003)

1.2.1 Disease Burden in Kenya

There are wide regional variations in the disease burden with certain districts in the Lake Region and the Coastal area having the highest levels. Malaria is the leading cause of outpatient, diseases of the respiratory system, skin diseases, diarrhoeal diseases and intestinal worms follow in that order. Other frequent health problems include accidents, urinary tract infections, eye infections, rheumatism and ear infections. Combined, these ten leading conditions of outpatient morbidity contribute nearly four-fifths of total cases reported. (National Health Accounts, 2001/2)

Table 2: Diseases in Kenya

Year	1998		1999		2000		2001	
Diseases	Total numbers	As % of total diseases	Total numbers	As % of total diseases	Total numbers	As % of total diseases	Total numbers	As % of total diseases
malaria	4,523,651	34%	4,509,524	33%	4,618,556	35%	3,262,931	31%
Diseases of respiratory system	3,120,623	23%	3,112,876	23%	2,787,974	21%	2,424,302	23%
Skin diseases	963,149	7%	959,340	7%	827,217	6%	711,555	6%
diarrhea	633,774	5%	643,151	5%	622,275	4.73%	483,941	4.63%
Intestinal worms	597,110	4%	624,273	5%	608,979	4.63%	484,271	4.64%

Source: National Health Accounts (2001/2)

Malaria in Kenya

The malaria health burden has an important morbidity with the severe forms of the disease being the main reasons for hospital admissions of young children in Kenya. It debilitates both physically and financially by causing widespread premature death and suffering and imposing major financial hardship on poor households. In effect it holds back economic growth and improvements in living standards thus becomes heavy burden in economic development in malaria endemic areas.

Malaria is a serious health problem in Kenya because of its etiology and growth of drug resistance. It is a major economic burden for the households who end up spending money on prevention and treatment. It ranks among the foremost health issues facing Kenya and continues to be a major public health impediment since it increases public sector expenditures. WHO (1988) estimated that malaria reported cases represent 2% to 8% of actual cases. The impact of this disease translates into a significant demand for services and a major strain to the country's health system.

According to Tuitoek, (2004) malaria has a strong negative impact on GDP per capita on the Kenyan economy. This is a very large drawback on economic growth and development for a country like Kenya that is faced with dwindling resources.

Malaria illness (morbidity) has a pervasive effect on the economic incentives, behavior and strategy of households, (Leighton and Foster, 1993). The impact in Kenya is substantial principally because 70% of the population experiences several malaria episodes per year that requires adults to stay away from work to recuperate or to take care of sick children. Majority of the Kenyan population works in agriculture therefore malaria may have its biggest impact on this sector even though the value of a day's labor in agricultural sector is generally the lowest of any of the major economic sectors. One of the main implications of malaria's complexity is that the impact of lost production from malaria cannot be easily predicted based only on the importance of each sector. In industry and agricultural like tea, sugarcane, coffee, rice and tobacco estates, malaria accounts for the greatest number of man hours lost which may be up to or more than 50% of all man hours lost. This affects production and revenue for the industry, families and the nation as well.

Loss of investment funds affects economic growth because investors are not investing in countries where most of their profits will be eroded through absenteeism from work due to malaria and on treatment of malaria infected workforce. Malaria that is not controlled reduces accumulation of human capital thereby reducing long- term growth potential in malaria-affected parts.

HIV/AIDS in Kenya

HIV/AIDS pandemic is the only health problem that is believed to have reversed the significant gains made in life expectancy and infant mortality during the first three decades of independence. The HIV/AIDS pandemic is becoming much more than a health problem as it encompasses economic, social, and cultural dimensions. (Kimalu, et al, 2000)

According to Sessional Paper No. 4 (1997), AIDS kills young economically productive people, brings hardship to families, increases expenditure on healthcare and adversely affects the country's development. By depriving the economy of qualified and productive labour force, restricting the tax base, and raising the demand for social services due to the increased number of orphaned children and widows, AIDS poses a great challenge Kenya's development (Saitoti, 2002). The main reasons for the rapid spread of AIDS in Kenya are ignorance, poverty, high incidence of sexually transmitted diseases, socio-cultural beliefs and practices, and deficient public health infrastructure.

Figure 2: Adult HIV/AIDS prevalence in Kenya 1980-2003
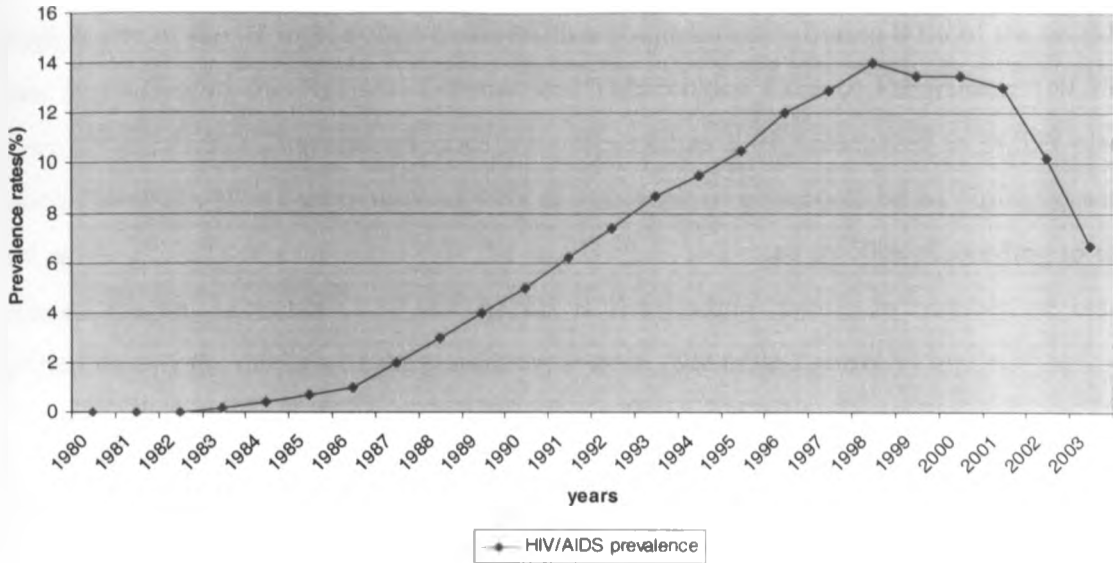
Source: National AIDS/STDs control Programme (NASCOP)

In Kenya, AIDS threatens effective labour force because up to 80 percent of the infected people are in the age group 15-49 years. According to the Institute of Economic Affairs (2001), the total cost of AIDS in Kenya was projected to reach Ksh 4.1 billion in 2000, and Ksh 5.5 billion by 2005. The AIDS impact on the Kenya economy is expected to reduce Gross Domestic Product (GDP) by 14.5 percent in the next 10 years—comparing a case with no AIDS—and the per capita income is projected to drop by 10 percent.

Tuberculosis in Kenya

TB is re-emerging in many regions of the world as the next Millennium's gravest threat to global health and well-being. In particular its synergistic relationship with HIV/AIDS makes it a double burden on those populations that we know are already suffering the devastating social, economic and health impacts of HIV/AIDS. While Asia has the greatest number of TB cases, Africa has the highest rates of TB primarily due to rampant HIV/AIDS. In all parts of the world the urgent danger of inaction is the potential threat of an explosive increase in multi-drug resistant TB.

Kenya is one of the 22 high Tuberculosis burden countries contributing 80% of the world's cases. According to the National Leprosy and Tuberculosis Control Programme (NLTP) survey (2002), 73,017 Tuberculosis cases were reported in 2001, (compared to 14,599 cases reported in 1992). 1994 survey showed 40% of Tuberculosis patients to be co - infected with HIV, while a 2002 survey showed that the number had increased to 50%. According to the National Health Accounts (2001/2002), TB is the leading disease in number of cases reported among the diseases of the respiratory system. (See table 2 above.)

Poverty plays a large role in the growing epidemic. Due to poverty, people live in crowded shelters without ventilation. Even the diet is poor and the body's protective system becomes weak, making them vulnerable to infectious diseases like TB. The outbreak of HIV/AIDS in the 1980s has also caused the number of TB cases to explode.

The economic impact of TB like that of other diseases includes lost income as the patients spend money in treating the disease, transportation costs to the medical facilities and wage loss due absence from work (major problem to labourers who are paid on a daily basis). Potential job loss incurred from time off work also creates economic barriers for patients seeking care. The duration of illness is associated with greater time off work for both employed and self-employed patients. This has a greater implication for the self-employed, as it would translate to immediate reduced source of income.

1.2.2 Foreign Direct Investments In Kenya

The Kenyan government has realized the importance of foreign direct inflows into the country. It has recognized that the country does not have adequate resources to attain the high levels of investment required to bring about the planned industrial transformation. Therefore, it would actively seek private portfolio and FDI to supplement local resources. (National Development plan, 1997-2000)

Kenya's net investments flows were the highest in the period immediately after independence. Investments approvals by the Investment Promotion Centre (IPC) show a marked decline in new investments in the country in recent years.

The situation was compounded by evidence of disinvestments by some foreign companies citing poor infrastructure and insecurity in the country. The country has therefore recently sought to aggressively market itself as a competitive investment destination by holding an international investment conference in the year 2004, preparing the Investment code and strengthening the export processing zones ability to attract new investors.

Over the period 1997-2001, FDI was about 0.6% of GDP, which was below the Sub-Saharan African average of 1.9%. Kenya's low performance in attracting FDI reflects to a certain extent low foreign investor confidence. The often-cited reasons for this perception include high utility costs, high interest rates, limited legal recourse and corruption. Health has not been included as one of the reasons.

The FDI inflows to Kenya have been fluctuating (See figure 3) with an average of 1.5 billion shillings per year over the period 1980-2002.

Figure 3

FDI TREND IN KENYA
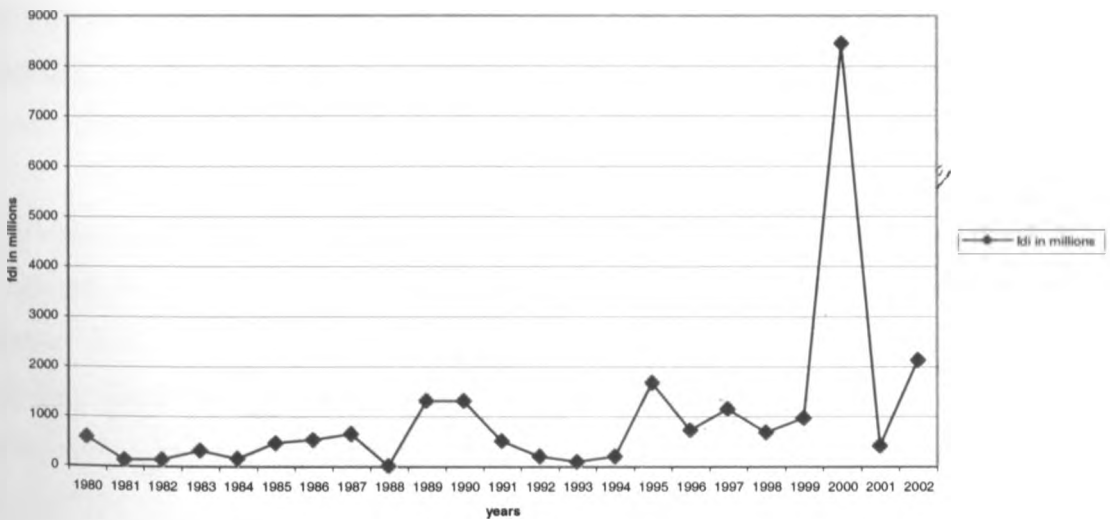
Source: IMF-International Finance Statistics Year book (2003)

1.3 Statement of the Problem

The outbreak of severe acute respiratory syndrome (SARS) in 2003 in Asia brought into sharp focus the linkages between health and the macro economy. The economic impact of SARS was largely driven by fear and uncertainty, resulting in sharp declines in tourism and consumer confidence. (Tandon, 2005)

Foreign direct investment (FDI) in SARS affected countries such as People's Republic of China (PRC) declined significantly in the immediate aftermath of the outbreak. The decline in FDI, however, did not last very long: the numbers rebounded after a lag period (Figure 1) above. Nevertheless, the SARS outbreak has brought to surface the following question: if episodic health "shocks" such as SARS can put a brake on FDI and trigger capital flight, what might be the consequences of high levels of prevalence of more endemic communicable diseases such as HIV/AIDS, Malaria and TB for international investment?[1]

Kenya is a country that experiences high levels of endemic communicable diseases such as HIV/AIDS, Malaria and TB. This signifies low levels of human capital, lower labor productivity, higher absenteeism and likely higher costs of operations due to health related expenditures. More generally it contributes to the perception of operational risk in the investment climate of a country, hence deterring potential international investors.

Given the fact that income level and domestic savings in Kenya are very low, external capital is needed to supplement domestic savings in order to spur investment and growth. International capital markets, FDI and official loans are the major sources of external capital. However, capital market flows and official development assistance to Kenya have steadily declined, therefore FDI has been seen to provide the key to increasing resource inflows to the country.

With the potential benefits of FDI, Kenya has been actively seeking to attract greater FDI inflows. In this paper we investigate the effects of health on FDI inflows in Kenya.

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[1] This issue has recently been addressed by Alsan et al.(2004) and Tandon (2005)

1.4 Study Objectives

The main objective of this study is to analyze the effects of health on foreign direct inflows in Kenya, and draw up policy recommendations and implications.

Specific objectives

1. Analyse the key diseases in Kenya.
2. Analyse the foreign direct inflows in Kenya.
3. Using the results drawn from the above objectives, to study the relationship between the health and FDI in Kenya.

1.5 Justification of the Study

This study is significant because majority of the population of Kenya are either directly infected or affected by various diseases hence leading to low human capital and labour productivity. Given the importance of FDI the country could formulate policies that improve health of the population and by extension the human capital which would attract and increase FDI.

The study would also enable public sector investments in health to be viewed in a more general sense, not only as indicative of a commitment to social sector development but also as a signal of a commitment to provision of a conducive climate within which economic activities (FDI included) are allowed to flourish resulting in economic growth, employment generation and poverty reduction.

The results of this study may be useful to:

1. The government when planning and formulating policies both for the health sector and investments sector.
2. National investments committees and centers so that they not only consider the obvious causes of reduced FDI inflows into the country such as poor infrastructure, poorly developed financial market and corruption but also the salient features such as population health.

3. The scholars and researchers who might have an interest in developing the findings further or taking other related studies in health and macro economy.

Most of the studies carried out in this area are cross-country based. Therefore this study is different in that it is country specific. Cross-country studies fail to capture specific characteristics for example population density that may be crucial to economic development. Although countries included in the cross sectional studies may share similarities in their characteristics, each to a larger extent has its own unique population health status (due to different levels of disease burden) that influences foreign direct investments. Therefore it would be inconsistent to apply some of the result findings from the cross sectional studies to a specific country.

Secondly, cross-country studies more or less suffer from measurement problems especially with regard to production inputs (labor, physical capital, education capital and health capital). It is therefore necessary to carry out an empirical study on the Kenyan situation and obtain country specific results.

CHAPTER 2: LITERATURE REVIEW

2.1 Theoretical Literature.

There are numerous theoretical arguments that underscore the positive effects of FDI for economic growth and, therefore, for poverty reduction.

(Ram and Zhang, 2002) argue that FDI can provide resource and savings in poor economies with much-needed injections of capital. Unlike other forms of international capital, the authors assert that FDI inflows are less likely to be volatile and destabilizing to the host economy. They further argue that foreign direct investment is a relatively efficient mechanism for technology transfer to developing countries, having the potential to boost knowledge "spillovers" and long-term productivity. In addition, FDI can have a positive stimulatory effect on domestic firms, enhancing their international competitiveness.

Agrawal, et al (1993) presents an argument that foreign investors introduce a package of highly productive resources into the host economy, including production and process technology, managerial expertise, accounting and auditing standards and knowledge of international markets. So that the challenge of the host economy, is to benefit from the multinational enterprises presence and to appropriate some of the increased income accruing from the resultant productivity.

Given this backdrop, there has been extensive research on the determinants of FDI, especially in terms of identifying enabling characteristics of successful host countries.
Shatz and Venables (2000) suggest that the theoretical basis for FDI flows into developing countries is based on two broad motivating factors: (i) the desire by firms to increase market size for their products (often referred to as horizontal FDI); and (ii) the need to exploit cost advantages in the supply chain by seeking out lower factor-price locales or other such advantages (vertical FDI). They further argue that in addition to the above, several other characteristics of host countries such as infrastructure, openness, political and macroeconomic stability, governance, and human capital are deemed to be conducive to FDI inflows.

According to Gorg andGreenway (2001), trade policy is a relevant factor in gearing FDI. In general, countries with more open trade regimes have done better at attracting FDI and benefiting from it than countries with inward oriented regimes. They further add that it is partly a reflection of the fact that more FDI is of export seeking than classic 'tariff jumping' variety. UNCTAD(2002), gives a more comprehensive explanation of the link between FDI and trade. Transnational corporations exert a strong influence on the patterns of world trade, in that much of the international flow of goods is handled within transnational corporations in the form of intra firm trade. Thus, inward FDI has contributed to boosting export performance of a number developing host countries. The report further adds that foreign affiliates active in export markets can be significantly affected by the host country's trade regime. Trade liberalization in general can make a host country more conducive to export oriented foreign affiliates, any tariffs or other restriction on imported inputs affects efficiency, costs and schemes to reduce or eliminate barriers to foreign inputs and the attractiveness of a host country as a place for investments.

On the other hand several arguments that link health to economic growth and development have been put forth.

Grossman (1972) presents an argument for health capital as being different from other forms of human capital, in that the stock of health of an individual determines the total amount of time he can spend producing money earnings and other commodities.

Schultz and Tanzel (1997) observe that unhealthy people are less productive. People with poor general health will often be sick and miss work and perhaps more important, they will also have lower levels of energy reducing their productivity even when they are at work or even not working at all.

Acemoglu, et al (2002) argues that poor health reduce life expectancy, which may reduce human capital investments because agents have shorter horizons. But he cautions that this effect would be important if average human capital in a society is a major factor in economic growth, and if the elasticity of the response of human capital; investments to life expectancy is high.

In addition to productivity effects, there are several other arguments put forth that expect a positive link between FDI and health.

Tandon (2005) observes that the health of the workforce in the host country is one factor determining returns to investment.[2] The higher the productivity of workers, the more conducive is the climate for investment in general, and FDI in particular.

Bhargava (2001) argues that foreign direct investment may be deterred due to risks related to high morbidity (and mortality) in employees. Poor health levels add to operational burdens and risks in the form of uncertainty related to health expenditure and insurance costs, health related absenteeism, and costs related to employee turnover.

Tandon (2005) further puts forth an argument that given information asymmetries, foreign firms are likely to view poor population health conditions as a signal of government ineffectiveness and of institutional weaknesses. Poor health conditions may depress FDI due to this effect. He asserts that population health levels are one crude indicator of the concern a government has for the welfare of its citizens.

2.2 Empirical Literature

Research shows that infrastructure and skills are important determinants of FDI (Wheeler and Mody, 1992, and Noorbaksch, 2001). The studies indicate that a low level of appropriate skills is one of the main barriers to investing in Africa. In addition, if there is no proper infrastructure, investors have to build their own in order to produce, transport, sell or export their products. At the same time, infrastructure and skills help to absorb the positive effects from FDI (Borensztein *et al*, 1998). With a more skilled workforce and a better infrastructure (ports, roads water pipelines, electricity and telecommunications), local firms can more easily capture knowledge spillovers, for instance through becoming local suppliers. The state of the infrastructure and educational attainment or enrolment rates in Africa compares

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[2] This issue was also addressed in the latest *World Development Report*, World Bank (2004)

unfavourably with those of other regions and the situation has become worse during the past decade.

A study by Wei (2000) suggests that conflict and corruption deter foreign investment .For a firm, paying bribes is like paying a tax, but then the firm is faced with more uncertainty.

According to a survey carried out by Transparency International (2001), Kenya was ranked 84 out of 91 countries. Transparency International collects data on the perception of corruption, mainly on the basis of private sector surveys. Corruption is defined as the misuse of entrusted power for private gain and ranks from 10 (no corruption) to 0 (highly corrupt).

In general, African countries score low. Only Botswana (rank 26), Namibia (30) and South Africa (38) are ranked in the top 50. Countries such as Nigeria, Uganda, Kenya and Cameroon are found at the bottom. Te Velde (2001) says that while it is more difficult and uncertain to do business in a country with more corruption and conflict, some investment is likely to take place regardless. In particular, FDI in the extractive industries does not have a choice but to locate near the available natural resources (e.g. Nigeria, Angola etc.). He further adds that certainty in future operations is required for FDI in activities such as manufacturing and services. In particular, FDI in manufacturing (garments, assembly operations) can often choose between locations, and the 'footloose' investor is likely to choose a country with less corruption and conflict to avoid taking too much risk. He also notes that corruption and conflict are important elements of political risk assessments, which in turn determine investor perceptions of the business climate in a country. With only limited available information, such perceptions are difficult to change and are sometimes applied to countries or regions with a good economic business climate in practice.

He concludes by saying that with few natural resources and lots of corruption and conflict, countries may not appear on an investor's shortlist.

Cecchetti (1999) suggest that the issue of the legal environment is important because it defines the scope of protection for property rights and the safety of investment, both of which are crucial to the inflow of FDI. Even in the advanced economies of Europe, it has been observed that dissimilar legal structures lead to dissimilar financial arrangements and capital inflows. Similarly, it has been shown that the legal structure of an economy

determines, in part, the extent to which external funds flow into that economy (La Porta, Lopez-de-Slanes, Schkeifer and Vishny 1997 and 1998).

They contend that an enabling legal environment, for instance, must be present before investors are willing to surrender their funds in exchange for securities or other ownership instruments.

Economic freedom is another factor that has been found to determine FDI. This is done using the Index of Economic Freedom as composed by Gerald O'Driscol, Kim Holmes and Melanie Kirkpatrick (Heritage Foundation 2001). Their 2001 ranking of nations is based on ten key factors that affect the rate of FDI flows into various nations. The factors include trade policy, capital inflows and investment; they also include laws governing, and government attitude to, property rights. The index for each country is a score between 1 and 5. The interpretation is that the lower the score, the more free the economy. The 2001 indices show that African countries, even with improvements over previous years, have the least free economies in the world. Every other region of the world has at least one country whose economy is rated completely free. There were 5 of such economies in North America and Europe, 4 in Asia and 1 (Bahrain) in the Middle East. Scores in North America and Europe range from 1.8 to 4.0; 2.00 to 4.75 in Latin America and the Caribbean (Cuba is the main drawback) and from 2.00 to 4.45 in the Middle East. African countries scored between 2.80 and 4.80. Seven African countries had severely repressed economies.

Gallup and Sachs (2000) in their study on economic burden of malaria, suggest that better health conditions could improve annual per capita growth rates in malaria prone countries, such as sub-Saharan Africa, by approximately 1.3 percent. This estimate, according to them, implies that with similar health condition gaps as in the postwar period, healthier nations should have grown to be over thirteen fold as rich as the less healthy nations of sub-Saharan Africa since the beginning of the industrialization (modern growth) process the actual difference is around fourteen fold in 1995 PPP GDP per capita.

The study by Leighton and Foster (1993) assessed the effect of malaria on labor productivity. It shows that Malaria illness (morbidity) has a pervasive effect on the economic incentives, behavior and strategy of households. The impact in Kenya is substantial

principally because 70% of the population experiences several malaria episodes per year that requires adults to stay away from work to recuperate or to take care of sick children. Majority of the Kenyan population works in agriculture therefore malaria may have its biggest impact on this sector even though the value of a day's labor in agricultural sector is generally the lowest of any of the major economic sectors. One of the main implications of malaria's complexity is that the impact of lost production from malaria cannot be easily predicted based only on the importance of each sector. In industry and agricultural like tea, sugarcane, coffee, rice and tobacco estates, malaria accounts for the greatest number of man hours lost which may be up to or more than 50% of all man hours lost. This affects production and revenue for the industry, families and the nation as well. Loss of investment funds affects economic growth because investors are not investing in countries where most of their profits will be eroded through absenteeism from work due to malaria and on treatment of malaria infected workforce. Malaria that is not controlled reduces accumulation of human capital thereby reducing long- term growth potential in malaria-affected parts.

A substantial body of evidence has demonstrated that population health is a robust predictor of growth in per capita income (Barro, 1991; Bhargava *et al.*, 2001; Bloom, Canning, & Sevilla, 2004). However, countries may benefit to different degrees from health, Bhargava *et al.* (2001) argue that economic growth resulting from health improvements is more pronounced in developing countries than in industrial countries.

Furthermore, in cross-section data, FDI inflows have been found to be positively correlated with population health measures. Alsan et al. (2004) assess the robustness of this link using panel data for 74 countries for the time period 1980-2000. They proxy population health by life expectancy and find that indeed, at least for low- and middle-income countries, health had a positive and statistically significant influence on FDI inflows, after controlling for other determinants.

Tandon (2005) in his study 'does poor health signal poor government effectiveness? ' finds that one reason why poor health depresses FDI, in addition to the traditional productivity arguments is because it may serve as a signal of the general investment climate in the country. This, he explains, is because of the association that poor levels of population health

have with lower levels of governance and other structural or institutional constraints in the economy. He further adds that this link is especially relevant for FDI given information asymmetries in that foreign investors are less likely to have information about the investment climate in the host country vis-à-vis domestic investors.

2.3 Overview of Literature

The analysis of different studies shows that FDI is an important contributor towards economic growth. FDI provides resource and savings and the much needed capital in poor countries. It is also a source of technology transfer, managerial expertise and exposes the developing countries to international markets. Determinants of FDI therefore need to be carefully evaluated so as to maximize FDI inflows to a country.

On the other hand, studies reviewed on population health show that it is a significant factor in economic performance. Poor health leads to low productivity, low life expectancies and low capital investments. It also limits the total amount of time an individual can spend producing money earnings and other commodities. However studies that link population health to FDI inflows are scant.

This study aims at filling the information gap by providing the precise information on the relationship between population health and foreign direct inflows. The study borrows a lot from Alsan et al (2004) who concentrate on the impact of population health on FDI among different categories of countries; high income, medium income and low income countries. Tandon (2005) evaluates poor health as being a signal to poor government effectiveness which in turn acts as a signal to poor general investment climate in a country. However the point of departure from the above studies is that, this study is country specific- Kenya.

Countries have different health needs and some are more prone to diseases than others and the ways of tackling health problems and investing in health are also diverse. This study therefore takes into consideration the Kenya's health situation given the health indicators such as life expectancy rates, morbidity rates etc and diseases such as Malaria, HIV/AIDS and TB. Against this backdrop it analyses what effect health has on FDI inflows in Kenya.

CHAPTER 3: METHODOLOGY

3.1 Theoretical Framework

Firms invest abroad instead of, say, exporting or licensing to a local company, to satisfy one of two strategic objectives. They may seek to better serve the local market, producing locally to avoid transportation costs, trade barriers, or production delays, and speed information flow; this is market-seeking or horizontal FDI. Alternatively, they may seek to produce for the global market but select this location to minimize production costs through lower-cost inputs; this is export-oriented or vertical FDI (Shatz and Venables, 2000).

Following Asiedu (2002) and Blonigen and Wang (2004), we assume that horizontal FDI will be driven largely by domestic demand (market size). Local production allows a firm to avoid transportation costs and import duties, but this is only attractive if the domestic market is sufficiently large to cover the fixed costs of setting up production and any country-specific cost disadvantages. Investigators have traditionally found that host market size, usually measured in terms of real gross domestic product (GDP) per capita and population size, is a positive determinant of FDI inflows (Chakrabarti, 2001; Schneider and Frey, 1985; Wheeler and Mody, 1992). By contrast, *ceteris paribus,* vertical FDI will flow to countries that possess cheap, productive inputs and have the fewest restrictions on trade. The presence of highly educated healthy workers, available at low wages, may be a large inducement for vertical FDI.

3.2 Empirical Model

Since the study investigates the effect of health on foreign direct investments in Kenya, other variables, which affect foreign direct investments, will be included under model specification. Therefore the general model to be tested empirically will be:

$$FDI_t = f(PN_t, \text{GDP per capita }_t, H_{1t}, H_{2t}, ED_t, T_t, F_t, S_t)\text{---}(3.1)$$

Where,

FDI= Gross foreign direct investments in Kenya

PN = total population in Kenya

GDP= Gross Domestic Product per capita

H_1 and H_2 = Health

ED= Education

T= Openness of the economy to trade

F= Infrastructure

S= Insecurity of the country in terms of political stability, civil unrests, coups and
acts of terrorism.

T= time

Following the works of Alsan et al (2004) we use a cobb Douglas model as shown below,

$$FDI_t = aPN_t^{\beta 1} \, GDP \text{ per capita }_t^{\beta 2} \, H_{1t}^{\beta 3} \, H_{2t}^{\beta 4} ED_t^{\beta 5} \, T_t^{\beta 6} \, F_t^{\beta 7} \, S_t^{\beta 8} \quad \text{-------------------- (3.2)}$$

a is the technological coefficient

Taking logarithms on both sides, we have a double log function of equation 2 as follows:

$$\log FDI_t = \log a + \beta_1 \log PN_t + \beta_2 \log GDP \text{ per capita }_t + \beta_3 H_{1t} + \beta_4 H_{2t}$$

$$+ \beta_5 \log ED_t + \beta_6 T_t + \beta_7 F_t + \beta_8 S_t + \varepsilon_t, \text{ --------------- ----------------------------- (3.3)}$$

Where:

FDI = Gross foreign direct investments in Kshs

PN = Population proxied by the total number of persons in the country

GDP per capita = Gross Domestic Product per capita in Kshs

H_1 = Health proxied by life expectancy at birth

H_2 = Health proxied morbidity of population

ED = education proxied by number of persons who have enrolled for
Secondary education

a = a constant

T = Openness of the economy to trade proxied by ratio of trade

(imports+exports) to GDP

F   = Infrastructure proxied by telephone main lines per 1000 population.

S   = Insecurity of the country, a dummy variable;

            1= insecurity

            0= security

ε = the error term

βs   = are elasticities for the respective variables

3.3 Explanation and Definition of variables

Dependent variables

Foreign direct investments inflows is our dependent variable.

This paper will measure FDI as gross inflows. This measure is preferred for two reasons. First, it seems more appropriate for investigating the incentives for foreign businesses to invest in a particular country. Second, in terms of knowledge spillovers, which may be a central benefit of FDI, it is the gross inflows that matter and not net inflows.

Explanatory variables

From the literature reviewed in chapter 2, various factors are identified as having influence on foreign direct investments. They include; population, GDP per capita, education, health (which is our variable of study), infrastructure, insecurity, and openness of the economy to trade.

Population and **GDP per capita** can be considered as scale variables that capture market size effects. However, GDP per capita can also be thought of as a proxy for labor costs (assuming a fairly fixed share of labor income in total GDP). The coefficient on GDP per capita should therefore be interpreted with caution, because it may reflect both a market size and a cost effect.(Alsan et al, 2004)

Education is another variable that influences FDI. Investors are known to employ persons with some level of education and skills. Following Barro and Sala-i-Martin (1995), who argue that secondary schooling is the best measure of education for predicting economic growth, we will use secondary school enrollment to determine the literacy level in the country.

Health status of the population is the main explanatory variable used in this study. We study health in terms of two major health indicators; life expectancy and morbidity rates.

Life expectancy at birth gives us the general health status of the population as it encompasses both morbidity and mortality rates.

Morbidity on the other hand is more specific as it reveals the disease burden and cases of sickness reported. It therefore determines the frequency of disease thereby threats of disease spread and cases of absenteeism from work.

Infrastructure is factor that many authors consider key towards attracting and maintaining foreign direct inflows. It includes ports, roads, water pipelines, electricity, and telecommunications. It enables investors to efficiently and cheaply produce their output and transport it at with minimum costs. In this study we employ telephone mainlines per 1,000 population as a proxy for host country infrastructure. However, this measure has its shortcomings, as it only accounts for the availability and not the reliability of the infrastructure, which may be particularly problematic in poor countries where support for infrastructure may be lacking (Asiedu, 2002).

Openness of the economy to trade is especially important for firms seeking to export products from the host country to the global market, as tariffs, quotas, and other forms of capital controls will diminish firms' profits (Asiedu and Lien, 2004). Openness is required not only with respect to exports, but also for imports, because many FDI ventures may require the purchase of intermediate inputs from abroad. We employ the ratio of trade (imports + exports) to GDP as our measure of openness.

Insecurity of a country is also considered to influence foreign direct investments. Insecurity in this case includes land clashes, acts of terrorism; violence attributed to pre- election campaigns and coup attempts. It is a dummy variable where **1** indicates insecurity in the country and **0** measures security of the country.

Table 3: Expected signs of the explanatory variables

Variable	Expected sign of the coefficient	Explanation of expected results
Population	Positive	As population increases we expect to have increased market size and also availability of labour hence increased FDI
GDP per capita	Positive	Increased GDP per capita implies increased income and hence increased purchasing power which increases market size. This leads to increased FDI
Life expectancy	Positive	Higher life expectancy implies a high human capital and productivity hence more attractive to foreign investors.
Morbidity	Negative	Higher morbidity leads to reduced FDI because it implies low worker productivity hence low FDI inflows.
Infrastructure	Positive	With better infrastructure we expect increased FDI as investors will be able to conduct their activities efficiently
Education	Positive	Higher education levels leads to increased skills, productivity and hence increased FDI inflows.
Openness to trade	Positive	Absence of trade barriers such as tariffs and quotas enables goods and services to flow freely across borders hence encouraging FDI inflows.
Insecurity Insecure =1 Secure =0	Negative	The presence of land clashes, acts of terrorism, violent pre-election campaigns and attempted coups are likely to scare away foreign investors from investing in the country.

Source: Authors computation

3.4 Hypothesis

The study will test the hypothesis that;

- The population of a country does not influence the level of foreign direct inflows into the country. ($H_0 : \beta_1 = 0$ or $H_1 : \beta_1 \neq 0$)

- There is no relationship between Gross Domestic Product per capita and FDI. ($H_0 : \beta_2 = 0$ or $H_1 : \beta_2 \neq 0$)

- Life expectancy does not influence FDI. ($H_0 : \beta_3 = 0$ or $H_1 : \beta_3 \neq 0$).

- Morbidity does not influence FDI. ($H_0 : \beta_4 = 0$ or $H_1 : \beta_4 \neq 0$)

- Education level has no impact on FDI. ($H_0 : \beta_5 = 0$ or $H_1 : \beta_5 \neq 0$)

- Openness of the economy does not influence FDI. ($H_0 : \beta_6 = 0$ or $H_1 : \beta_6 \neq 0$)

- Infrastructure does not influence FDI. ($H_0 : \beta_7 = 0$ or $H_1 : \beta_7 \neq 0$)

- Insecurity does not influence FDI. ($H0 : \beta_8 = 0$ or $H1 : \beta_8 \neq 0$)

3.5 Estimation Procedure

The equation is to be estimated as a double log regression model specified in equation 3.3. The study will apply Ordinary Least Square (OLS) to estimate a log linear form of the equation 3.1. A log linear form of the equation will allow the author to interpret regression coefficients as elasticities. The specific equation to be estimated is linear and additive. The econometric package that will be used is STATA / Eviews.

3.6 Data Sources and Types

This study uses secondary time series annual data covering a period of thirty-four years from 1970-2004. It will include data from various publications such as Kenya Government's Statistical abstracts, economic surveys as well as various Sessional papers and National Development Plans. Data will also be sourced from the International Finance statistics (IFS) by IMF and World Development Indicators, by World Bank.

3.7 Data Refinement and Analysis

In this section we shall examine the time series characteristic of the data to be used in the study, testing for stationarity and cointegration of the variables under consideration. Unit root tests are important in determining if the model proposed has got a long run solution that will enable the adoption of an error correction model.

Most macroeconomic variables are usually integrated. As a result, there is always a need to make them stationary through differencing. This is crucial because econometric theory requires that regression variables are stationary (integrated of order zero) if inferences are to be non- spurious. In the study we use the Dickey Fuller (DF) and Augmented Dickey Fuller (ADF) tests to examine variables for the presence of unit root.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Descriptive Analysis of Data

Gross FDI Inflows

Fig. 4 below shows the trend of gross FDI in Kenya from the period 1970-2003.

This trend has been erratic and inconsistent over the years. The year 1976 saw a sharp increase in FDI inflows from Kshs 1.25 billion in 1975 to 3 billion Kshs. However, this increase did not last long as there was a sudden drop in FDI inflows in 1979 to Kshs. 1.5 billion. The sudden increase could be explained by the booming coffee market, which saw Kenya export coffee at higher prices between 1976-1978. This could have attracted foreign investments especially in the coffee and tea sectors. World coffee prices did not remain favourable for long but they slumped leading to subsequent reduction in FDI inflows. The sudden decline in FDI trend 1980 could also be explained by the Norfolk bombing 1979, which could have led investors to shy away from Kenya. The 1982 coup attempt made FDI inflows to fall 1983. However, this rebounded back but only to an average of 1 billion Kshs. in the period 1985-1987. The period 1990-2003 is characterized by fluctuations caused by pre election campaigns, land clashes and terrorist attacks. (See table 4 page 38)
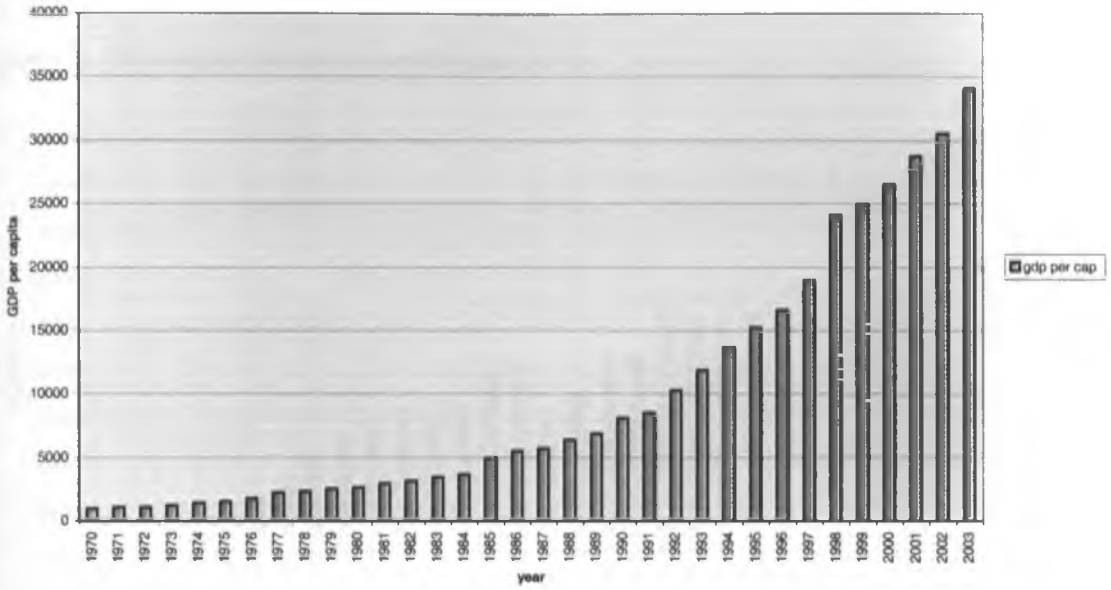
Figure 4: Gross FDI Inflows in Kenya.

Gross FDI inflows in Kenya

27
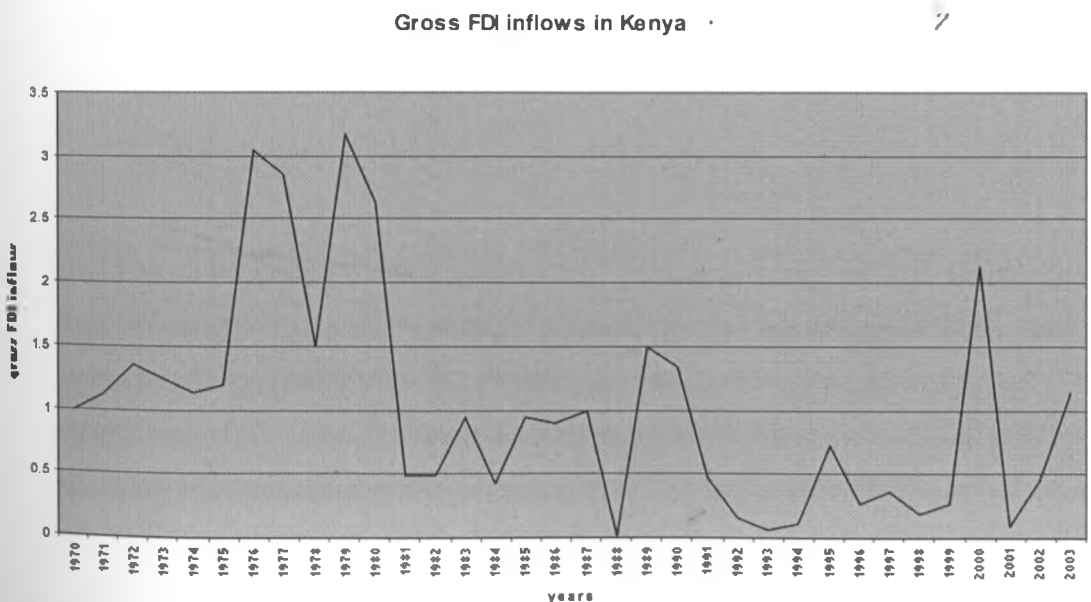
GDP per capita

Figure 5 below shows that GDP per capita has been steadily increasing over the years 1970-2003. This is attributed to increases in GDP and population over time.
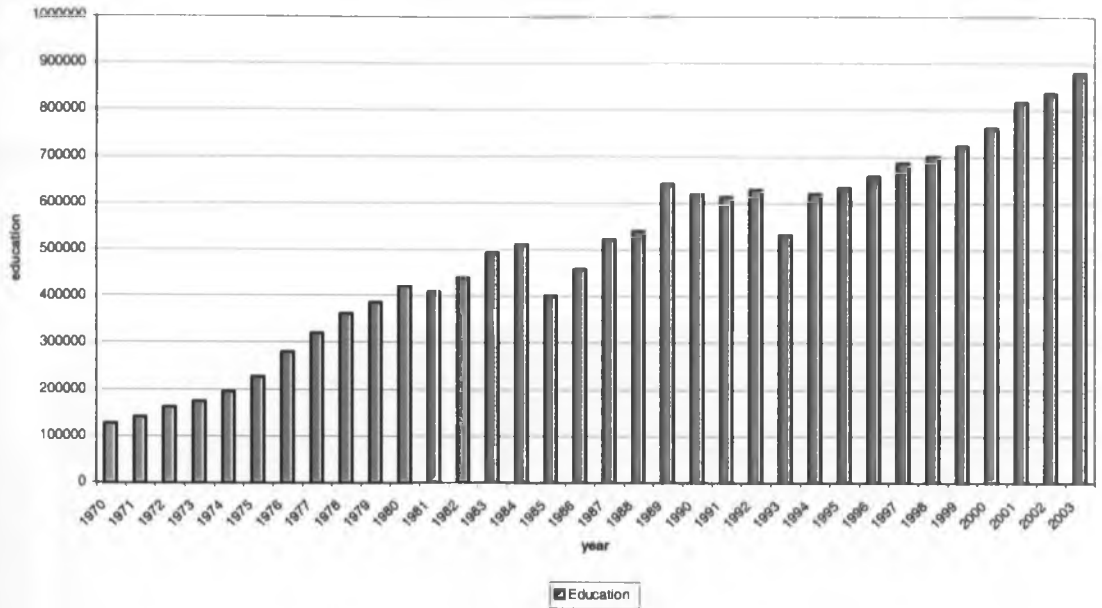
Figure 5: GDP per capita

Education

Secondary school enrollment is used as a proxy for education. Secondary school enrollment has been increasing steadily over the years as shown in fig.6 below with 1985 and 1993 experiencing sudden drops in enrollment.

Figure 6: Secondary School Enrollment

Population

Population surveys in Kenya are carried out after every ten years. In our time frame 1970-2003 three census were carried out; 1979,1989,1999. The population data for the remaining years are estimates. The period 1990-1999 saw population increase by 28.1% as compared to the period 1980-1989 which was 45.1%. The reduction in population growth in the 1999 census could be explained by increase in adult mortality rates caused by the HIV/AIDS pandemic. The fig.7 below shows how the population trend had been moving.

Morbidity

Fig. 7 below also shows the trend of cases of illness reported. In the 1970s, the ratio of number of cases reported to total population was low. This could have been due to few people using medical facilities preferring traditional healing methods instead. The other reason is that many diseases had not been listed in the CBS data on morbidity; some cases could have therefore gone unreported. The 1980s saw an increase in morbidity with 1984 recording the highest number of cases of sicknesses reported. This number has been steadily declining in the 1990s to 2003 due to increased awareness by people in using medical facilities, improved medical care and access to medical facilities.

Figure 7: Population and Morbidity 1970-2003
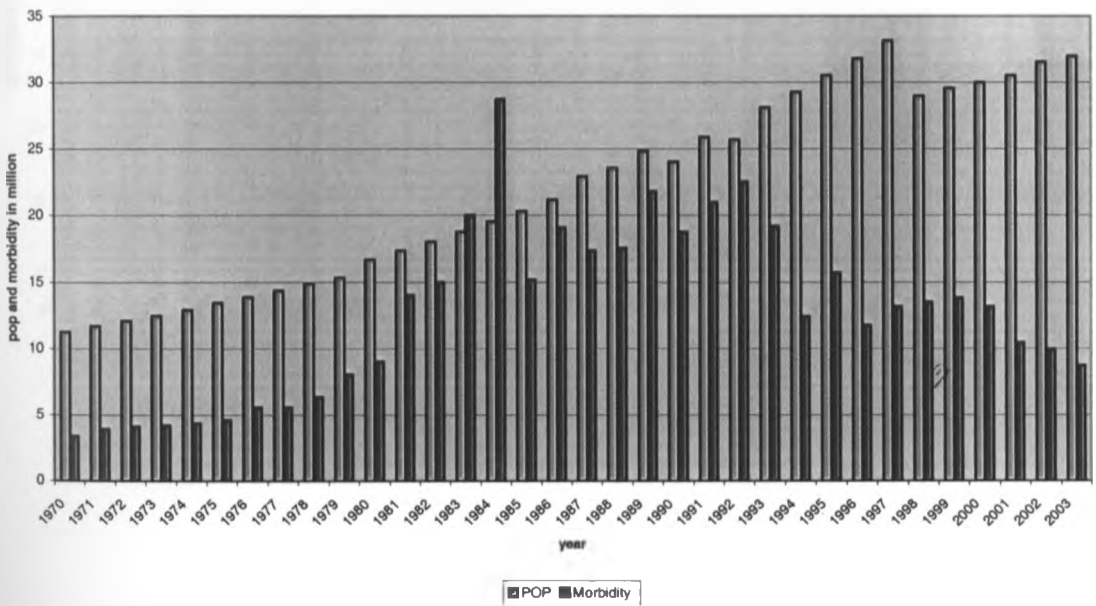
Life Expectancy

From the fig. 8 below, life expectancy has been steadily rising over time, however there is a sudden increase between the years 1988-1990. The trend remains constant between 1990-1992 and then it fluctuates downwards. The downward trend characterizing the 1990s to 2003 can be explained by the HIV/AIDS pandemic, which has increased mortality rates in the working class adults. Tuberculosis and malaria cases have also been on the increase hence lowering the life expectancy at birth.

Figure 8: life expectancy
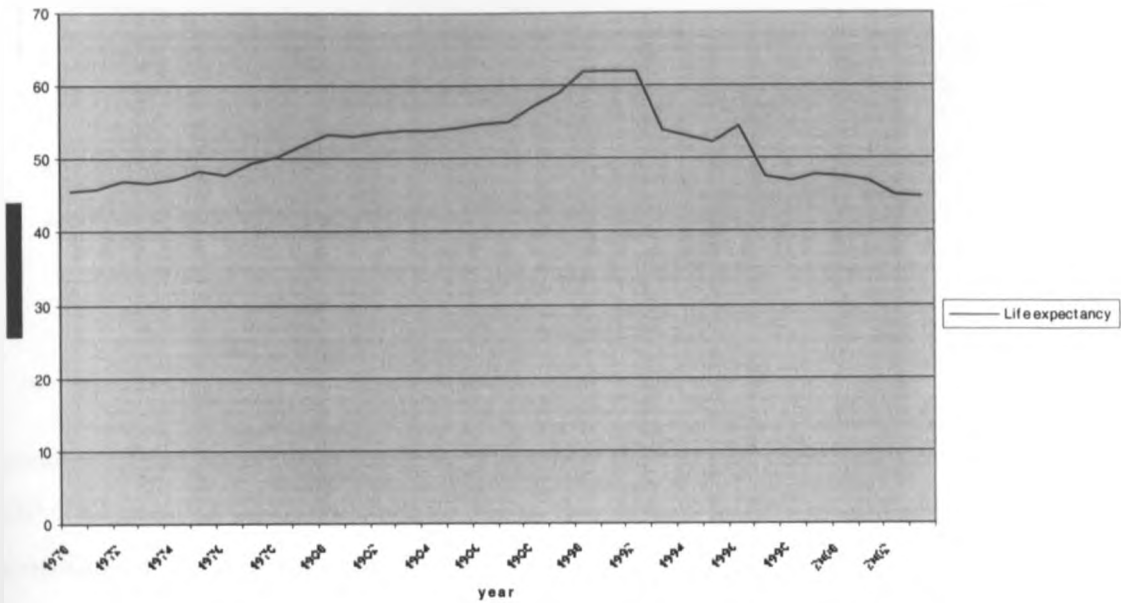
Openness of the Economy to Trade

Figure 9: Ratio of trade to GDP
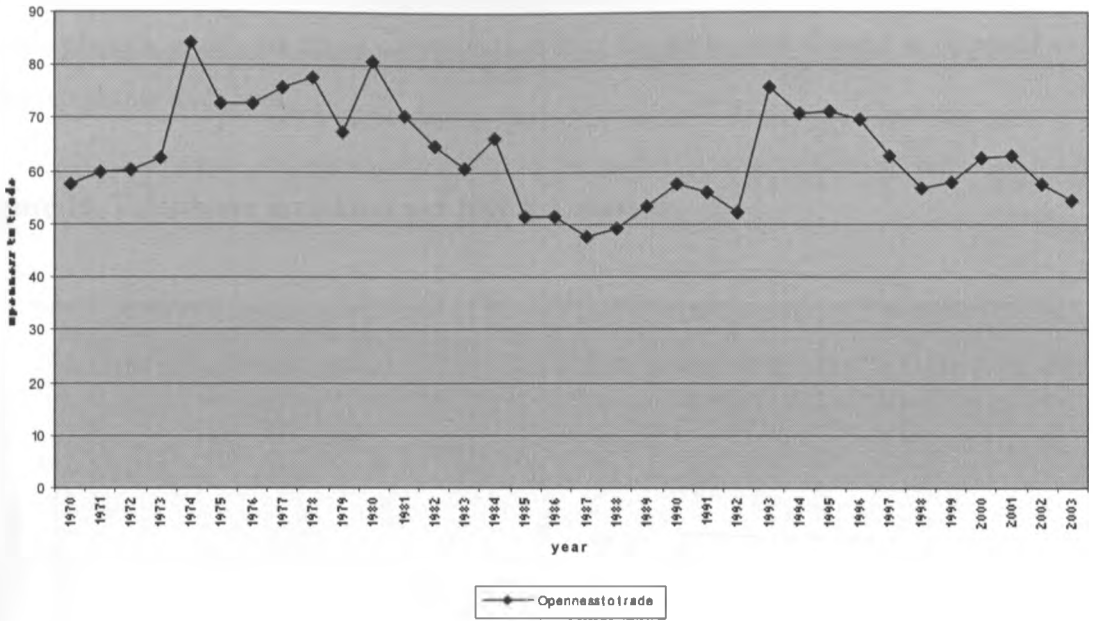
Openness of the economy to trade is proxied by the ratio of trade (imports + exports) to GDP. The trend of this ratio is erratic due to fluctuations in exports and imports caused by fluctuations in world prices of imports and exports.

Infrastructure

Number of telephone mainlines per 1000 population has been used as proxy for infrastructure. The graph in fig. 9 shows that installation of telephone mainlines has been increasing gradually over the time frame 1970-2003. However it remained stagnant in the year 2000-2001 but started to drop in 2003. This can be attributed to the introduction of mobile phones, which are more convenient as they can be carried around as opposed to the fixed telephone mainlines.

Figure 10: Telephone mainlines per 1000 population
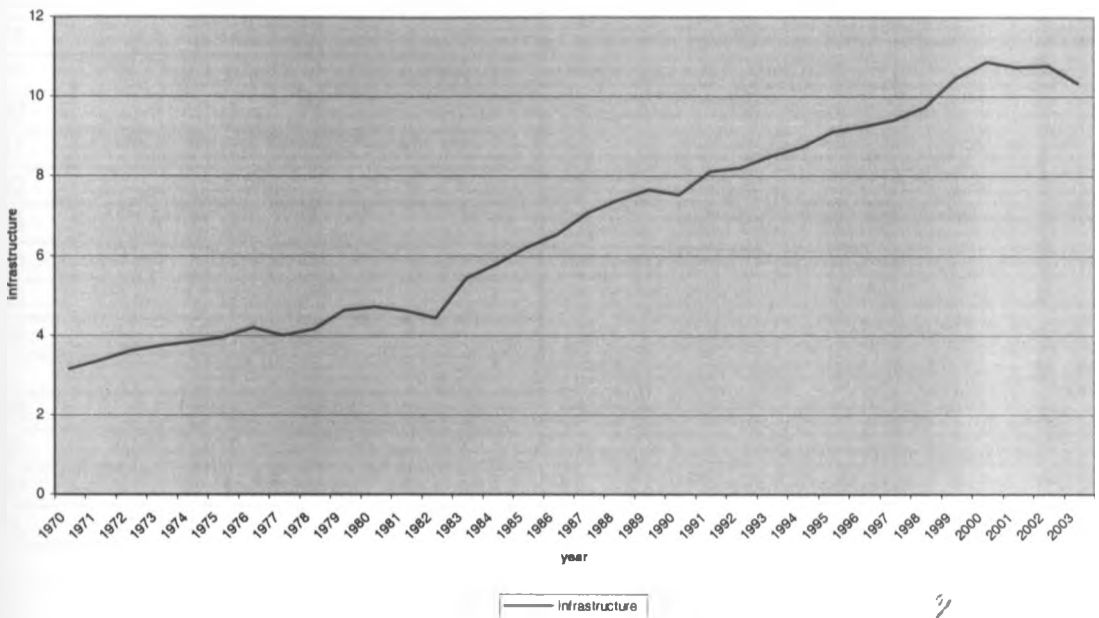
Insecurity caused by civil unrests and terrorism

Table 4: Insecurity

YEAR	INSECURITY
1970	0
1971	0
1972	0
1973	0
1974	0
1975	0
1976	0
1977	0
1978	0
1979	1
1980	0
1981	0
1982	1
1983	0
1984	0
1985	0
1986	0
1987	0
1988	0
1989	0
1990	1
1991	0
1992	1
1993	0
1994	0
1995	0
1996	1
1997	1
1998	1
1999	0
2000	0
2001	1
2002	1
2003	0

Insecurity is measured using a dummy variable whereby 1 indicates insecurity and 0 indicates security in the country. Insecurity is in terms of civil unrests and acts of terrorism. Kenya has experienced acts of terrorism: the 1979 Norfolk bombing, 1998 American Embassy bombing and 2002 paradise hotel bombing in Kikambala.

Several incidences of civil unrests have also occurred between 1982 to 2003, which are believed to have impacted negatively on FDI inflows. In 1982 Kenya experienced a coup attempt that left a feeling of national insecurity to both Kenyan residents and foreign investors. Other civil unrests include:- the 1990 and 1992 Molo and Burnt forest tribal clashes in Nakuru; the 1996 to 1997 Likoni and Bombolulu tribal clashes and; the 1992,1997 and 2002 pre election campaigns. Table 4 above, shows the years of various occurrences.

This section analyses the regression results of the study. The tests carried out before the actual analyses are normality tests, stationarity tests and cointegration analysis

4.2 Normality tests

This test is done to ensure that the variables used in the analysis are normally distributed. The common test for normality is the Jarque–Bera statistics test (Jarque, 1980). This test utilizes the mean based coefficient of skewness and kurtosis to check the normality of all the variables used. A normal distribution is assumed by many statistical procedures. Normal distributions take the form of a symmetric bell-shaped curve. *Skewness* is the tilt (or lack of it) in a distribution. A common rule-of-thumb test for normality is to run descriptive statistics to get skewness and kurtosis, and then divide these by the standard errors. Skew should be within the +2 to -2 range when the data are normally distributed. Negative skew is left-leaning, positive skew right leaning. *Kurtosis* is the peakedness of a distribution. Kurtosis also should be within the +2 to -2 range when the data are normally distributed (a few authors use +3 to -3). Negative kurtosis indicates too many cases in the tails of the distribution. Positive kurtosis indicates too few cases in the tails. In this Study, the essential Jarque Bera test statistic has a chi-square distribution (Jarque, 1980).

Table 5: Normality test results analysis of Jarque Bera tests

	INFR	INSEC	LE	LNEDU	LNGDP	LNFDI	LNMORB	LNPOP	TRDEOP
Mean	6.781696	0.294118	51.76382	13.00066	8.653858	-0.484923	16.20267	3.031307	63.44154
Median	6.81907	0	52.255	13.15497	8.636601	-0.055764	16.3913	3.092497	62.45562
Maximum	10.88215	1	62	13.68763	10.43777	1.155554	17.17398	3.500741	84.2565
Minimum	3.164559	0	44.94	11.7508	6.931427	-4.668076	15.04252	2.418589	47.78111
Std. Dev.	2.571093	0.462497	4.863297	0.535439	1.10203	1.258199	0.600881	0.353093	9.502593
Skewness	0.158584	0.903696	0.597999	-0.932656	0.068665	-1.292005	-0.499357	-0.282528	0.3448
Kurtosis	1.589941	1.816667	2.563446	2.851252	1.757586	4.950529	2.033339	1.660738	2.239316
Jarque-Bera	2.959221	6.611505	2.296404	4.960476	2.213472	14.84904	2.736804	2.993292	1.493435
Probability	0.227726	0.036672	0.317207	0.083723	0.330636	0.000596	0.254513	0.22388	0.47392

Normality test uses the null hypothesis of normality against the alternative hypothesis of non-normality. If the probability value is less than the Jacque Bera chi-square at the 5% level of significance, the null hypothesis of the regression is not rejected.

A sufficiently low probability value of the estimated jarque-bera chi-square statistics leads to acceptance of the null hypothesis of a normal distribution. From the table 4, all the variables are normally distributed since all the probabilities are less than the Jarque Bera chi-square distribution.

4.3 Stationarity test

Stationarity means that the statistical properties of the process do not change over time (Engle, 1987). If the non-stationary time series data is used, it may lead to conclusion whose validity is questionable. A convenient but weak definition of stationary regarding quantitative variables is that there is no systematic change in either mean or variance in the time series. If there were such changes, an increasing or decreasing trend in the data would be present.

Time series data regression analysis is not complete unless stationary data is used. It is therefore important to test whether the data used is stationary or not. Most time series data used is non-stationary as indicated in the Appendices 1(a) and (b). It is therefore necessary, as a first step is to correct the situation. This can be done by differencing to eliminate non-stationarity. Non-stationary series is intergrated of order ≥ 1. Stationary series on the other hand is intergraded of order I (0). If I ($\geq$1), it can be differenced to obtain an I (0) series which is a stationary series.

Based on the graphs and Unit Root Test in Appendix 2(a) and (b), it can be seen that all the variables used are stationary after differencing. However, it is difficult to determine the order of intergration. This therefore calls for a more formal test for stationary since the graphical methods is inadequate. A unit root test has therefore to be conducted.

4.4 Unit root test

The unit root test indicates whether the variables are stationary or not. In carrying out a unit root test, a random walk model is used (Green, 2003). This variable assumes the same value as in the last period, modified by the current period shocks. The current period is analyzed by the past period plus a certain unpredictable value as indicated in equation 1.

$$Y_t = Y_{t-1} + \varepsilon_t \quad\quad\quad 1$$

Where, Y_t is the current period, Y_{t-1} is the past period and ε_t are shocks to the system and assumed to be the white noise with zero mean ,constant variance and non-auto correlated.

In general, the above equation can be analyzed with a modified equation (2) below for the purposes of hypothesis testing.

$$Y_t = \alpha Y_{t-1} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 2$$

Where α is the coefficient of the past values and is the one used to measure the stationary.

The null hypothesis: $H_0 : \alpha . > 0$ Non Stationary (Unit Root Presence)

Alternative hypothesis: $H_1 : \alpha < 1$ Stationarity (No unit root)

Rejecting the null hypothesis would mean that the series is stationary and vice versa. Accepting the null hypothesis implies that the variable has a unit root or is a random walk variable and hence is non-stationary. If $\alpha < 1$, the process generating Y_t is integrated of order zero and hence stationary I(0). My study uses Augmented Dickey-Fuller Test (ADF) to test for unit roots.

4.4.1 The Dickey-Fuller (DF) and Augmented Dickey- Fuller (ADF) Test

DF is an auto-regressive model. The random walk model is a special type of AR (1) model (Non-Stationary Model) with $\alpha = 1$ in equation 2. If $\alpha = 1$, Y_t is non-stationary and contains a stochastic trend. Thus within the AR (1) model, the hypothesis that Y_t has a trend can be tested by testing: $H_0 : \alpha = 1$ vs $H_1 : \alpha < 1$ on equation 2. The null hypothesis is that of non-stationarity while the alternative hypothesis is that of stationarity. The regression software automatically prints the t –statistic testing $\alpha < 1$. The t statistic is then compared with t critical. If is t-statistic is less than t-critical reject the null hypothesis of non-stationary and therefore the series is stationary (Green, 2003).

The ADF test was specified by (Granger and Engle, 1987). It follows the same procedure as the DF test. The ADF test was performed by introducing lags of the dependent variables. To avoid spurious regression, the non-stationary variables are differenced to remove any stochastic trends in the series. The ADF test takes care of the intercept as opposed to the DF. This study concentrates on the ADF test.

The test is based on the following equation $Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots 3$

Equating equation 2 and 3 we have $Y_t = \alpha_0 + (\alpha_1 - 1) Y_{t-1} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots .4$

Now letting $\alpha_1 - 1 = \delta$.

The null hypothesis occurs when $\delta < 0$ and Y_t is a non-stationary series. Under alternatives hypothesis, $\delta = 0$. The t-statistic is the compared with t-critical.

If t- calculated is less than t-critical, then reject the null hypothesis of non-stationery and accept that the series are stationary.

Table 6: The Unit Root Test using ADF

Variable	ADF STATISTIC	5% CRITICAL VALUE	NATURE
LNEDU	-2.835973	-2.9527	Non stationary
LNFDI	-4.404805	-2.9527	stationary
LNGDP	0.134683	-2.9527	Non stationary
LNMORB	-1.989047	-2.9527	Non stationary
LNPOP	-1.632459	-2.9527	Non stationary
TRDEOP	-2.565573	-2.9527	Non stationary
INFR	-0.367212	-2.9527	non stationary
INSEC	-4.840194	-2.9527	stationary
LE	-1.132639	-2.9527	Non stationary

The result in table 5 shows that most variables except LNFDI and INSEC are non-stationary because the ADF t-statistics is greater than the ADF t-critical at 5% level of significance. The variables are then differenced and subjected to the same tests. The results of the differenced ones are presented in the table 6. The graphs and the unit root test of these non-stationary series are shown in Appendix 1(a) and (b).

Table 7: Unit Root Test after Differencing (ADF)

Variable	ADF STATISTIC	5% CRITICAL VALUE	NATURE
DLNEDU	-5.371918	-2.9558	Stationary
DLNFDI	-8.722137	-2.9558	Stationary
DLNGDP	-6.126068	-2.9558	Stationary
DLNMORB	-6.647804	-2.9558	Stationary
DLNPOP	-6.193783	-2.9558	Stationary
DTRDEOP	-7.511461	-2.9558	Stationary
DINFR	-4.649664	-2.9558	Stationary
INSEC		-2.9558	Stationary
DLE	-5.137873	-2.9558	stationary

Source: E- views computation

The results from table 6 shows that the ADF t- statistics is less than the t critical and therefore we reject the null hypothesis of non-stationary and accept that the series are stationary. The first differencing of all variables is therefore stationary which implies that these variables are integrated of order one, I(1).

The series in table 6 are therefore integrated of order zero, I(0) and are thus stationary. The graphs and the unit root test of these stationary series are shown in Appendix 2(a) and (b).

4.5 Cointegration Analysis

This analysis combines both short-run and the long run properties and at the same time maintains stationarity in all the variables. Such an analysis tests the existence of long run relationship between an independent variable and its explanatory variable. If two or more variables are integrated of the same order and their differences have no clear tendency to increase or decrease then this will suggest that their differences are stationary. Thus if non-stationary series have a long run relationship they will be stationary. If the linear combination of the residual from the variables is integrated of order zero I(0),then this will be a case of cointegration (Green, 2003). The existence of cointegration is important because failure to find cointegration between variables will be a manifestation of the existence of spurious regression in which case the valid influence will not be realized. Cointegration tests can be carried out using two methods namely Johansen approach and Engle-Granger two-step procedure based on residual tests. This study makes use of Engle-Granger procedure based on the Equation 1.

$$Y_t = \alpha_0 + \Phi X_t + U_t \quad\quad\quad\quad\quad 1$$

Where Φ is the cointegrating coefficient, which must be tested prior to testing for a unit root in the error correction model.

H_0: No Cointegration………..Non-Stationarity

H_1: Cointegration……………Stationarity

Test on stationarity is done on residuals. In this case, we first get the static equation of the variables in levels then we generate the residual. If the residual is stationary, then the series is cointegrated. The Engle-Granger cointegration test results are at the Appendix 3.From the results ADF t-statistic is less than ADF t-critical value at 5% level of significance and therefore we reject the null hypothesis of no cointegration.

Based on the results we can conclude that there is cointegration between the variables since the residual of differenced FDI is stationary. The stationarity graphs for the residual at the Appendix 3(b)

These results suggest that an Error Correction Model (ECM) will provide a better fit than one without the error correction variable (Green, 2003).

4.6 Diagnostic Tests

Diagnostic Tests are necessary to indicate whether the models are consistent or not. The following diagnostic tests are carried out in the analysis.

4.6.1 Jarque-Bera (JB) Residual Normality Test

This test is done to test for normality of the residuals. It focuses on the distribution of the first four moments (mean, standard deviation, skewness and kurtosis in addition to the minimum and the maximum values) of the series. The difference is distributed as chi-square distribution. This is then compared to the standard normal distribution. Since the error terms explain the dependent variable, the normality tests are carried out on the dependent variable, which in this study is foreign direct investments (FDI).

Table 8:Jarque Bera Test for Normality on the Residuals

	RESDLNFDI
Mean	1.35E-16
Median	-0.200685
Maximum	4.737412
Minimum	-2.916291
Std. Dev.	1.353431
Skewness	1.179554
Kurtosis	6.305756
Jarque-Bera	22.67844
Probability	0.000012

Source: E-Views Computation

The results in table 7 indicate that the probability values of both the residuals are less than the Jarque Bera chi-square statitistics and therefore the residuals are normally distributed at 5% significant level (Jarque, 1980).

The conclusion is that the error term is normally distributed and hence the regression obeys the OLS assumption of consistency and efficiency.

4.6.2 The Autocorrelation Test

This is a test for serial correlation of the residuals because the DW TEST is not efficient when higher lagged order of the dependent variable are included as explanatory variables. This study shows that there is no serial correlation. The test uses correllogram method to test for serial correlation/autocorrelation of the residual. The results of autocorrelation test are shown in the Appendix 4. Since the stars are within the dotted bands, there is no autocorrelation in the residual. If any of the stars were out of the dotted band then there would have been a serious autocorrelation in the residual.

4.6.3 The Whites Heteroskedasticity Test

This is a test for heteroskedasticity in the residuals from a least squares regression (Green, 2003). Ordinary least squares estimates are consistent in the presence heteroskedasticity, but the conventional computed standard errors are no longer valid. White's test is a test of the null hypothesis of no heteroskedasticity against heteroskedasticity. The probability value of the F-statistic is then used in the analysis. If the probability value is less than 0.05, reject the null hypothesis. The results on the heteroskedasticity test are in Appendix 4. Since all the p-values of both the residuals are greater than 0.05, Heteroskedasticity is not a serious problem.

4.7 Regression Results

The data analysis is done using the Autoregressive Distributed Lag (ADL) model. Both the dependent and additional predictors (variables) have been lagged in this model. The study makes the use of ADL (1, 1) model in that the dependent variable and the independent variables have been lagged once (Green, 2003).

The final equation estimated is: -

$$DLNFDI_t = C + \alpha_0 DLNFDI_{t-1} + \alpha_1 DLNGDP_t + \alpha_2 DLNGDP_{t-1} + \alpha_3 DLNPOP_t$$
$$+ \alpha_4 DLNPOP_{t-1} + \alpha_5 DLNEDU_t + \alpha_6 DLNEDU_{t-1} + \alpha_7 DLE_t + \alpha_8 DLE_{t-1} + \alpha_9 DLNMORB_t$$
$$+ \alpha_{10} DLNMORB_{t-1} + \alpha_{11} DTREOP_t + \alpha_{12} DTREPO_{t-1} + \alpha_{13} DINFR_t$$
$$+ \alpha_{14} DINFR_{t-1} + \alpha_{15} INSEC + RESDLNFDI$$

Where,

D	= appears before each variable and represents the difference of the variable
$LNFDI_t$	= logarithm of FDI current period
$LNFDI_{t-1}$	= logarithm of FDI previous period
$LNGDP_t$	= logarithm of GDP per capita current period
$LNGDP_{t-1}$	= logarithm of GDP per capita previous period
$LNPOP_t$	= logarithm of population current period
$LNPOP_{t-1}$	= logarithm of population previous period
$LNEDU_t$	= logarithm of education previous period
$LNEDU_{t-1}$	= logarithm of education previous period
LE_t	= life expectancy current period
LE_{t-1}	= life expectancy previous period
$LNMORB_t$	= logarithm of morbidity current period
$LNMORB_{t-1}$	= logarithm of morbidity previous period
$TREOP_t$	= openness of economy to trade current period
$TREOP_{t-1}$	= openness of economy to trade previous period
$INFR_t$	= infrastructure current period
$INFR_{t-1}$	= infrastructure previous period
INSEC	= insecurity
RESDLNFDI	= logarithm of the differenced residual of the equation

C   = constant

$\alpha_0, \alpha_1 \text{----} \alpha_{15}$ = coefficients of the respective variables

4.7.1 Modeling of FDI by OLS

Dependent Variable: DLNFDI
Method: Least Squares
Date: 10/08/05   Time: 07:45
Sample(adjusted): 1972 2003
Included observations: 32 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.244315	1.795789	0.692908	0.4997
DINFR	0.017924	2.821459	2.803535	0.0351
DINFR_1	0.642364	1.462161	0.439325	0.6671
DLE	0.001203	3.002970	4.006033	0.0153
DLE_1	0.201338	0.051944	3.875990	0.0458
DLNEDU	0.681498	0.103925	6.557544	0.0286
DLNEDU_1	0.051944	0.091172	0.569736	0.5779
DLNFDI_1	-0.152361	0.051545	-2.955878	0.0507
DLNGDP	-0.030617	8.321992	-0.364170	0.7212
DLNGDP_1	0.685289	0.221743	3.090457	0.0292
DLNMORB	-0.168207	0.055619	-3.024233	0.0331
DLNMORB_1	-0.587644	1.717164	-0.342218	0.7373
DLNPOP	0.278232	0.065107	4.273427	0.0236
DLNPOP_1	0.256615	0.535904	0.478845	0.0394
DTRDEOP	0.035260	0.005217	6.758539	0.0107
DTRDEOP_1	0.033984	0.044098	0.770653	0.4537
INSEC	-0.587506	0.214255	-2.742083	0.0159
RESDLNFDI_1	0.755304	0.347704	2.172262	0.0207

R-squared	0.748628	Mean dependent var		0.000680
Adjusted R-squared	0.680534	S.D. dependent var		1.607784
S.E. of regression	1.607355	Akaike info criterion		4.085378
Sum squared resid	36.17025	Schwarz criterion		4.909854
Log likelihood	-47.36605	F-statistic		34.00974
Durbin-Watson stat	2.024377	Prob(F-statistic)		0.000128

Source: E-views computation

R^2 is 0.748628 and adjusted R^2 is 0.680534. Using the adjusted R^2, the explanatory power of the model is about 68%.

The independent variables (INFR, GDP, POP, TREOP, MORB, LE, EDU, and INSEC) explain about 68% of the changes in the dependent variable (FDI).

The Durbin Watson statistic is 2.04377, which is closer to 2, indicating that there is no serial correlation of the residuals.

Since Durbin Watson test statistic is greater than adjusted R spurious regression is not suspected. The probability of F- statistics is 0.000123 indicating that on average all the variables are jointly significant at 5% level of significance.

Current infrastructure (DINFR) has a positive relationship with the current FDI (DLNFDI). As the current infrastructure increases by one unit, FDI increases by 0.017924 units. This is significant at 5% level. With increased infrastructure more foreign investments are expected due to reduced costs of transportation and efficient communication systems. This is consistent with results obtained by Asiedu(2002) and Borensztein et al (1998) who found better infrastructure to significantly affect FDI inflows positively.

The previous period infrastructure (DINFR -1) also has a positive relationship with the current FDI (DLNFDI). As the previous infrastructure development increases by one unit FDI increases by 0.642364, however it is not significant at 5% level of significance.

Infrastructure developed previous period has more effect in encouraging foreign investors as opposed to the current infrastructure being developed. This could be due to the fact that investors have more confidence in the already existing infrastructure, which they can use immediately as opposed to the current whose future use is uncertain.

The above is also evidenced by the fact that previous infrastructure has a higher coefficient (0.642364) compared to current infrastructure (0.017929).

Life expectancy (DLE) positively determines FDI inflows. As life expectancy increases by one unit, the level of foreign investments increases by 0.001203 units. It is significant at 5% level. Life expectancy is a major indicator of health in a country. If a nation is healthy, they live longer and their productivity is also increased. Higher life expectancy reflects a healthy labor force and therefore a more productive one. This will encourage foreign investors to invest into the country. Alsan et al (2004) found life expectancy to have a positive and significant impact on FDI inflows to low and medium income countries however it was not significant in determining FDI inflows in high income countries.

Previous period life expectancy (DLE-1) also determines FDI positively. As the previous period life expectancy increases by one unit (DLNFDI) increases by 0.201338 units. It is also significant at 5% level.

Previous period GDP per capita (DLNGDP-1) greatly influences positively, the current period FDI (DLNFDI). As (DLNGDP-1) increases by one unit, FDI inflows is expected to increase by 0.685289 and is significant at 5% level. GDP per capita reflects income that each person earns in a country. The higher the income, the more a person is expected to spend. This is attractive to foreign investors, it suggests ready markets for their products. Higher GDP per capita leads to higher capital formation, higher investments and hence higher savings.

However, the current period GDP per capita (DLNGDP) influences FDI negatively and is not significant at 5% level. This could be due to balancing of market size effects with the cost of production effect, which tends to work in the opposite direction. GDP per capita was used as a proxy for both market size and labor costs. Therefore with increased GDP per capita we expect people to have more income at the same time we expect producers to pay workers more. Both effects hence balance out. These results are also consistent with Alsan (2004) who found GDP per capita not to be statistically significant.

Both current (DLNMORB) and previous period morbidity (DLNMORB-1) are negatively related to FDI. As the current morbidity increases by one unit FDI falls by 0.168207 units. Whereas as the previous period's morbidity increases by one unit, FDI falls by 0.587644.
The effect of the current period morbidity is significant as opposed to previous period morbidity. The more the cases of illness reported the lower the health status of a nation and the lower the FDI inflows. This could be because the investors perceive threat of diseases for themselves and their expatriate staff and also higher absenteeism from workers in general.

Both current (DLNPOP) and previous period population (DLNPOP-1) influence FDI positively. As the current population increases by one unit FDI increases by 0.278232 units. It is significant at 5% level.
The previous period population increase by one unit leads to 0.256615 units increase in FDI. It is also significant at the same level of significance.
Both previous and current population increases implies an increase in market size hence an increased purchases. This is attractive to investors, as it would imply increased market size for their products.

The results agree with those obtained by Nunnenkamp (2002) who contradicts the notion that market-related determinants of FDI have lost importance. Rather, the correlation between absolute FDI flows and market size (proxied by population), as well as the correlation between FDI flows per capita and the income level of host countries strengthened over time.

Current period education (DLNEDU) positively affects FDI. As current education increases by one unit, FDI increases by 0.681498 units and it is significant and 5% level.

A unit increase in previous education (DLNEDU-1) also increases FDI by 0.051944 units. It is however not significant at 5% level of significance. The more educated people are the more skills and knowledge they are expected to have. We would therefore have a skilled and qualified labour force which attracts foreign investors. This in turn leads to increased foreign direct investments inflows. These results are consistent with those obtained by Noorbakhsh and Paloni (2001) and Globerman and Shapiro (2002) who argue that education does have a positive and significant affect on FDI inflows and that this effect has been increasing over time. However, there is conflicting evidence on the importance of education in determining FDI inflows. Root and Ahmed (1979), as well as Schneider and Frey (1985), report that education does not significantly affect FDI flows to developing countries.

Surprisingly, the previous periods FDI (DLNFDI-1) affects the current period FDI (DLNFDI) negatively but significant at 5% level of significance. This can be attributed to the fact that the previous FDI may have outlived its importance and is therefore not important in foreign investor decision making to invest in the country.

Openness of the economy to trade is represented by DTRDEOP. It influences FDI positively. As the current openness to trade increases by one unit the FDI inflows are expected to increase by 0.035260 units and significant at 5%. The previous period openness to trade (DTRDEOP-1) also influences FDI positively.

As the previous period openness to trade increases by one unit the FDI increases by 0.033984 units. It is however not significant.

The less the barriers to trade the more the exports and imports. This will encourage foreign investors as they will be able to export and import raw materials and finished products freely, hence increased FDI.

According to the sensitivity analysis of Chakrabarti (2001), openness to trade (proxied by exports plus imports to GDP) has the highest likelihood of being correlated (positively) with FDI among all explanatory variables classified as fragile. Asiedu (2002), using the same proxy for openness, comes to a similar conclusion when separating Sub-Saharan host countries from host countries in other regions. This means openness to trade is indeed a significant determinant of foreign direct inflows in developing countries.

Insecurity (INSEC) is negatively related to FDI. As insecurity increases by one unit FDI falls by 0.587506 units. It is also significant at 5% level.

Periods prior to General elections are known to lead to foreign disinvestments as the investors are uncertain of what the new regime holds. This period is usually characterized by pre election campaigns which could turn violent hence foreign investors flee the country for fear of losing their investments or their lives. The same applies for acts of terrorism and civil unrests, which scare away foreign investors.

Results by Schneider and Frey (1985) indicate that political instability, expressed in terms of crime level, riots, labour disputes and corruption, is an important factor restraining substantial foreign investment. However, Eriksson (1990) provides evidence that where the host country possesses abundant natural resources, no further incentive may be required, as is seen in politically unstable countries such as Nigeria and Angola, where high returns in the extractive industries seem to compensate for political instability. He concludes by saying that, so long as the foreign company is confident of being able to operate profitably without undue risk to its capital and personnel, it will continue to invest.

CHAPTER 5: SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

5.1 Summary

The results obtained in the preceding chapter show that population and education have positive and significant impact on FDI inflows. Health, proxied by life expectancy and morbidity also significantly determines the FDI inflows level. However life expectancy has a positive impact while morbidity has a negative effect on FDI inflows. Infrastructure, openness of the economy to trade and insecurity were also found to significantly affect FDI. Insecurity has a negative impact while infrastructure and openness of the economy to trade have a positive impact on FDI. GDP per capita was found not be significant.

The estimated parameters have the expected signs except for GDP per capita which has a negative sign. This could be due to balancing of market size effects with the cost of production effect, which tends to work in the opposite direction.

5.2 Conclusion

This study has examined the effect of health on foreign direct investment inflows in Kenya for the period 1970 – 2003. Based on the above findings, health indeed affects foreign direct investment inflows in Kenya. Other factors that affect foreign direct investments are population, education, infrastructure, openness of the economy to trade and insecurity. GDP per capita was found to have no significant impact on FDI inflows.

5.3 Policy Recommendations

FDI inflows is one of the development indicators for developing countries. Many of these countries (Kenya included) seek ways to improve on the foreign direct inflows into the country. They do this by identifying the factors that influence FDI and controlling or improving on these factors so as to attract foreign investors. Some of the determining factors of FDI in Kenya have been identified to be; infrastructure, insecurity, openness of the economy to trade, legal framework, and governance.

It was not until the recent outbreak of SARS in China that made FDI inflows into the country to fall by about 62% that researchers found health to be a factor that determines FDI.

This study has established the significance of health on foreign direct investments in Kenya. This has great policy ramifications, which must be addressed by health policy makers with a view of improving the population health in Kenya. Public sector investments in health must be viewed in a more general sense, not only as indicative of commitment to social sector development but also as a signal of a commitment to provision of a conducive climate within which economic activities (FDI included) are allowed to flourish resulting in economic growth, employment generation and poverty reduction.

Some of the policies to be put in place by the government so as to increase FDI inflows are:

1. Improving medical care by making health services accessible and affordable to the people. Drugs should also be affordable. The price of Anti Retro virals should be subsidized to improve the health status of those living with HIV/AIDS.

2. Continually assessing the effectiveness of drugs that are used in treating and controlling diseases such as malaria and tuberculosis and removing from the market those that have become resistant to the various disease strains.

3. Improve infrastructure so as to make the country attractive to foreign investors

4. The issue of insecurity needs to be continually addressed and assessed as investors need assurance that their property and business interests are protected before they invest in the country.

5. The introduction of free primary education led to many children enrolling into schools. The current number of educational facilities cannot accommodate the increasing number of students. The government should therefore build more schools and institutions of higher learning to ensure that these students get the learning and education they need.

5.4 Limitation of the study and areas of further research

This study uses secondary data and the major limitation is the availability and quality of data. Since data collection and measurement may not have been accurate, it is likely that measurement errors were present therefore affecting the quality of results obtained in the study.

The data on morbidity by Central Bureau of Statistics only contained outpatient morbidity thus ignoring the in-patient morbidity, which contributes a significant part of cases of sickness reported. The data was also available only for public hospitals therefore ignoring the private hospitals. This study would have been more exhaustive if I could obtain both in-patient and out-patient data on morbidity for both the private and public hospitals.

This study also ignores some factors that determine the level of FDI such as governance in terms of bureaucratic quality and corruption due to the difficulty in measuring these variables. Further research should be done to incorporate these factors together with health to find out how they affect foreign direct investments.

Studies should also be undertaken to find out the effect of health on investments levels both local and foreign in the country.

REFERENCES:

Acemoglu, D, Johnson,S and. Robinson, J.A (2001) "The Colonial Origins of Comparative
Development: An Empirical Investigation,"
American Economic Review, December, Volume 91, Number 5, 1369-1401.

Agrawal, A.N (1993), Economics of Development and Planning. New Delhi: Vikes
Publishing House PVT Ltd.

Alsan, M., D. E. Bloom, and D. Canning, (2004). The Effect of Population
Health on Foreign Direct Investment. NBER Working Paper No. 10596, National
Bureau of Economic Research, Cambridge.

Asiedu, E. (2002). On the determinants of foreign direct investment to developing
countries: Is Africa different? *World Development, 30* (1), 107–19.

Asiedu, E., & Lien, D. (2004). Capital controls and foreign direct investment. *World
Development, 32* (3), 479–90.

Barro, R. (1991). Economic growth in a cross-section of countries. *Quarterly Journal of
Economics, 106* (2), 407–33.

Barro, R., & Sala-i-Martin, X. (1995). *Economic Growth.* New York: McGraw-Hill.

Bhargava, A. (2001). *Nutrition, health, and economic development: Some poliy
priorities.* Commission on Macroeconomics and Health Working Paper Series WG1:
14, Geneva: World Health Organization.

Bhargava, A., Jamison, D., Lau, L., & Murray, C. (2001). Modeling the effects of health
on economic growth. *Journal of Health Economics, 20* (3), 423–440.

Blomström, M., & Kokko, K. (2003). *Human capital and inward FDI.* Working Paper
No. 167, London: Centre for Economic and Policy Research.

Blonigen, B. A., & Wang, M. (2004). Inappropriate pooling of wealthy and poor
countries in empirical FDI studies. Working Paper No. w10378, NBER, Cambridge,
MA.

Bloom, D. E., & Canning, D. (2000). The health and wealth of nations, *Science, 287*
(5456), 1207–09.

Bloom, D. E., Bloom, L., Steven, D., and Weston, M. (2003). *Business and HIV: Who
me? A global review of the business response to HIV/AIDS.* Geneva: World
Economic Forum.

Bloom, D. E., Canning, D., & Jamison, D. (2004). Health, wealth and welfare. *Finance and Development,* Vol. 41(1), 10–15.

Bloom, D. E., Canning D. & Sevilla, J. (2004). The effect of health on economic growth: A production function approach. *World Development,* 32 (1), 1–13.

Brainard, S. L. (1997). An empirical assessment of the proximity-concentration trade-off between multinational sales and trade. *American Economic Review, 87* (4), 520–44.

Business Daily Update. (2003). Expectation of 2003 actual FDI lowered. *Financial Times Information, Global News Wire: Asia Africa Intelligence Wire.* 5 December 2003.

Chakrabarti, A. (2001). The determinants of foreign direct investment: Sensitivity analyses of cross-country regressions. *Kyklos, 54* (1), 89–114.

Commission on Macroeconomics and Health. (2001). *Macroeconomics and Health: Investing in Health for Economic Development.* Geneva: World Health Organization.

CSICC, various years. China Monthly Statistics. China Statistical Information and Consultancy Center, Information Department, Beijing.

Engle, R. F and Granger, C.W. (1982), Cointegration and Economics, Representation, Estimation and Testing. *Econometrica,* Vol. 55.

Eriksson, G. (1990) Development of the African economy by Foreign Direct Investment With special reference to Nigeria with an appendix, Abo: Abo Akademis

Gallup, J. L., & Sachs, J. D. (2001). The economic burden of malaria. *American Journal of Tropical Medicine and Hygiene, 64* (1,2 Supplement), 85–96.

Gallup, J. L., Sachs, J. D., & Mellinger, A. D. (1999). *Geography and economic development.* Working Paper No. 1, Center for International Development, Harvard University. Cambridge, Massachusetts.

Globerman, S., & Shapiro, D. (2002). Global foreign direct investment flows: The role of governance infrastructure. *World Development, 30* (11), 1899–1919.

Government of Kenya (2003). *Kenya Demographic and Health Survey, 2003; Preliminary Report,* Nairobi, Kenya.

Government of Kenya (1997). *National Development Plan: 1997-2001.* Nairobi: Government Printer.

Government of Kenya (various). *Economic Survey.* Nairobi: Government Printer.

Government of Kenya (various). *Statistical Abstracts.* Nairobi: Government Printer

Institute of Economic Affairs (2001). *Kenya at a crossroads: scenarios for our future.* Nairobi: Institute of Economic Affairs.

Grossman, M. (1972) The concept of Health Capital and the Demand for Health, *The Journal of Political Economy,* Vol.80, No.2, 223-255.

Hausmann, R., & Fernández-Arias, E. (2000). The new wave of capital inflows: Sea change or just another title? Working Paper No. 415, Inter-American Development Bank, Washington, DC.

Jones, T. (1990). *The Panama Canal: A brief history* http://www.ilovelanguages.com/Tyler/.

Kimalu, P., Nafula, N., Manda, D., Mwabu, G., and Kimenyi, M.S. (2004) A Review of the Health Sector in Kenya. KIPPRA Working Paper No.11, Nairobi: KIPPRA.

Krueger, A., & Lindahl, M. (2001). Education for growth: Why and for whom? *Journal of Economic Literature, 39* (4), 1101–36.

La Porta, R., F. Lopez-de-Silanes, F. Scheifer and R. Vishny *Law and Finance,* Journal of Political. Economy, vol. 106 no 6 pp 1113-1155.

Lim, E. (2001). Determinants of, and the relation between, foreign direct investment and growth: A summary of the recent literature. Working Paper No. WP/01/75, IMF, Washington, DC.

Lucas, R. E., Jr. (1990). Why doesn't capital flow from rich to poor countries? *American Economic Review, 80* (2), 92–96.

Miyamoto, Koji. (2003). *Human capital formation and foreign direct investment in developing countries.* Technical Paper No. 211, OECD, Paris.

Murray, C., & Lopez, A. (1996). *The Global Burden of Disease.* Cambridge, MA: Harvard University Press.

National AIDS/STDs Control Programme (1999). *AIDS in Kenya: background projections, impact, intervention policy* (Fifth edition). Nairobi, Kenya.

Noorbakhsh, F., & Paloni, A. (2001). Human capital and FDI inflows to developing countries: New empirical evidence. *World Development, 29* (9), 1593–1610.

Nunnenkamp,P (2002). Determinants of FDI in developing countries: *Has Globalization changed the rule of the Game?* Kiel working Paper No. 1122, Kiel, Germany.

O'Driscoll, Gerald, Kim Holmes and Melaine Kirkpatrick, .2001. *Index of Economic Freedom* Heritage Foundation.

Pasvol, G., Weatherall, D.J., & Wilson, R.J. (1978). Cellular mechanism for the protective effect of haemoglobin S against *P falciparum* malaria. *Nature, 274*: 701-03.

Ram, R., and K. H. Zhang, 2002. "Foreign Direct Investment and Economic Growth: Evidence from Cross-Country Data for the 1990s." Economic Development and Cultural Change 51(1):205-15.

Ribero, R. (1999). *Earnings effects of household investment in health in Colombia.* Discussion Paper No. 810, Economic Growth Center, Yale University, New Haven, CT.

Root, F., & Ahmed, A. (1979). Empirical determinants of manufacturing: *Direct foreign investment in developing countries.* Economic Development and Cultural Change, 27 (4), 751–67.

Savedoff, W. D., & Schultz, T. P. (2000). Earnings and the elusive dividends of health.

William D. Savedoff and T. Paul Schultz (Eds.), *Wealth from Health: Linking Social Investments to Earnings in Latin America.* Washington, DC: Inter-American Development Bank.

Saitoti, George (2002). *The challenges of economic and institutional reforms In Africa.* Aldershot: Ashgate Publishing Company Limited, UK.

Schneider, F., & Frey, B. (1985). Economic and political determinants of foreign direct investment. *World Development, 13* (2), 161–75.

Schultz, P.T. and A. Tansel (1993). Measurement of returns to adult health: Living standards measurement study. Working Paper No. 95. Washington D.C: The World Bank.

Schultz, T. P., & Tansel, A. (1997). Wage and labor supply effects of illness in Côte d'Ivoire and Ghana: Instrumental variable estimates for days disabled. *Journal of Development Economics, 53* (2), 251–86.

Sen, A., 1998. "Mortality as an Indicator of Economic Success and Failure." Economic Journal 108:1-25.

Shastry, G. K., & Weil, D. N. (2002). How much of cross-country income variation is explained by health? *Journal of the European Economic Association, 1* (2–3), 387–96.

Shatz, H., & Venables, A. J. (2000). *The geography of international investment.* Policy
Research Working Paper No. 2338, World Bank, Washington, DC.

Stein, E., & Daude, C. (2001). *Institutions, integration and the location of foreign direct
investment.* OECD Global Forum on International Investment New Horizons for
ForeignDirect Investment, Mexico City.

Tandon, A.(2005) *Population Health and Foreign Direct Investments: Does Poor Health
Signal Poor Government Effectiveness?* Series no. 33, Asian Development Bank

Tam, J. (2003). SARS slashes FDI inflows by 62 per cent. *The Standard: Greate
China's Business Newspaper,* 1 October 2003.

UNCTAD (United Nations Conference on Trade and Development). (1998). *World
Investment Report 1998: Trends and Determinants.* New York and Geneva: United
Nations.

UNCTAD (United Nations Conference on Trade and Development). (2003). *World
Investment Report 2003: FDI Policies for Development: National and International
Perspectives.* New York and Geneva: United Nations.

Te Velde, D.W (2001) Foreign Direct Investment for Development. *Policy changes for Sub-
Saharan Africa.* Overseas Development Institute.

Wei, Shang-Jin. (2000). How taxing is corruption on international investors? *Review of
Economics and Statistics, 82* (1), 1–11.

Wheeler, D., & Mody, A. (1992). International investment location decisions: The case
for U.S. firms. *Journal of International Economics, 33* (1–2), 57–76.

World Bank. (2003). *World Development Indicators.* Washington, DC. CD-ROM.

World Bank (2004). *World Development Indicators Online.*
http://www.worldbank.org/data/wdi2004/index.htm.

World Bank, 2004. World Development Report 2005: A Better Investment
Climate for Everyone. Washington, D.C.: Oxford University Press.

Yigang, P. (2003). The inflow of foreign direct investment to China: The impact of
Country specific factors. *Journal of Business Research, 56* (10), 829–33.

APPENDICES:

Appendix 1(a): Non - Stationarity (graphs)
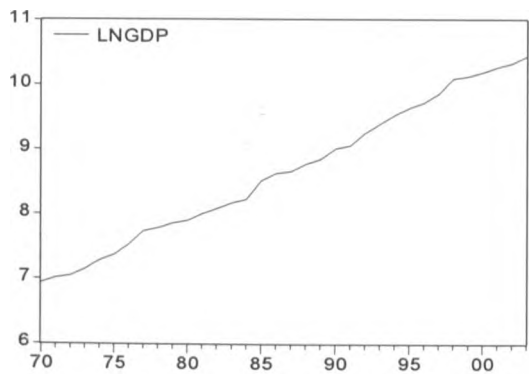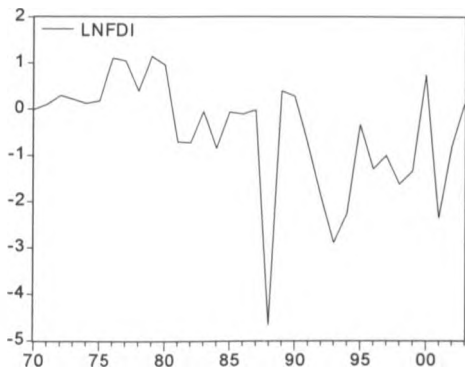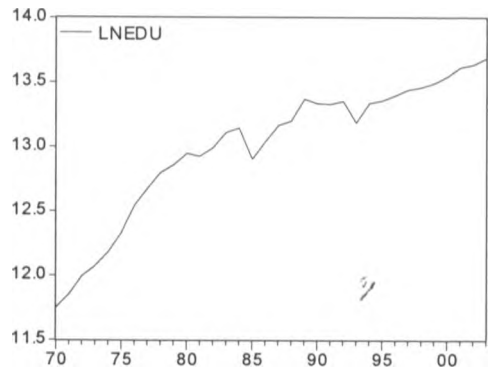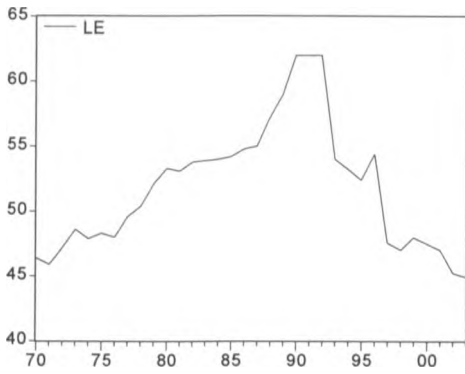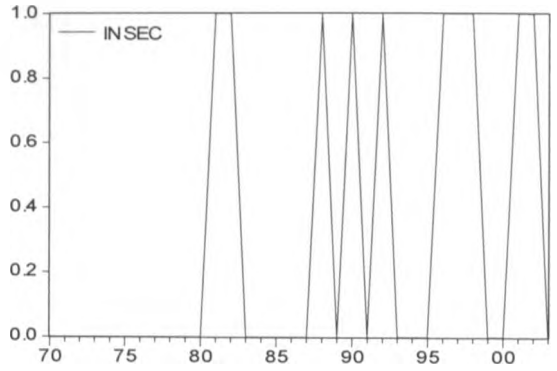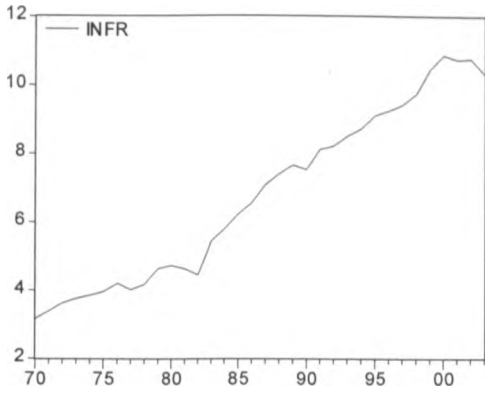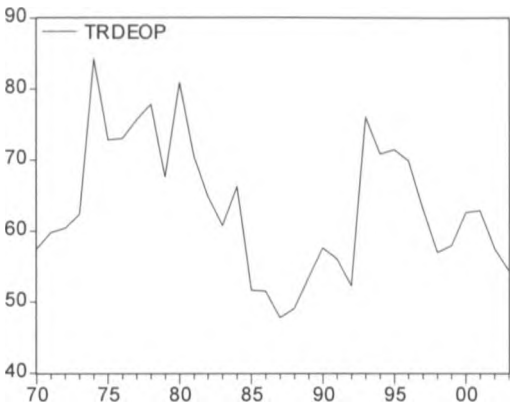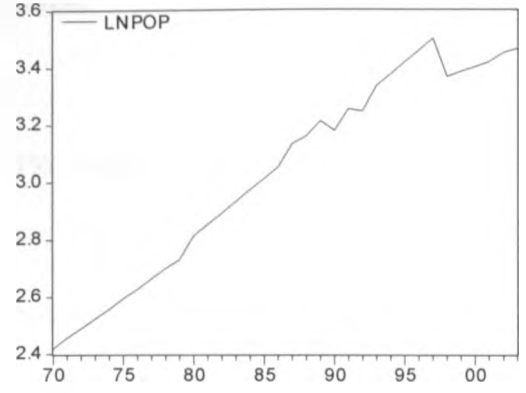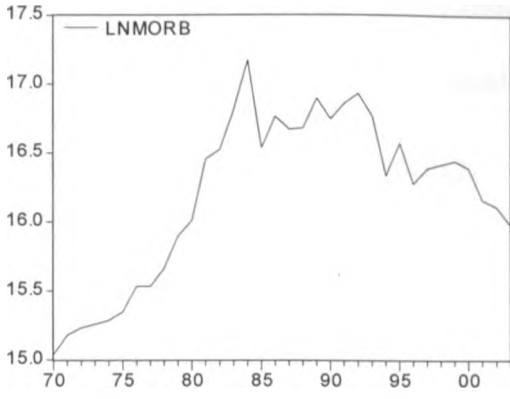
Appendix 1(b): Non - Stationarity unit root test

(i) Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INFR)

ADF Test Statistic	-0.367212	1% Critical Value*	-3.6422
		5% Critical Value	-2.9527
		10% Critical Value	-2.6148

(ii).

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(INSEC)

ADF Test Statistic	-4.840194	1% Critical Value*	-3.6422
		5% Critical Value	-2.9527
		10% Critical Value	-2.6148

(iii) Augmented Dickey-Fuller Test Equation

Dependent Variable: D(LE)

ADF Test Statistic	-1.132639	1% Critical Value*	-3.6422
		5% Critical Value	-2.9527
		10% Critical Value	-2.6148

(iv).Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LNEDU)

ADF Test Statistic	-2.835973	1% Critical Value*	-3.6422
		5% Critical Value	-2.9527
		10% Critical Value	-2.6148

(v).Augmented Dickey-Fuller Test Equation
   Dependent Variable: D(LNFDI)

ADF Test Statistic	-4.404805	1% Value*	Critical -3.6422
		5% Value	Critical -2.9527
		10% Value	Critical -2.6148

(vi) Augmented Dickey-Fuller Test Equation
   Dependent Variable: D(LNGDP)

ADF Test Statistic	0.134683	1% Value*	Critical -3.6422
		5% Value	Critical -2.9527
		10% Value	Critical -2.6148

(vii) Augmented Dickey-Fuller Test Equation
   Dependent Variable: D(LNMORB)

ADF Test Statistic	-1.989047	1% Value*	Critical -3.6422
		5% Value	Critical -2.9527
		10% Value	Critical -2.6148

(viii) Augmented Dickey-Fuller Test Equation

   Dependent Variable: D(LNPOP)

   ADF Test Statistic   -1.632459   1%   Critical -3.6422
                                              Value*
                                              5%   Critical Value -2.9527
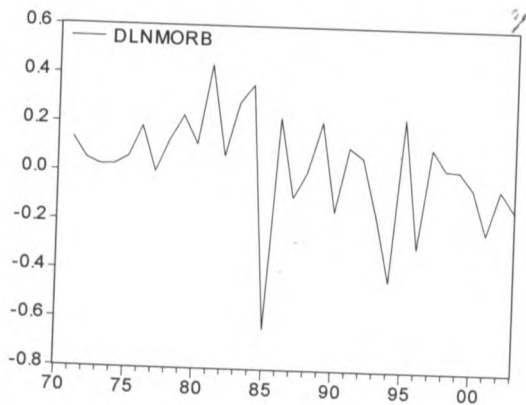
                                              10% Critical Value -2.6148

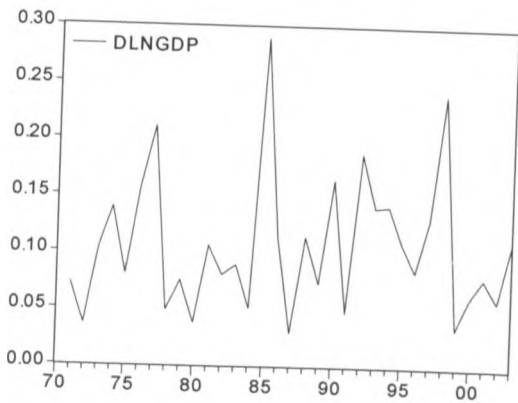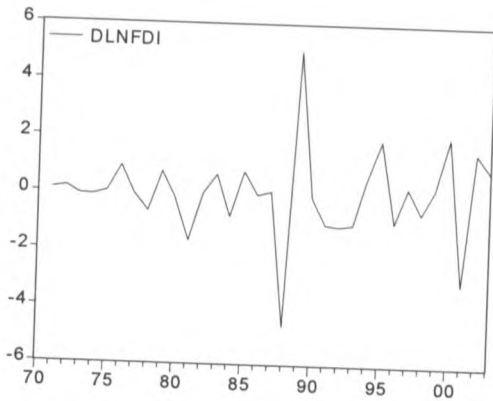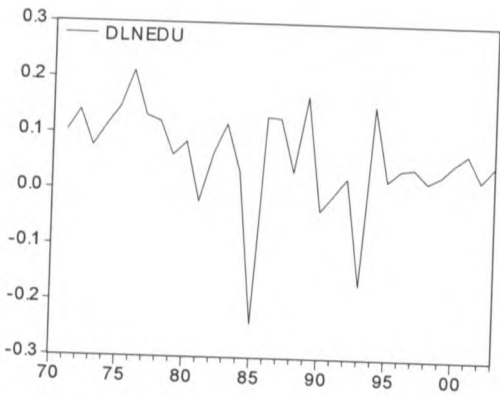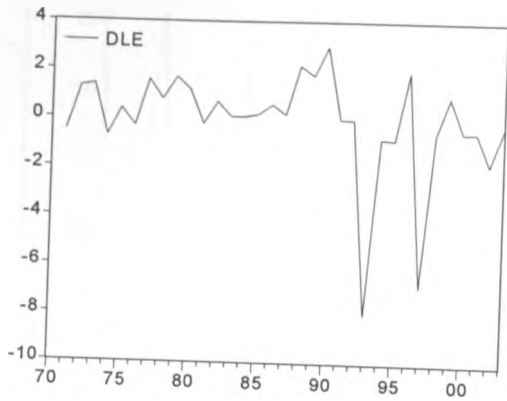(ix) Augmented Dickey-Fuller Test Equation
    Dependent Variable: D(TRDEOP)
    ADF Test Statistic   -2.565573   1%   Critical Value* -3.6422
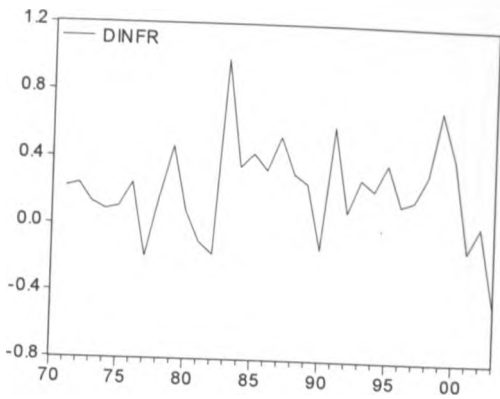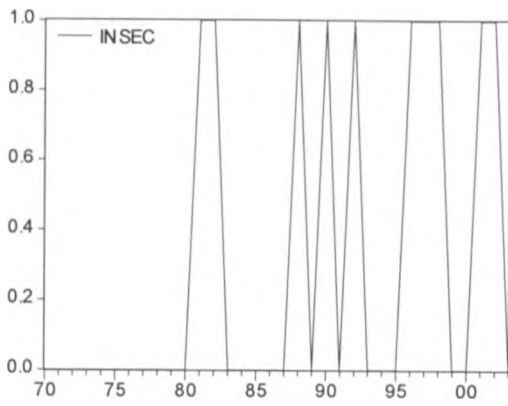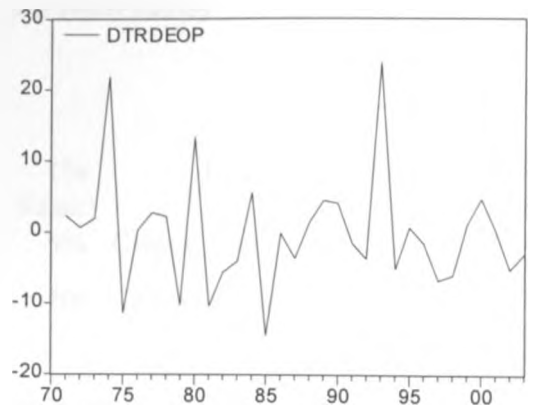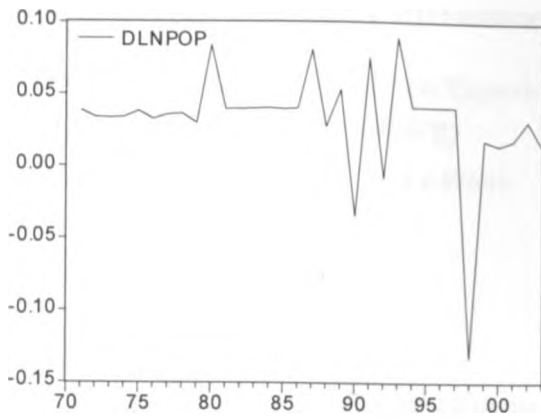
                                           5%   Critical Value   -2.9527

                                           10% Critical Value   -2.6148

Appendix 2(a): Stationarity after differencing (graphs)

Appendix 2(b): Stationarity after differencing (unit roots)

(i) Augmented Dickey-Fuller Test Equation

Dependent Variable: D(DINFR)

ADF Test Statistic	-4.649664	1% Value*	Critical -3.6496
		5% Critical Value	-2.9558
		10% Critical Value	-2.6164

(ii) Augmented Dickey-Fuller Test Equation

Dependent Variable: D(DLE)

ADF Test Statistic	-5.137873	1% Value*	Critical -3.6496
		5% Value	Critical -2.9558
		10% Value	Critical -2.6164

(iii) Augmented Dickey-Fuller Test Equation

Dependent Variable: D(DLNEDU)

ADF Test Statistic	-5.371918	1% Value*	Critical -3.6496
		5% Value	Critical -2.9558
		10% Value	Critical -2.6164

(iv) Augmented Dickey-Fuller Test Equation

Dependent Variable: D(DLNFDI)

ADF Test Statistic	-8.722137	1% Value*	Critical -3.6496
		5% Value	Critical -2.9558
		10% Value	Critical -2.6164

(v) Augmented Dickey-Fuller Test Equation
  Dependent Variable: D(DLNGDP)

ADF Test Statistic	-6.126068	1% Value*	Critical	-3.6496
		5% Value	Critical	-2.9558
		10% Value	Critical	-2.6164

(vi) Augmented Dickey-Fuller Test Equation
  Dependent Variable: D(DLNMORB)

ADF Test Statistic	-6.647804	1% Value*	Critical	-3.6496
		5%	Critical Value	-2.9558
		10%	Critical Value	-2.6164

(vii)Augmented Dickey-Fuller Test Equation
  Dependent Variable: D(DLNPOP)

ADF Test Statistic	-6.193783	1%	Critical Value*	-3.6496
		5%	Critical Value	-2.9558
		10%	Critical Value	-2.6164

(viii)Augmented Dickey-Fuller Test Equation
   Dependent Variable: D(DTRDEOP)

ADF Test Statistic	-7.511461	1% Value*	Critical	-3.6496
		5% Value	Critical	-2.9558
		10% Value	Critical	-2.6164

(ix) Augmented Dickey-Fuller Test Equation
   Dependent Variable: D(INSEC)

ADF Test Statistic	-4.840194	1% Value*	Critical	-3.6422
		5% Value	Critical	-2.9527
		10% Value	Critical	-2.6148

Appendix 3(a): Cointegration analysis (unit root test)

ADF Test Statistic	-7.276966	1%	Critical Value*	-3.6496
		5%	Critical Value	-2.9558
		10%	Critical Value	-2.6164

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RESDLNFDI)
Method: Least Squares
Date: 10/12/05   Time: 14:29
Sample(adjusted): 1972 2003
Included observations: 32 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESDLNFDI(-1)	-1.274640	0.175161	-7.276966	0.0000
C	0.018111	0.236987	0.076421	0.9396
R-squared	0.638355	Mean dependent var		0.010117
Adjusted R-squared	0.626300	S.D. dependent var		2.192970
S.E. of regression	1.340585	Akaike info criterion		3.484550
Sum squared resid	53.91503	Schwarz criterion		3.576159
Log likelihood	-53.75280	F-statistic		52.95423
Durbin-Watson stat	2.092579	Prob(F-statistic)		0.000000

Appendix 3(b): Cointegration Analysis (graph)
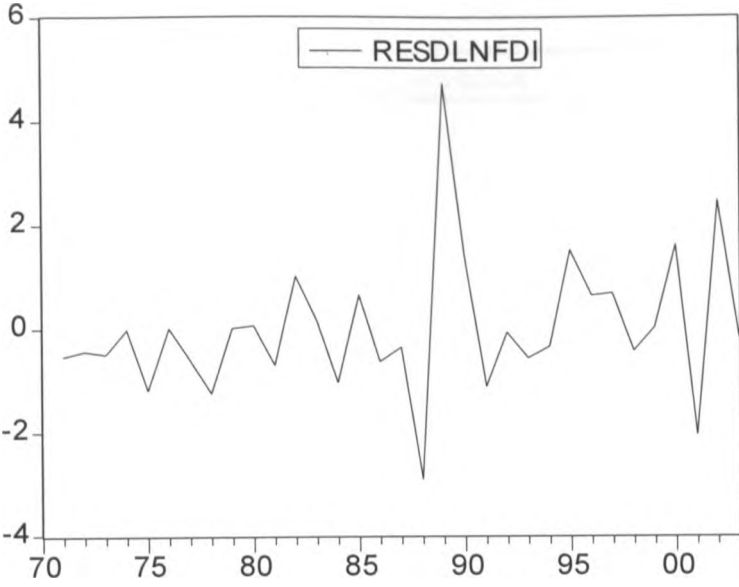
Appendix 4: Autocorrelation test

Date: 10/12/05   Time: 14:39
Sample: 1970 2003
Included observations: 33

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
.**| . |	.**| . |	1	-0.274	-0.274	2.7175	0.099
. *| . |	. *| . |	2	-0.080	-0.168	2.9563	0.228
. | . |	. | . |	3	0.032	-0.045	2.9952	0.392
. | . |	. | . |	4	-0.034	-0.056	3.0411	0.551
. | . |	. | . |	5	0.014	-0.013	3.0494	0.692
. |* . |	. |* . |	6	0.085	0.086	3.3606	0.762
. |* . |	. |** . |	7	0.194	0.280	5.0264	0.657
. | . |	. |* . |	8	-0.031	0.175	5.0703	0.750
. *| . |	. | . |	9	-0.135	-0.034	5.9412	0.746
. |* . |	. |* . |	10	0.175	0.159	7.4843	0.679
. *| . |	. | . |	11	-0.063	0.030	7.6945	0.740
.**| . |	***| . |	12	-0.250	-0.332	11.119	0.519
. |*** |	. |* . |	13	0.381	0.154	19.489	0.109
.**| . |	.**| . |	14	-0.221	-0.245	22.448	0.070
. | . |	. | . |	15	0.056	-0.047	22.646	0.092
. *| . |	. *| . |	16	-0.070	-0.129	22.981	0.114

Appendix 5: White's Heteroscedasticity test

White Heteroskedasticity Test:

F-statistic	1.070642	Probability	0.476831
Obs*R-squared	22.14884	Probability	0.390977