

**ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES**

**IMPACT OF ECONOMIC GLOBALIZATION ON HUMAN
DEVELOPMENT IN SUB-SAHARAN AFRICAN:
A DYNAMIC PANEL DATA ANALYSIS**

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By

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LIST OF ABBREVIATIONS AND ACRONYMS

AU	African Union
FDI	Foreign direct investment
GDF	Global development Finance
GDP	Gross domestic product
GDPPC	Gross domestic product per capita
GMM	Generalized method of moments
GNP	Gross national product
HDI	Human development index
HDR	Human development report
HIV	Human Immune deficiency virus
IMF	International monetary fund
LDCs	Least developed countries
MDG	Millennium development goals
NGOs	Non-governmental organization
ODA	Official development assistance
PPP	Purchasing power parity
R&D	Research and Development

SSA	Sub-Saharan African
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Program
WDI	World development indicator
WTO	World Trade Organization

ABSTRACT

Participation in the existed global economic integration is an inevitable process because it brings additional positive force for the acceleration of economic growth, and ensuring sustainable development, particularly for resource-scarce developing countries like Sub-Saharan Africa., But there will be a need to regulate the level and value of the integration to maximize the benefits and reduce the costs associated with it.

The debate about economic development has taken on a new turn since recent years and start thinking beyond per capita gross national product as the measure of a country's development performance, instead the human development index challenged purely economic measures of national achievement and helped lay the conceptual foundation for the UN's MDGs, calling for consistent global tracking of progress in health, education and overall living standards. To this effect, using a panel data on 39 Sub-Saharan African countries from 1990 to 2009, this study explores the potential contribution of economic globalization for the achievement of human development in SSA. The study uses HDI as a dependent variable and the inflow of investment, GDP Per Capita and trade openness as independent variables. To test the sensitivity of the results, I employ the dynamic panel data method based on System GMM to verify findings.

The estimation result suggests that both greater GDP Per Capita and the inflow of foreign investment are positively and significantly contribute to the growth of human development index and then to the progress of those human development components of MDGs. But, the study also confirms outward trade policy has no a direct impact in country's effort to improve the welfare development of their nation in the region. Moreover, the study recommends SSA countries should focus on domestic and foreign investment policies that encourage job creation, skill and technology transfers, strengthen the quality and accessibility of both health and education sectors.

1: INTRODUCTION

1.1 Back ground

Economic globalization consist of a set of policies which include free trade, free markets, financial liberalization, enhanced foreign investment, privatization, deregulation, flexible labor force, reduced public expenditures and laws protecting property rights. These policies were introduced through the structural adjustment programs by the World Bank and the International Monetary Fund particularly in the developing countries. But, it offers participating countries new opportunities for accelerating growth and development and, at the same time, it also poses challenges to, and imposes constraints on policy makers in the management of national, regional and global economic systems. While the opportunities offered by globalization can be large, a question is often raised as to whether the actual distribution of gains is fair, in particular, whether the poor benefit less than proportionately from globalization – and could under some circumstances actually be hurt by it(Machiko,2005).

For African countries, particularly for Sub-Saharan African a key growth strategy remains the economic integration of the continent to harness its full economic forces in fostering sustained and inclusive development and in meeting the Millennium Development Goals including poverty eradication. More than ever before, the acceleration and deepening of African economic integration is an imperative for the transformation of African economies and building resilience in meeting the new challenges from globalization. At the same time the multiplicity of trade negotiations has place considerable strain on the

negotiating capacities of African countries at a time when such capacities need to be built up and strengthened.

The economies of Sub-Saharan African are characterized by huge income inequalities, high unemployment rates and endemic poverty. There is plentiful evidence that the region's failure to sufficiently open up its markets has hampered its integration into the global economy. Import-substitution strategies predominated in the immediate post-colonial era, with industries relying on protection for their survival. This strategy failed to build productive industries, and left the countries ill equipped for opening up to the global economy. Though, exports make up 29 per cent of Africa's GDP – similar to the world average of 27 per cent and the region's share of world trade is less than 1 per cent. Most of the continent's exports are low-value primary goods, with manufactures making up less than 20 per cent of total exports. Besides, the regions' dependence on primary commodities has increased since 1980, and worldwide falls in primary product prices have magnified the effects of the region's heavy reliance on primary goods.

In fact, the empirical as well as the reality observed in Sub-Saharan African in the earlier period of 1980s and 1990s shows that, trade openness would not favor for the improvement of citizen welfare in the region. Because, despite the substantial liberalization of trade since the 1990s, SSA's trade policies remain, on the average, significantly more protectionist than those of other countries, and within its narrow range of products the region has been losing its market share in global trade. Moreover, the review of longer-term trends-looking back at HDI indicators for most countries from 1970

shows there is no consistent correlation between national economic performance and achievement in the non-income HDI areas of health and education.

According to UNCTADs 2002(which is cited in Malhotra,K., (2004) LDC Report says, there is little correlation between trade liberalization and poverty reduction in LDCs: poverty appears to be increasing unambiguously in the least developed countries with the most open and the most closed trade regimes. But between those extremes, poverty is also increasing in countries that have liberalized trade more. While these findings do not prove that trade liberalization increases poverty, they do show that it does not automatically reduce poverty. More specifically, Sub-Saharan African countries have liberalized trade for the last decade and seen different results. The average tariff rate in SSA declined by 20 percent from 1983 to 2003 as the average applied tariff decreased from 22.1 percent to 17.7 percent. Likewise the share of exports plus imports of SSA in the world rose from 49 percent in 1983 to 63 percent in 2003. However, average growth rate of per capita GDP in SSA countries fell by -0.3 percent between 1983 and 2003. Poverty also increased during this time according to the HDI¹ Index reports. On the other hand, with some exceptions, as many studies have shown that, countries like India, China, Vietnam and Mexico are the most cited examples of countries that have liberalized trade policies and have seen a substantial increase in economic growth and poverty reduction.

Meanwhile, as to UNDP (1997), economic globalization encompasses both a description and a prescription. The description lies in the widening of international flows of trade,

¹ Human Development Index (HDI) equally weights three components of well-being-- health, education, and income—intended to reflect the “capabilities” (Sen 1999) of a country’s population. Life expectancy at birth measures the capability of health, gross enrollment and adult literacy reflect the capability of education, and GDP (PPP) reflects the capability of income (UNDP 2009, p. 170).

finance and information in a single integrated global market, while the prescription lies in liberalizing national and global markets in the belief that free flows of trade, finance and information will produce the best outcome for both growth and human welfare. In view of this prescription, Sub-Saharan African's efforts to improve their human development have followed a pattern similar to its progress on global integration – where Africa has made steps, others have made strides. For instance, as shown in the reports of all countries for which complete HDI data are available for the past 40 years, life expectancy climbed from 59 years in 1970 to 70 in 2010, school enrollment rose from just 55 percent of all primary and secondary school-age children to 70 percent, and per capita GDP doubled to more than US\$10,000. People in all regions shared in this progress, though to varying degrees. Life expectancy, for example, rose by 18 years in the Arab states between 1970 and 2010, compared to eight years in Sub-Saharan African (HDR, 2010).

HDR, et al (2010) also announces that, it is striking that the top 10 list contains several countries not typically described as top performers. And Ethiopia (but, the number of people who are multi-dimensionally poor is higher) comes in 11th, with three other Sub-Saharan African countries (Botswana, Benin and Burkina Faso) in the top 25. But, of 135 countries in the sample for 1970–2010, with 92 percent of the world's people, only 3—the Democratic Republic of the Congo, Zambia and Zimbabwe—have a lower HDI today than in 1970. Moreover, People in Sub-Saharan Africa suffer the largest HDI losses because of substantial inequality across all the three HDI dimensions.

Human development puts the emphasis on people - on the quality of their lives, their education, their skills and health, their environment, their choices, and the prospects for

their children. People are seen as actors and agents of development, not as subjects or obstacles. Enhancement of all people's capabilities, choices and quality of life is the goal of human development. But, there are still hard-core believers of "the market" as the final arbiter of everything, including human welfare. Increasingly, and maybe perhaps grudgingly, a part of the economic fraternity is beginning to acknowledge that "the human being" is more important than the market, that the market is no guarantor of human welfare, so that action needs to be taken that goes beyond the market to ensure sustainable human development.

Over the period 1970-2005, it is found that the human development index improved in all African countries except in Zambia, where it declined, due to unfavorable terms of trade and to persistent health and governance problems, among challenges. For Sub-Saharan African Mauritius, South Africa and Botswana, in that order, enjoy the highest HDI. In the other extreme, Niger has the lowest HDI value of 0.326. The average for sub-Saharan Africa (SSA) is 0.487, which is only 7 percent lower than the overall African average of 0.522 that is inclusive of North Africa. Nonetheless, despite this progress, African countries continue to lag behind other regions of the world in human development. (Fosu and Mwabu, 2010) Because, annual economic growth has been low or negative on the continent and disparities in living standards have increased in many countries of the region. Still around 50% of the African population remains poor, a condition that contrasts sharply with situations in other world regions where poverty rates have declined considerably over the past two decades and a half. Hence, as AU Commission,(2010) recommends, strong political will at the highest level and consistent and sustained follow-up implementation at the regional level, with close and rigorous monitoring and

evaluation of progress towards consolidating and accelerating African integration is a prerequisite.

Thus, Yet continued opening up of the region's markets, while important to the region's integration into the global economy, is unlikely to be sufficient to improve Sub-Saharan Africans prospects without significantly improved progress in the human development and economic growth spheres. Hence, going forward these last should be the main focus of domestic and international policy-makers' attention just as Secretariat-General Ban Ki-moon underlined, in his speech during the 2010 Human Development Report released session, that they have learned that while economic growth is very important, what ultimately matters is using national income to give people a chance at a longer, healthier and more productive life.

1.2 Statement of the problem

The human development approach makes people the ends rather than the means of development, so that increased income and consumption are valuable only insofar as they improve people's lives. Accordingly, Human development is two-sided. It involves forming people's capabilities through improved health, knowledge and skills. It also involves using these capabilities to achieve what is valued. The approach also places more emphasis on the quality and distributions of growth than conventional measures like GDP. The underlining objective of human development is to enable people to enjoy long, healthy and creative lives (UNDP, 2008). However, without greater and more sustained growth, poverty reduction and quality of life improvements will continue to be limited especially in Sub-Saharan African.

Meanwhile, a number of sub-Saharan Africa WTO members undertook comprehensive trade liberalization in the early to mid-1990s slashed import tariffs to very low levels and removed all quantitative restrictions. Yet their economies have gone nowhere, their social indicators are deteriorating, and many of these countries have made little progress in integrating with the global economy. Nevertheless, in recent years some parts of Sub-Saharan African have made progress in liberalizing their economic policy, for instance they undertook privatization in many sectors; foreign investment has increased; macroeconomic and political stability have also been achieved by some nations in the region, thus they commence earning benefits.

As a result, to the positive extreme, there are countries such as: Seychelles, Mauritius, Gabon, and South Africa which scores great improvement in their HDI value for the past two decades and shown progress in their category from medium to high development countries. Over these periods, HDI values also rise in these countries and reached to its peak² in the 2007. Furthermore, other countries like Botswana, Namibia, Sao Tome and Principe, Congo, Angola and other 11 countries have improved in recent years and categorized in medium HDI ranking. But the remaining 18 Sub-Saharan African countries were badly remaining in low human development index, clearly shows evidence of the incidence of poverty and poor human development within their countries. This may be due to weak economic integration with global market which will be reflected by their incapability to achieve the desired economic growth and institutional development that enable them to improve basic education, health and per capita income of their nations.

Consequently, by considering the existed inadequate economic integration of the region, many professionals repeatedly express their fear that at the current pace, it will be unrealistic for SSA to imagine that they could achieve the MDGs³ due stated period. Actually, their hesitation is substantiated with the ground that the Millennium Development Goals were based on global trends; they tend to place at a disadvantage of

² In 2007, Seychelles (0.843), Mauritius (0.804), Gabon (0.755), and South Africa (0.683) which is the highest HDI values of the region since the calculation of the index started. Particularly, Mauritius and Seychelles showed advancement in their HDI value rank; for example, in 2007 Seychelles becomes 57th and Mauritius, 81th of the other 177 UNDP member countries.

³ The MDGs are necessarily linked with the concept of human development and provide an already well-established monitoring mechanism. If a nation can achieve those components of human development, it is very nearly to say it achieves those eight MDGs namely: (1) Eradicate Extreme Hunger and Poverty, (2) Achieve Universal Primary Education, (3) Promote Gender Equality and Empower Women, (4) Reduce Child Mortality, (5) Improve Maternal Mortality, (6) Combat HIV/AIDS, Malaria and Other Diseases, (7) Ensure Environmental Sustainability, (8) Develop a Global Partnership for Development. The eight MDGs - which range from halving extreme poverty to providing universal primary education, all by the target date of 2015 - form a blueprint agreed to by all the world's countries and leading development institutions.

those countries whose starting point was far from the indicators' maximum boundaries. Notwithstanding all these, more recent review⁴ of MDGs progresses dictates optimistic views that the assumption that "Africa is lagging behind" on the MDGs is not well founded and SSA countries are the best performers in terms of MDG acceleration, particularly in its human development element. These improvements are mainly linked to improvements in the growth rate of GDP per person employed; primary school completion rates; reduction in child mortality; reduction in HIV prevalence; and increase in ODA and debt relief, but the region still lagged⁵ behind in improving maternal health.

However, debates continue among many concerned professionals and policy makers that whether global economic integration determines these progresses in human development and then related MDGs in that far-behind Sub Saharan African in the past decade, hence this is the foremost motivation to conduct this paper. The other rationales behind showing desires to deal with this problem are: first, improving the living standards of nations become one of those priorities of the region in their multi-sectoral poverty alleviation efforts; since it is increasingly becoming the loyal instrument to evaluate the progress of country-wise development policies; Second, these human development elements are the main prioritized components of MDGs in which countries of the region are expected to

⁴ The review is made by Hailu and Tsukada,(2011), It is another perspective on evaluation and measurement, demonstrating that developing countries, especially those in Africa, are among the best performers in terms of MDG acceleration. For further reading (see Hailu and Tsukada, 2011),

⁵. On the Indicator "improve maternal mortality " of goal 5, also calls for more effective interventions: in 16 of the 21 countries for which data are complete, progress on reducing maternal mortality slowed down. This coincides with disappointing progress on births attended by skilled personal. However, given that there is intra-country difference among the region, there are still many episodes of slowdown in MDG progress such as improving female employment, higher education and maternal health which deserve special attention.

achieve in the remaining four years; third, the core issue of this paper hasn't yet properly addressed by previous studies as they focus on more specific (at country) level or more general issues of the effects of either components of global integration: FDI or trade liberalization or GDP per capita in the past. For instance, Sachs and Warner, (1999), Fontagné and Mimouni,(2000), and Carkovic and Levine(2005), devoted to show the effect of either foreign investment or trade openness on economic growth in developing countries. In addition, much related works by, Anand and Sen, (2000), Rudra, N.(2002), Sharma and Gani, (2004), Ming-Chang Tsai (2006), Eddy and Vivarelli(2006), UNCTAD(2008), Gohou and Soumaré (2009), Akinbobola and Isike(2009), and Anyamele, O.D.,(2010) dedicated to estimate the effects of global integration in the process of poverty reduction in developing countries or, in African countries as whole or, in single countries but not specific to Sub-Saharan African, as countries of this region have their own common socio-economic, and political features. Thus, it is a deserved assignment to examine the contribution of the current global economic interaction on the process of ensuring human development in Sub-Saharan African.

1.3 Objectives of the Study

The general objective of the study is to examine empirically, the impact of economic globalization in promoting human welfare in Sub-Saharan African. More specifically,

- To scrutinize the extent to which trade openness, inflow of private investment and ensuring economic growth contribute to achieve the desired human development in the region. In other words, to tests whether FDI or/and international trade extension is an effective tool for the attainment of human development in the current international economic integration scenario in case of Sub-Saharan African.
- To assess the position of Sub-Saharan African in which whether they are in the right track in realizing those human development components of MDGs.
- To add some prolific tip to the existing literature on the topic understudy since to my best knowledge, this paper is the first one that focuses on this issue in the region.

1.4 Hypothesis of the study

Being active participants of the existing global economic integration system, Sub-Saharan African will be among those competitive shareholders from the benefits and costs of it. So that it is hypothesized in this study that economic integration will bring additional opportunities to attain those basic components of human development such as ensuring longevity (higher life expectancy), getting advanced literacy (access to basic education),

and achieving higher per-capita income in targeted SSA countries. However, due to the presence of intra-country variation in level of integration, timing and reaction while joining the global market, some mixed results will be observed only in the effect of international trade policy variable.

1.5 Methodology and Data Sources

1.5.1 Data sources

The study entirely depends on secondary data and employs yearly data ranging from the period 1990- 2009. The choice of the period is dictated on the fact that the various liberalization policies in Sub-Saharan African were introduced. The data for HDI⁶ is from the Human Development Report (HDR) of the UNDP; for Per Capita GDP is from the World Bank and World Development Indicators (WDI); for FDIGDP is from the World Development Indicators and Global Development Finance (GDF) databases of the World Bank; for Openness is from International Financial Statistics (IMF/World Bank), and World Development Indicators.

1.5.2 Methodology

The paper employed econometric data analysis techniques. Since trade openness, FDI and economic growth are ongoing processes, not an event, therefore the long term as well as the short-term perspective is required, besides, economic globalization constitutes

⁶ HDI value for year 2008 on the selected SSA countries became absence. Since HDI is the composite index of three variables, its increment is expected to be in decimal. Thus, to make our analysis more recent, the author uses the average values of the nearest five years HDI values for them.

dynamic aspects of all related to the increased market access: increased access to capital, information, technology and trade; its relation with human development index is undoubtedly vivacious, the paper will employ dynamic panel data analysis techniques. Furthermore, to account joint endogeneity issues and country specific effects we adopted the generalized method of moments estimator which was introduced by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1997). The Sargan/Hansen test of over-identifying tests for joint validity of the instruments; and the Arellano-Bond test for autocorrelation will also be undertaken to address consistency issue of the GMM estimator.

Following those previous empirical literatures, economic globalization is captured by trade openness or trade policy (measured as the ratio of trade (exports + imports) to GDP), Inflow of foreign investment (measured as ratio of FDI net inflows over GDP) and the economic growth which will be measured by real GDP can be considered as an explanatory variables while Human development index which is the popular measure of human development of nation since its introduction by UNDP. Finally, based on the literature posted by Garrett's (1998), Milanovic (2002), Wade (2004), Akinbobola and Isike(2009), the model that will be appropriated to estimate the extent of global economic integration (ECOGLO) on human welfare (HDI) in Sub-Saharan Africa is given as:

$$HDI_{it} = f(EOGLO) \quad (1)$$

We use i to index the countries and t to index time and Economic globalization variables (ECOGLO) can be captured by the degree of openness of a country's economy to the foreign trade; the rate of growth of real GDP and is used as a measure of the attractiveness of the host country's market; and the amount in flow of private investment. Shortly,

$$ECO\ GLO = f(OPN, FDI\ and\ RGDP) \quad (2)$$

By adopting Cobb-Douglas Production function we can rewrite equation 2 and the empirical model of the study takes the following form:

$$hdi_{it} = \mu hdi_{it-1} + \beta_1 fdi_{it} + \beta_2 opn_{it} + \beta_3 gdp_{it} + \alpha_i + \varepsilon_i \quad (3)$$

Where *hdi* is the human development index to measure human development; α_i is the constant; FDI is measured by the ratio of FDI to GDP; economic growth is by per capita GDP and openness is globally captured by trade openness which is measured by international trade to GDP.

1.6 Significant of the study

The subject human development typically involves improvements in a variety of indicators such as literacy rates, life expectancy, and poverty rates. It might not be the best action if Sub Saharan Africans decide to isolate from global integration, particularly from economic integration. Because, it will bring additional potential and assistance in achieving human development need of their nation within likely period of time. But there is a need to regulate the interaction with these global markets, since it has its own benefits and costs. Accordingly, the finding of this study will provide inherent clue to policy designers, and decision makers on the indigenous relationship between human development and the explanatory variables: foreign direct investment, trade openness and economic growth particularly, in the current context of Sub-Saharan African. Moreover, it will help them to understand the progresses regarding achieving the MDGs, to know where and what shall be their focus, and to pass reliable decision in prioritizing policies and strategies implementation.

1.7 Scope of the study

While globalization truly occurs in many fronts such as the political, economic and socio-cultural and the process of ensuring human development is also affected by them, this paper is focused and tried to investigate the contribution of only economic globalization on human development progress in Sub-Saharan African. Because, considering all these aspects of globalization will make the study unmanageable and theoretically ambiguous. As another limitation of the study, just as most studies face, in Africa countries, the availability of data sometimes dictates the range of the study and the choice of proxy for certain variables.

1.8 Structure of the study

The paper is structured as follows. Having introduced the paper in section one, section two deals with a brief theoretical and empirical literature reviews on the relation between economic globalization, MDGs and human welfare while section three presents the methodology, which includes Model specification, the sample, and estimation techniques and econometrics tests. Section four, our findings and discussion. The final section discusses conclusion and policy implication of our analysis.

2: LITERATURE REVIEW

2.1 Theoretical arguments on the linkage between global economic integration and human development

2.1.1. The Mechanics of Human Development and Trade Openness

The relationship between trade and poverty is likewise extremely complex and case-specific. However, a general conclusion from the literature on the causal link between trade openness and poverty reduction is through economic growth. Trade openness appears to be beneficial to economic growth and—through growth—poverty reduction. However, it cannot by itself be expected to bring about more balanced human development. Accordingly, the standard argument for a positive relationship between international trade and human development is that more trade begets a greater standard of living which, in turn, begets more education, better health care, better social services, etc. Besides, a broader or “globalist” argument is that trade impacts non-income human development measures both indirectly via income and directly via cross-cultural fertilization and an increased variety of goods available. Trade promotes education because communication, cross-cultural understanding, and global awareness are necessary for conducting businesses across countries.

In similar fashion, to a developing nation, such as SSA the new types of goods flowing into the country will include medicines, health related equipment, and medical training – all of which improves the health, nutrition, and longevity of the country’s people. Even if trade had no impact on income, we would expect the cross-cultural fertilization that

accompanies trade to foster improved human development simply by broadening people's outlooks and exposing the people to new products (Davies and Quinlivan, 2006). In other words, a common "propagation path" to show the impact of trade on social welfare development implies improvements in international trade encourage a similar sequence of improvements across countries—for example, improved trade is followed by improved per-capita income, which is followed by improved literacy, which is followed by improved longevity, etc.

2.1.2 The Mechanics of Human Development and Inflow of Foreign Investment

Poverty reduction and improvement of overall population welfare are the priorities of governments of Sub-Saharan African. In these countries, the governments' main objective is to improve the living standards of their population as one of their social functions. Foreign Direct Investment can help countries to achieve these priorities as they create jobs, develop local skills and bring new technological progress. On the economic side, recent endogenous growth literature shows that human capital might be the main contributor to self-sustained GDP per capita growth. As from the initial studies on economic growth, it has been recognized that technological progress is the main driver of sustainable growth (Solow, 1956)-In turn one of the main contributors to human capital is obviously human development (Gohou and Soumaré, 2009,).

Since capital, technology and management know-how are bundled into one in FDI, its consequences for economic growth and the welfare of host countries are likely to be significant. Regarding this, the new-growth theory gives significant weight to human capital – creating agents who can become more productive through their acquisition of

knowledge, increased skills and better health and nutrition. Foreign investors play a positive role in the enhancement of such attributes. Thus, higher levels of individual well being are likely to represent an increase in human capital, hence contributing to higher levels of aggregate output. Increased output generates higher incomes and improves per capita incomes, inducing overall well being. (Sharma & Gani, 2004).

2.1.3 The Mechanics of Human Development and Economic Growth

According to Ranis et al. (2000) we view economic growth to human development as a two-way relationship. The first chain consists of economic growth benefiting human development with GNP. Namely, GNP increases human development by expenditure from families, government and organizations such as NGOs. With the increase in economic growth, families and individuals will likely increase expenditures with the increased in incomes, which leads to increase in human development. The other, with the increased in expenditures, health, and education tend to increases in the country and later will contribute to economic growth. In addition to increasing private incomes, economic growth also generates additional resources that can be used to improve social services (such as healthcare, safe drinking water etc...). By generating additional resources for social services, unequal income distribution will be limited as such social services are distributed equally across each community; benefiting each individual, thus, ensuring increased living standards for the public. In other words, growth can contribute to human development in two ways. First, employment-led growth raises household income. Depending on how it is spent, the additional income can be used to improve nutrition, augment children's education or increase skills-all of which enhance human capabilities.

Second, growth can contribute to human development through government policies and spending. Growth can increase government revenue-which, if used to enhance health and education, thus benefits human development.

While ‘economic growth expands the material base for fulfilling human needs’ (UNDP, 1996, p. 66 and Rodrick, 1994), the extent to which those needs are met depends on resource allocations and on the creation of opportunities for all parts of the population. The interaction between economic growth and human development is a key driver of both virtuous and vicious development spirals. Weak human development is both a cause and a result of Sub-Saharan Africans’ failure to integrate into the global economy. Again, a failure to globalize has weakened Africa’s human capital base. Weak funding on higher education institutions, health faculties and then increasing their per-capita income for example, means that countries often lack the leadership skills needed to successfully manage integration into the global economy (Bloom, Weston, and Steven, 2005)

2.1.4 Millennium Development Goal and Economic Globalization

The newness of the present phase of globalization lays in two directions with elements that impact on MDG strategies: First, the accelerated interdependence among nations in terms of higher volumes in trade, investment flows, and intermediation, including the trading of currencies. This affects resource mobilization and the state of the external account that may place short term fiscal and monetary constraints in the management of the MDGs. Second, interdependence in policy strategies and especially in macroeconomic policies, where regional groups and the International Financial Institutions (IFIs) have considerable power vis a vis individual SSA country. Moreover, it is a straightforward to

understand that in the daily affairs of a country in the region, balance of payments disequilibria, currency volatility, and interest rates crisis usually take priority over the pursuit of longer term objectives such as the MDGs.

However, although all that seems above with the existed economic globalization, Hailu and Tsukada (2011)⁷ produced an optimistic report from their empirical review of MDGs progress of SSA. They analyzed the performance of 40 indicators for 98 countries including all Sub-Saharan African between 1990 and 2008. Finally, they drew the following broad results: First, a significant number of sub-Saharan African countries have substantially improved the rate of progress on the MDGs. Of the leading 10 countries whose MDG progress accelerated, eight⁸ are from the region. Second, most progress was made towards goals 1, 2, 4, 6 and 8. Of which all human development elements of MDGs components are considered too. For example, regarding poverty reduction, more than 78 per cent of the countries in the sample accelerated the reduction of the proportion of people living on less than US\$1.25 (PPP) per day. Regarding goal 2, primary education completion rates have accelerated in 70 per cent of the countries. The study also ensured that relatively greater inflow of foreign investment and the growth rate of GDP per person employed remarkably contribute to these MDGs progresses in the majority of Sub-Saharan African countries.

⁷Hailu,D., and Tsukada, R.,(2011) produced the article in titled “*achieving the Millennium Development Goals: a Measure of Progress*”, in *February 2011*. They introduce a new method for evaluating the commitment of countries, as measured by their effort to accelerate MDG progress. It compares the rate of improvement of indicators before and after the adoption of the MDGs. The authors emphasize that the new methodology based on the rate of progress “is a step towards recognizing the commitment of countries to furthering advances in attaining the MDGs”.

⁸ Burkina Faso made progress on 91.3% of the indicators, while Angola and the Central African Republic accelerated progress on 90% of them. Only two countries from Sub-Saharan Africa (Sudan and Mauritania) are among the bottom 20 countries where the rate of MDG progress was slow.

2.2 Empirical evidences of the impact of global economic integration on human welfare in SSA

Since improving the nations' welfare status keeps on as a sensitive concern at regional and global level time to time, many researchers tried to put their own insight by depending on their indigenous methodologies they followed; the scope of their understanding and interest in the past two decades. To this effect, though I made many reviews of empirical studies regarding the matter, it seems judicious to present only the most lucrative and specific to this issue as follows.

The voluminous literature on the positive relationship between trade liberalization and economic growth forms the basis for often-heard claims about the benefits of trade openness. But that literature is far from unequivocal. That is, there is no convincing evidence that trade liberalization is automatically or always associated with economic growth, let alone poverty reduction or human development (Malhotra, 2004). Thus, the previous empirical evidences regarding this are mixed. For instance, Mbabazi et al. (2008), using cross-section and panel econometric techniques found consistent evidence that trade openness have a positive effect on growth. similarly, by means of co-integration and causality analysis, Gries et al. (2008) found limited evidence that trade openness enhance growth and then welfare development through its impact on financial development in 16 SSA countries. But, Rodrik (1999), in his popular work argues that openness in the sense of low barriers to trade and free capital flows will not systematically produce the result of increased growth, reduction of poverty and improvement in the quality of life for the majority of citizens of developing nations like SSA.

Devotion by Davies and Quinlivan (2006) measured the impact of international trade(actually, not openness) on 154 developing countries' HDI growths by modeling the growth in the HDI as a distributed-lag function of current and past changes in the country's per-capita trade. Their paper offers evidence, within the context of a multi-country, multi-year panel data analysis, which suggests a significantly positive relationship between improvements in social welfare and increased international trade. They also found that the freer nations attracted more foreign direct investment-the poorest ten countries attracted only 0.43 percent of the total FDI obtained by the 154 developing countries in their sample.

Among those prominent work that intensively focuses on the relation between FDI and human development is by Sharma and Gani, (2004). They examined the effects of foreign direct investment on the progress of human development for two groups of countries—low and middle income countries. The empirical results of their study confirm that foreign direct investment exerts a positive effect on human development in the low and middle-income category of countries. However, the positive effect is weak in both cases. Their empirical results have also confirmed that in the low-income group, it is the progress of human development that exerts a significant positive effect on FDI. Besides, they recommended that FDI through positive effect on economic growth and infrastructure creations in host countries contributes towards the enhancement of human development. This then implies that open economic policies with increasing efforts towards integration of national economies into the global marketplace are a necessary condition for human development.

Moreover, Akinbobola and Isike(2009) also employing the vector autoregressive modeling technique and was found that Capital inflow(FDI) explains a significant change noticed in the human development index as the inflow of capital and economic openness had positive impact on poverty reduction in south Africa. Another finding that was advanced by Anyamele (2010) recommended that, in addition to FDI inflow and trade (export promotion), the importance of educational attainment (ensuring literacy), which is one of the component of human development index, to accelerate economic growth especially in Sub-Sahara African.

To the specification, Gohou and Soumaré, (2009) were also exhausted in testing the extent of FDI inflow on welfare development in Africa across regions. During their empirical analysis, they used FDI net inflows per capita and Human Development Index (HDI) respectively as the appropriate devices to measure FDI and welfare variable. In their exploration they confirmed that there is positive and significant relationship between FDI net inflows and welfare development in Africa. Nevertheless, this relationship is significantly different between African regions. For instance, whilst the relationship remains positive and significant for economic communities in Central and East Africa, it is non-significant in Northern and Southern Africa and ambiguous in Western Africa.

3: ECONOMETRICS METHODOLOGY

3.1 Model Specification

3.1.1 Theoretical Framework

Classical economists explained that economic development depends upon capital accumulation (Harrod and Dommar and Solow growth model etc). Later in 1986's export-led growth hypothesis (Romer) which states that export can play a key role to enhance economic growth. Augment in export results increase in domestic output through the multiplier process that depends on Marginal Propensity to Consume, Marginal Propensity to Export and Marginal Propensity to invest etc. Having a strategy to concentrate and differentiate the export-led production, a country can anticipate main advantage of trade and static gain will be gradual to establish dynamics of comparative advantages with its foreign trading partners. This dynamic gain can stimulate innovation and explore better economies of scale results better economic growth can be obtained in short. The expansion of international production is determined by economic and technological forces along with ongoing trade liberalization, foreign direct investment (FDI) and trade policies (Sulaiman and Sadaf, 2010).

Although trade and human development have a complex relationship, Trade can benefit human development directly in three ways, 1) International trade can expand markets, facilitate competition and disseminate knowledge, creating opportunities for growth and human development; 2) Trade can also raise productivity and increase exposure to new technologies through foreign direct investment, which can also spur growth and then

welfare development; 3) Trade can enlarge people's choices by expanding markets for goods and services and by providing stable incomes for households. In addition, increased employment leads to higher incomes that, if spent on health and education, enhance people's capabilities.

In this context, economic globalization suggests a unique opportunity for Sub-Saharan African countries to attain quicker economic growth and then welfare development through trade and investment. Hence, the study will adopt the Export-Led Growth Hypothesis (ELGH), which postulates that exports (which is the outcome of outward trade policy) are essential ingredient for the enhancement and acceleration of long run economic growth and human development, in such a way that it creates conveniences to estimate the effects of those variables that detain global economic integration on those components of human development index.

3.1.2 The Empirical Model

For this econometric analysis, following those previous empirical literatures such as Garrett's (1998), Milanovic (2002) and Wade (2004), economic globalization is captured by trade openness or trade policy (measured as the ratio of trade (exports + imports) to GDP), Inflow of foreign investment (measured as ratio of FDI net inflows over GDP) and the economic growth which will be measured by GDP Per Capita can be considered as an explanatory variables while human development index which is the popular measure of human development of nations since its introduction by UNDP will be taken as the dependent variable. Finally, based on the literature posted by Takinbobola and Isike (2009), the model that will be appropriated to estimate the extent of global economic integration (ECOGLO) on human welfare (HDI) in Sub-Saharan African is given as:

$$HDI_{it} = f(EOGLO) \quad (1)$$

We use i to index the countries and t to index time and the rationale for including these variables is explained next.

Human Development Index (HDI): We use the United Nations Development Program's (UNDP) Human Development Index (HDI) as our measure of human development. The UNDP claims that the HDI is superior to per-capita GDP for measuring social well-being because: (1) per-capita GDP measures only income whereas the HDI is also weighted for longevity and education, and (2) per-capita GDP only reflects average income whereas HDI is influenced by the type of goods that constitute GDP. For example, "...a country with a very high GDP per-capita such as Kuwait has a lower HDI rank because of a relatively lower level of educational attainment. Uruguay has roughly half the GDP per-capita of Kuwait but has a higher HDI rank." (Davies and Quinlivan, 2006)

To construct the HDI, the UNDP establishes a "dimension index" for each country and outcome. Dimension indices that feed into the HDI are: GDP index (having a decent standard of living measured by purchasing power parity, PPP, income), life expectancy index (living long and healthy life), and adult literacy index (being educated measured by adult literacy and enrollment at primary, secondary, and tertiary level). Shortly,

$$HDI = 1/3 (GDP \text{ index}) + 1/3 (life \text{ expectancy index}) \\ + 1/3 (adult \text{ literacy index}) \quad (2)$$

Economic globalization variables (EOGLO): Many literatures confirmed that the effect of economic globalization can be captured by the degree of openness of a country's

economy to the foreign trade; GDP Per Capita of the country and is used as a measure of the attractiveness of the host country's market; and the amount of inflow of private investment. Shortly,

$$ECO\ GLO = f(OPN, FDI\ and\ GDPPC) \quad (3)$$

Openness (OPN): in the literature, the popular measure of globalization is the degree of openness. The use of this measure is premised on the argument that the more a country opens, the higher the level of its integration with global economy and, consequently, a resultant increase in economic growth. This actually explains the various liberalization policies in Sub-Saharan Africa since the mid 1980s. There are two measures⁹ of openness in literature. These include ratio of trade (exports + imports) to GDP. Following Cigno *et al* (2002), among others, we used the ratio of trade to GDP, as our measure of degree of openness.

Foreign Direct Investment (FDI): FDI is measured by FDI net inflows, which is the sum of equity capital, reinvestment of earnings, long term capital and short-term capital as shown in the balance of Payment. We use the percentage of FDI to GDP ratio as the measure of FDI variables. Theoretically, investment will go primarily to markets that are large enough to support the scale economies needed for production.

⁹ There are two measures of liberalization (or trade openness) are used. One is the standard measure used in much of the 'new' growth theory literature of the ratio of total trade (exports + imports) to GDP. The second is the so-called Sachs-Warner (1995) ratio of openness. Sachs and Warner define an economy as 'open' if all five of the following conditions are met: (i) an average tariff rate of less than 40 percent; (ii) average non-tariff barriers equivalent to a tariff rate of less than 40 percent, (iii) a black market exchange rate premium of less than 20 percent, (iv) no communistic government, and (v) no state monopoly of major exports.

Gross Domestic Product per Capita (GDPPC): this is defined as the rate of growth of GDP (we often use per capita GDP¹⁰ in empirical works) and is used as a measure of the attractiveness of the host country's market. Since globalization involves dispersion of production activities and location of different segments of the same process in different states, we anticipate that globalization will boost economic growth and equally and positively impact on poverty reduction of these economies.

Accordingly, the adopted Romer's Export-Led Growth Hypothesis relates achieving higher value of human development index (HDI) through promoting economic growth (GDPPC), trade openness (OPN) and inflow of foreign investment (FDI). Thus, on the basis of the above theoretical background, and following the previous empirical evidences on these variables relationship on SSA countries and by adopting the well-known Cobb-Douglas production function, the empirical model of the study takes the following form:

$$hdi_{it} = \mu hdi_{it-1} + \beta_1 fdi_{it} + \beta_2 opn_{it} + \beta_3 gdppc_{it} + \alpha_i + \varepsilon_i \quad (4)$$

Applying logs on both sides of the equation 4 (for ease of interpretation) and denoting the lowercase variables as the natural log of the respective uppercase variable and t for time result in the econometric version. By employing log-linear equation the model we estimate seems the following:

$$\ln hdi_{it} = \mu \ln hdi_{it-1} + \beta_1 \ln fdi_{it} + \beta_2 \ln opn_{it} + \beta_3 \ln gdppc_{it} + \alpha_i + \varepsilon_i \quad (5)$$

$$\beta_1 > 0; \beta_2 > 0; \beta_3 > 0; \beta_3 < \text{or} > 0;$$

¹⁰ Given our focus on human development, we are concerned with economic growth as it impacts on the people and I use the metric per-capita GDP rather than trade per-GDP.

Where, human development, which is taken as analogy to output of the overall effort of the nation, is measured by human development index, while capital is proxy by foreign direct investment (FDI). Given the view that labor is abundant in Sub-Saharan African countries, we exclude labor series from the model while trade openness as a good proxy to determine the extent of the country integration to the global economy is included as other factors influencing human development.

3.2 The Sample

Previous research on globalization had relied on cross-country data of a certain period for empirical testing (Garret, 2001& Rodrik, 1997). While researchers are able to detect differences in comparing countries, the weakness is that they failed to observe changes of certain structural features and their correlates over times. As I am interested in the effect of economic globalization of individual countries, that is, increased levels of global flows, I decided to collect country information from different periods to build a panel data. One advantage of a pooled data is to have a larger number of observations that give more precise estimates and have test statistics with more power. More importantly, a panel data allows assessment of dynamic causality in a time-series situation close to natural experiment that a change in quality of life of a country can be attributed to changes of certain hypothesized factors (Wooldridge, 2003). In practice, this study mobilized the data of 39 Sub-Saharan countries¹¹.

¹¹ All Sub-Saharan Africa Countries are included in the study except: Botswana, Comoros, Eritrea, Gambia, Liberia, Namibia, Somalia, São Tomé & Príncipe, and Swaziland.

3.3 Estimation Techniques and Econometrics Tests

In order to incorporate the dynamic nature of human development index into our model, we rewrite the econometric equation (4) as an AR (1) model in the following.

$$hdi_{it} - hdi_{it-1} = (\mu - 1)hdi_{it-1} + \beta_1 X_{it} + \alpha_i + \varepsilon_{it} \quad (6)$$

Where, hdi_{it} is the log of human development index in country i for the period t ; the vector X contains a set of explanatory variables (such as fdi_{it} , opn_{it} , $gdppc_{it}$), α_i is an unobservable country-specific effect, ε is the time variant idiosyncratic error term, μ is a coefficient and β is a column vector of coefficients.

Equivalently, the above equation can be written as

$$hdi_{it} = \alpha_i + \mu hdi_{it-1} + \beta_1 X_{it} + \varepsilon_{it} \quad (7)$$

In order to get rid of the country specific effects we first difference equation (1) and get:

$$\Delta hdi_{it} = \mu \Delta hdi_{it-1} + \beta_1 \Delta fdi_{it} + \beta_2 \Delta opn_{it} + \beta_3 \Delta gdppc_{it} + \Delta \delta_{it} \quad (8)$$

Where $\Delta \delta_{it} = \Delta \alpha_{it} + \Delta \varepsilon_{it} = (\alpha_{it} - \alpha_{it-1}) + (\varepsilon_{it} - \varepsilon_{it-1}) = \varepsilon_{it} - \varepsilon_{it-1} = \Delta \varepsilon_{it}$. Assuming that ε_{it} is *iid* over i and t , Δhdi_{it-2} could be a valid instrument for Δhdi_{it-1} , and so the GMM uses the following moment conditions:

$$E [hdi_{it-s} (\varepsilon_{it} - \varepsilon_{it-1})] = 0 \quad \text{for } s \geq 2 \quad \text{and } t = 3, \dots, T \quad (9)$$

$$E [x_{it-s} (\varepsilon_{it} - \varepsilon_{it-1})] = 0 \quad \text{for } s \geq 2 \quad \text{and } t = 3, \dots, T$$

Where x indicates all explanatory variables in the model

Since globalization constitutes dynamic aspects of all related to the increased market access: increased access to capital, information, technology and trade; its relation with human development index is undoubtedly vivacious. Hence, the paper will employ

dynamic panel data analysis techniques. Furthermore, to account joint endogeneity issues and country specific effects we adopted the generalized method of moments (GMM) estimator which was introduced by Arellano and Bond (1991), Arellano and Bover (1995) and Blundell and Bond (1997)¹².

A problem of endogeneity might exist if hdi_{it-1} is endogenous to the error terms through ε_{it} , and it will therefore be inappropriate to estimate the above specification by OLS. To overcome this problem of endogeneity, an instrumental variable needs to be used for Δhdi_{it-1} . Thus, two approaches, namely Instrumental Variable (IV, Anderson and Hsiao, 1982) and GMM estimators (Arellano and Bond's, 1991), first and second step respectively, can be used in this regard. We used only the latter technique, as the IV approach leads to consistent but not necessary efficient estimates of the parameters in the model (Baltagi, 1995). Moreover, the first step GMM estimator will be used since it has been shown to result in more reliable inferences. The asymptotic standards errors from the two step GMM estimator¹³ have been found to have a downward bias (Blundell and Bond, 1998).

The GMM system estimator is a system containing both first differenced and levels equations. In addition to using instruments in levels for equations in first differences, it

¹² Blundell and Bond suggested an additional stationary restriction on the initial conditions process. They considered that the absolute value of μ must be inferior to 1, so that the process is convergent. As Blundell and Bond, we exploit at once the new moment conditions for the observations in levels and the Arellano-Bond moment conditions for the transformed equation. This permits to derive an extended "system" GMM estimator. System GMM estimator uses lagged difference of hdi_i as instruments for equations in levels and lagged levels of hdi_i as instruments for equations in first differences. We use lagged two and/or three periods of hdi and the explanatory variables as valid instruments to generate consistent and efficient parameters estimates.

¹³ In past time, researchers often reported one-step results as well because of downward bias in the computed standard errors in two-step. But Windmeijer (2005) has greatly reduced this problem. In difference GMM regressions on simulated panels, Windmeijer finds that the two-step efficient GMM performs somewhat better than one-step in estimating coefficients, with lowers bias and standard errors. And the reported two-step standard errors, with his correction, are quite accurate, so that two-step estimation with corrected errors seems modestly superior to robust one-step.

uses instruments in first differences for equation in levels. In dynamic panel data models, the GMM system estimator eliminates the unobserved country-specific effects through the equations in first-differences. The GMM system estimator also controls for the endogeneity of the explanatory variables.

Besides, Arellano and Bond suggest two specification tests to address consistency issue of the GMM estimator. First, the Sargan/Hansen test of over-identifying tests for joint validity of the instruments. The null hypothesis is that the instruments are not correlated with the residuals. Second, validity of instruments requires the absence of second-order serial correlation in the residuals, thus the Arellano-Bond test for autocorrelation examines the hypothesis that the idiosyncratic disturbance ε_{it} is not serially correlated. In order to examine for autocorrelation, the Arellano-Bond test is applied to the residuals in difference. In general, the dynamic panel data model is valid if the GMM estimator is consistent and the instruments are valid.

4: RESULTS AND DISCUSSIONS

4.1 Descriptive Statistics

Table 4.1: Descriptive Statistics. Period 1990-2009

Variable	Mean	Std. Dev.	Min	Max
HDI value	0.41120	0.160	0.045	0.850
GDPPC	1117.84	2058.46	81.57	19551.64
FDI/GDP	4.0	8.90	-8.59	145.20
Trade openness	72.0	39.60	10.83	316.74

The table summarized some basic statistics of the econometric regression. HDI index is the appropriate alternative to indicate the devotion of a nation in realizing the overall social and economical sovereignty rather than displaying quantitative economic growth in terms of GDP. Because human development become a popular indicator of quality of national policies, strategies and their implementation commitment to ensure the accessibility of non-income welfare components such as basic education and health services, and real per capita income of their citizen.

Accordingly, since UNDP developed Human development Index as a suitable measure of human development in 1990, Seychelles become the highest –scoring nation among the Sub-Saharan African countries, of which reaches 0.85 in 1997 whereas Guinea is a nation that recorded the lowest HDI value in the history of this analysis, which is 0.045 in the year 1993. However, a number of Sub-Saharan African undertook comprehensive trade liberalization in the early and mid of 1990s; as a result most of them have been showing

progress in their HDI value, though the degree of their progress is different from countries to countries. For example, countries such as Seychelles and Mauritius rapidly grouped themselves among the “high development” countries¹⁴ of western nations, and countries like Cape Verde, Gabon and South Africa have been straggling to sustain their “medium development” category and growing up to the higher level by improving their education and health service converge along with attracting relevant foreign direct investments that helps them in creating job opportunities for the mass of skilled and unskilled citizens and increase productivity and then enhance national income.

Similarly, countries such as Ghana, Lesotho, Kenya, Equatorial Guinea, Djibouti, Congo Republic, Togo, Uganda, Sudan, Mauritania, Madagascar, Cameroon and Zimbabwe also following the footsteps of the previously mentioned countries by implementing structural adjustment program and by relaxing their policies and strategies in such a way that they promote their integration with the rest of the world and thus, they are progressing from “low development” to “medium development” countries from time to time. But, the HDI value of the remaining 21 Sub-Saharan Africa countries which are already included in this study, in average, still represents “low development” countries.

The cross-country variation among the variables from the included years is very large, except the percentage of the ratio of FDI to GDP. The average of net inflows of foreign direct investment to gross domestic product of sampled SSA countries is 4.0 percent, with a standard deviation of 2058.5 while the minimum value of this ratio concerns Gabon (-

¹⁴ The Human Development Report defines high development countries as those with HDI's of 0.8 or higher, and medium development countries as those with HDI's of 0.5 or higher but less than 0.8. Those remaining are classified as low development countries.

8.59 in 1996), whereas the maximum value is for Equatorial Guinea (145.20 in 1996), this shows countries enable to score great benefit from its inflow of investment than its gross domestic product it attained in that particular year.

Concerning economic growth, we observe that the average of per capita GDP among 39 selected countries is 1117.84, with a standard deviation of 2058.46. The minimum GDP per capita realized by Burundi in 2003 reaches 81.57 and the maximum is 19,552 which are achieved by Equatorial Guinea in 2007. International trade openness which is mostly taken as the better proxy to determine whether the country is well integrated with the global economy demonstrates Seychelles is a country that is in the right track in exploiting the benefit or the advantage of the existed economic globalization based on its comparative advantage analysis, particularly with the highest recorded in 2007 but Ethiopia (particularly in 1992) seems very far behind from the opportunity in which this global interaction provides and this might be due to the existence of the associated famines and wars that lasted for decades in the country. But after cautious review of openness indicator figures we recognized that the country shows a bit progress in practicing trade liberalization; for instance, various outward policy measures are declared and put in to practices massively and conducive environments are created to lure foreign direct investment in appropriate sectors, though its maximum achievement is in 2006 which is still even below the average of the rest of the countries included in the sample.

4.2 Econometrical Analysis

Table 4.2: Dynamic panel-data estimation: Arellano-Bond – System GMM.

Dependent variable: Log of human development index_t (HDI_t)

Independent Variables	One-step System GMM	Two-step System GMM	One-step System GMM (Robust SE)	Two-step System GMM (Corrected SE)
Log of human development index(t-1)	0.2527***	0.2828***	0.2527***	0.2828***
	(0.0735)	(0.0244)	(0.0378)	(0.0510)
Log of GDPPC	0.0581***	0.0435***	0.0581	0.0435
	(0.0190)	(0.0170)	(0.0441)	(0.0373)
Log of FDI/GDP	0.0509***	0.0457***	0.0509***	0.0457***
	(0.0101)	(0.0071)	(0.0113)	(0.0120)
Log of Trade openness	-0.2556	-0.2189	-0.2556	-0.2189
	(0.0404)	(0.0276)	(0.0606)	(0.0522)
Number of observations	679	679	679	679
Number of groups	39	39	39	39
Number of countries	39	39	39	39
Number of instruments	19	19	19	19
Sargan/Hansen test of over-identification Restrictions: p-value	0.597	0.597	0.597	0.597
Arellano-Bond test for AR(2) in first differences: p-value	0.594	0.519	0.197	0.129

Notes: *significant at 10%, ** significant at 5%, ***significant at 1%.

The above table shows the results from “System” GMM estimators¹⁵. Since untransformed lags are weak instruments for transformed variables, we intensively relied on System GMM regressions with non-robust and robust¹⁶ conditions in this study. I used observations during the period 1990-2009 for thirty nine Sub-Saharan African countries. The panel is unbalanced but there are only very few missing observation that will not affect the outcome of the estimation. To favor identification of the estimates and to keep the rule of thumb¹⁷, I have to choose the estimation technique that will provide the lower instrument numbers with its expected level of significant, which is, we cannot use more than thirty nine instruments.

Standard assumptions for consistency of the GMM estimators are related to the validity of the instruments and that whether the error terms are not serially correlated. The Sargan test of over-identifying restrictions is usually conducted to determine the validity of the instruments. Accordingly, the Sargan test¹⁸ fails to reject the null hypothesis that the over-identifying restrictions are valid (with the p-value of 0.597 in both one-step and two-step

¹⁵ The system GMM estimator uses the levels equation to obtain a system of two equations: one differenced and one in levels. Using system GMM increased efficiency. There are, however, two important points to be made about using system GMM. First, because system GMM uses more instruments than the difference GMM it may not be appropriate to use system GMM with a dataset with a small number of countries. On the other hand, Blundell and Bond (1998) demonstrate in separate simulations, if HDI is close to a random walk, then difference GMM performs poorly because past levels convey little information about future changes. Xtabond2 offers both one-step and two-step System GMM.

¹⁶ Robust specifies that the resulting standard errors are consistent with panel-specific autocorrelation and heteroskedasticity in one-step system GMM estimation.

¹⁷ The rule of thumb is to keep the number of instruments less than or equal to the number of groups. i.e, keep number of instruments $\leq$ number of groups. A large number of instruments cause the Sargan test to be weak.

¹⁸ The Sargan test has a null hypothesis of “the instruments as a group are exogenous”. Therefore, the higher the P-value of the Sargan statistic is better. In robust estimation Stata reports the Hansen J statistic instead of the Sargan with the same null hypothesis.

System GMM tests). The Arellano-Bond test for second order autocorrelation¹⁹ indicates that we cannot reject (accepted with a p-value greater than 0.2 in each specification, that is, 0.594 and 0.519 in one-step and two-step System GMM estimation respectively) the null hypothesis that there is no second order serial correlation in the differenced residuals, suggesting consistency of our estimates and validity of the GMM estimator. Moreover, the fact that considering large number of countries though the number of periods may be small is the critical and theoretical assumption for consistency of the GMM estimators is already verified that there is no second order serial correlation in this study. Hence, the model seems correctly specified. Furthermore, the one-step and the two-step coefficients on lagged HDI became 0.2527 and 0.2828 respectively quite in the hoped-for range, provides additional witness that there is no any model specification problem.

The result for one-step and two-step System GMM seems quite similar and satisfactory. Both of the system GMM regressions generally convey the view that there is reliable and positive relationship between human development, economic growth, and foreign direct investments in Sub-Saharan African Countries. The regression coefficients of both GDP per capita and the inflow of foreign investment are statistically significant at 1% and are in line with the literature. The validity of export-led growth hypothesis is also supported by this analysis, because economic growth will leads to an improvement in welfare development by stimulating export volume, R & D and reducing income inequality by raising the returns on assets. In addition, the share of the world FDI on these selected SSA countries shows enhancement for the past ten years and they develop the capacity to grasp its spillover effect on their education, health, infrastructure and employment creation

¹⁹ The Arellano – Bond test for AR (1) process in first differences usually rejects the null hypothesis. The test for AR (2) in first differences is more important, because it will detect autocorrelation in levels.

sectors. However, there is a negative relation between trade openness and HDI value growth among these sampled SSA countries. This finding will dictate that involvement in international trade blindly²⁰ will not contribute to the effort of improving human development index of these nations particularly at the launching stages of the policy. More specifically, the regression outcome that tracks the interaction between trade openness and human development lead us to focus on the following three justifications. The first one, the output asserted the well-known conclusion of the famous economist Danni Rodrik (2000). He argues that the careful monitoring of the direct and indirect effects of liberalization measures from the outset of their introduction is essential. Because, during the infant stage of trade liberalization or trade openness, least developing countries usually highly suffer from deficiency of foreign currency and loss of their focus from their domestic macroeconomic performance until they adapt the flow of the benefit and cost package of the interaction.

In line with this, SSA were badly experienced in their opening of their economy to the global market and in their implementation scenario in the period late to 1980s and early and mid of 1990s, therefore, they were struggling to compensate their dollar balance which is caused by the paying of more for their import, capital investment and government expenditure than to be paid for their export at that time. Without any doubt, this in turn not only amplify the sensitivity of their balance of payment adjustment process but also put its own negative impact in the national effort to improve primary education,

²⁰ Danni Rodrik(1999) warns that the dangers to this approach are that: 1) openness alone is an unreliable mechanism to generate and sustain economic growth; 2) it tends to widen income and wealth inequalities within both developed and developing countries; and 3) it exposes countries to external shocks that can trigger domestic conflicts and political upheavals. On the other hand, his optimistic view also reflected as, the potential benefits of openness will only be realized when "complementary policies and institutions are in place domestically".

basic health, and per capita income of the nation; this will force them to apply intentional resources diversion to correct the former evil, happening of foreign exchange deficit and then will lead them time-taking macroeconomic instability. Hence, his skeptic looking seems real that at the beginning of applying trade liberalization policy, SSA incurred negative outcomes from it and this will be responsible for the lagging of achieving the poverty alleviation process of the region (specifically, in achieving the desired level of human development in deserved period of time) in the previous two decades. This is what empirically experimented in this study.

Secondly, The empirical finding will also likely provide the other outlook just as (Turner, Nguyen and Bird, 2008) did that it tests the relation between openness and poverty reduction empirically and concluded the presence of indirect linkages between trade openness and poverty reduction through overall economic growth. As various studies assured that the relation between trade openness and welfare development is complex and indirect. Basically, trade openness is mostly have positive contribution for the enhancement of national income growth through promoting higher export volume and allowing technological spillover effect. This economic growth, in turn, expected to bring the desire national development in the form of welfare improvement and then poverty reduction.

Thirdly, the negative coefficient of trade policy variable in this regression is also commonly indicating that the policies in question were normatively undesirable in these countries and in those considered periods. Hence this last justification will also strengthen the conclusion of the studies by Sharer (2000); Romer, (2006); and Zagha et al. (2006).

However, a negative relationship does not necessarily mean that trade openness are not always good for the region. Because, participation in the existed global economic integration is an inevitable process because it brings additional positive force for acceleration of economic growth, and ensuring sustainable development, particularly for resource-scarce developing countries like Sub-Saharan African, but there will be a need to regulate the level and value of the integration to maximize the benefits and reduce the costs associated with it. For this a more effective institutional and policy environment will be needed to operate efficiently, in which many countries have been able to do in the past decades. Specifically, trade openness can be good sometimes and bad at other times. An interesting point to note, yet, is the considerable increase in trade volume²¹ for the region as a whole over the period is essential; and it would need to venture more forcefully into the production and trade of goods and services that command higher value and enjoy higher growth prospects to capture a larger share of global trade.

Furthermore, regressions results where time dummies are included provides similar outputs just as the one-step and two-step system GMM estimators do; and my findings sustain the conclusion of Rodrik, D., (1999), Sharma and Gani (2004), Gohou and Soumaré (2009), and Anyamele,D., (2010), but rejects the results of Akinbobola and Isike(2009), though their main focus was on single nation, South Africa.

²¹ Export growth relax the balance of payments constraint on demand by providing the foreign exchange to pay for the import content of higher levels of consumption, investment and government expenditure. Most developing countries are constrained in their growth performance by a shortage of foreign exchange and could therefore grow faster with more exports.(Masato Hayashikawa,2008)

5: CONCLUSION AND POLICY IMPLICATION

This paper examines the effect of economic globalization on human development in 39 Sub-Saharan African countries between the years 1990 and 2009. It generally confirms the reliability of the essence of the stated theoretical underpinning that economic globalization will enable Sub-Saharan African to increase their FDI profile, export size, and then achieve economic growth that enable them to improve the lives of their citizens in terms of advancing basic and higher education, health facilities, individuals wealth, other social and political stabilities.

The empirical analysis of the paper validates the idea that the growth of GDP per capita and greater inflow of FDI will improve the socio economic conditions of SSA countries. Because, Foreign Direct Investment can help countries to achieve these priorities as they create jobs, develop local skills and bring new technological progress which is the main driver of sustainable growth and then obviously advancing in human development. It can also effectively absorb the highly skilled manpower and reduce the brain drain. In addition, the increase in economic growth that often comes with trade liberalization likely contributes to enhance the rate of human development in the region particularly in the past five years. But, it is vital to remark that the process of global integration needs to go hand in hand with better and broader regulation and supervision to harvest the expected positive share for the welfare development of the nations in these sampled SSA countries, particularly in the toddler stage of the opening of their economy.

The study also identifies that the majority of Sub-Saharan African accelerated with a higher rate in human development elements of MDGs progress, though; special attention should be put into action to reduce maternal and child health; and females unemployment among the whole nation of the region and to improve the quality of higher education sector in those low human development nations of the region.

As relevant policy implications of the study, countries of the region should be alert in designing and implementing policies that will boost capital inflow, encourage foreign trade, ensure economic growth and then improve the human development index of these nations and consequently reduce poverty in the region. Since turning away from world market is surely not a good way to alleviate domestic poverty, particularly for resource – scarce nation like SSA, countries in the region, just as the Asian Tiger did, need to be able to develop their own version of the rulebook based on specificities (their history, economic and social values, and production techniques) of their states and peoples. They should also be strong enough to develop, electioneer and win concessions from developed economies particularly in the area of policy choices. Moreover, it is wise enough to be conscious also in income inequalities related issues. Because, as Cornia and Court (2001) recommend: rising inequality threatens growth and poverty reduction targets, and persistent poverty at high levels makes poverty reductions efforts more difficult.

Lastly but not the least, Sub-Saharan African can meet all the targets of the MDGs by the stated date if only they try to improve the implementation rate of policies and delivers on MDGs-critical and sensitive programs; courageous local leadership and additional multi-stakeholders effort shall be made to address those lagged MDGs, but without leaving the importance of International cooperation for its progress.

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ANNEXES

Annex: A

Table A1: Lists of countries included in the study

R/ N	Name of the Country	ISO Codes	R/ N	Name of the Country	ISO Codes
1	Angola	AGO	21	Madagascar	MDG
2	Benin	BEN	22	Malawi	MWI
3	Burkina Faso	BFA	23	Mali	MLI
4	Burundi	BDI	24	Mauritania	MRT
5	Cameroon	CMR	25	Mauritius	MUS
6	Cape Verde	CPV	26	Mozambique	MOZ
7	Central African Republic	CAF	27	Niger	NER
8	Chad	TCD	28	Nigeria	NGA
9	Congo Rep.	COG	29	Rwanda	RWA
10	Congo Dem. Rep.	COD	30	Senegal	SEN
11	Cote d'Ivoire	CIV	31	Seychelles	SYC
12	Djibouti	DJI	32	Sierra Leone	SLE
13	Equatorial Guinea	GNQ	33	South Africa	ZAF
14	Ethiopia	ETH	34	Sudan	SDN
15	Gabon	GAB	35	Tanzania	TZA
16	Ghana	GHA	36	Togo	TGO
17	Guinea	GIN	37	Uganda	UGA
18	Guinea Bissau	GNB	38	Zambia	ZMB
19	Kenya	KEN	39	Zimbabwe	ZWE
20	Lesotho	LSO			

Table A2: Description of the variables and sources of the data

VARIABLES	DESCRIPTIONS	SOURCE OF DATA
Human development Variable		
Human Development	Human Development Index (HDI)	HDI is from the Human Development Report (HDR) of the UNDP
Economic globalization Variables		
Foreign Direct Investment	FDI / GDP	These variables are from the World Development Indicators (WDI) and Global Development Finance (GDF) databases of the WB
Openness	(Import + Export) / GDP	The WDI and African Development Indicators (ADI) databases of the WB
Economic growth	GDP per Capita	The WDI and the World Bank;

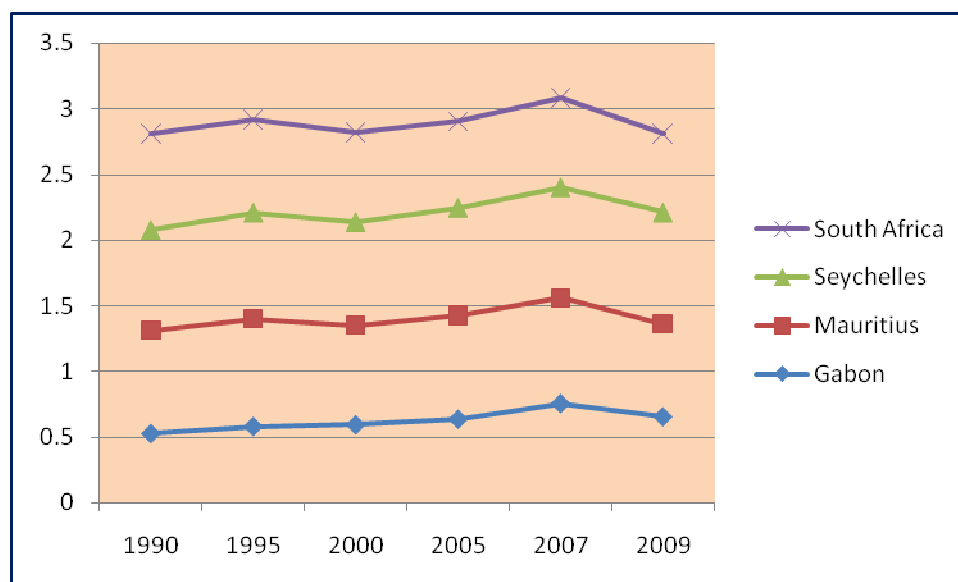
Table A3: Human Development Index for Top scorer in welfare development among Sub-Saharan Africa, 1990-2009

SSA Countries	1990	1995	2000	2005	2007	2009
Gabon	0.525	0.579	0.592	0.635	0.755	0.654
Mauritius	0.788	0.821	0.760	0.791	0.804	0.705
Seychelles	0.765	0.810	0.786	0.821	0.843	0.852
South Africa	0.731	0.705	0.680	0.658	0.683	0.600

Source: Compiled from UNDP HDI Statistics (1990 - 2009)

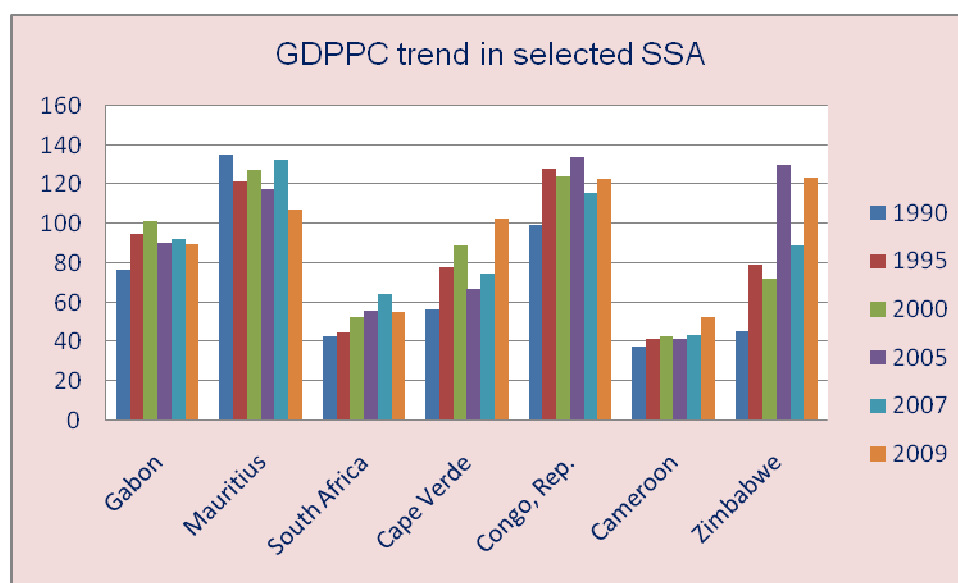
Annex: B

Figure B1: HDI for Top scorer in welfare development among SSA, 1990-2009



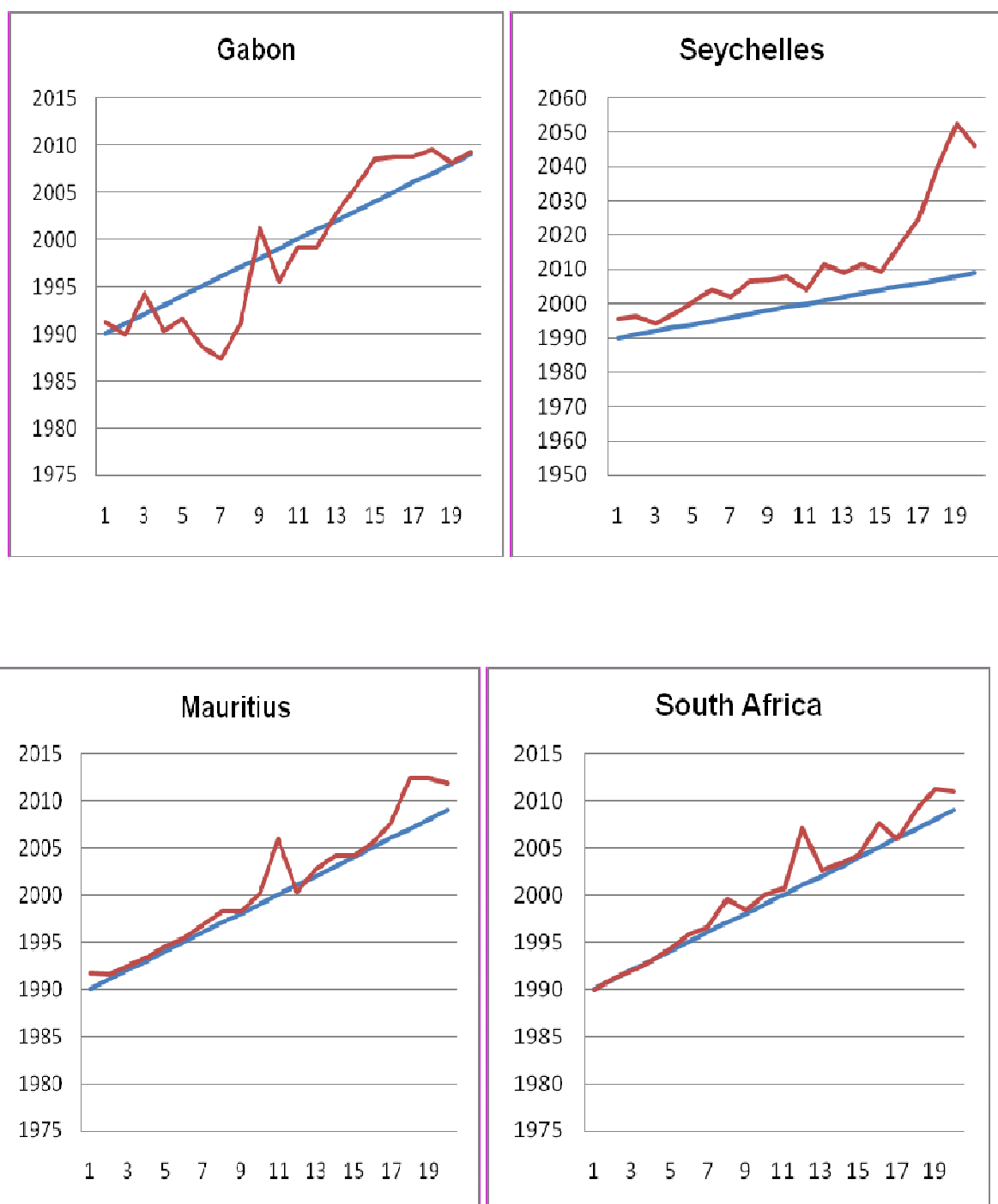
Source: Constructed based on data from UNDP HDI Statistics (1990 - 2009)

Figure B2: The economic growth in terms of GDPPC trend in SSA, 1990-2009



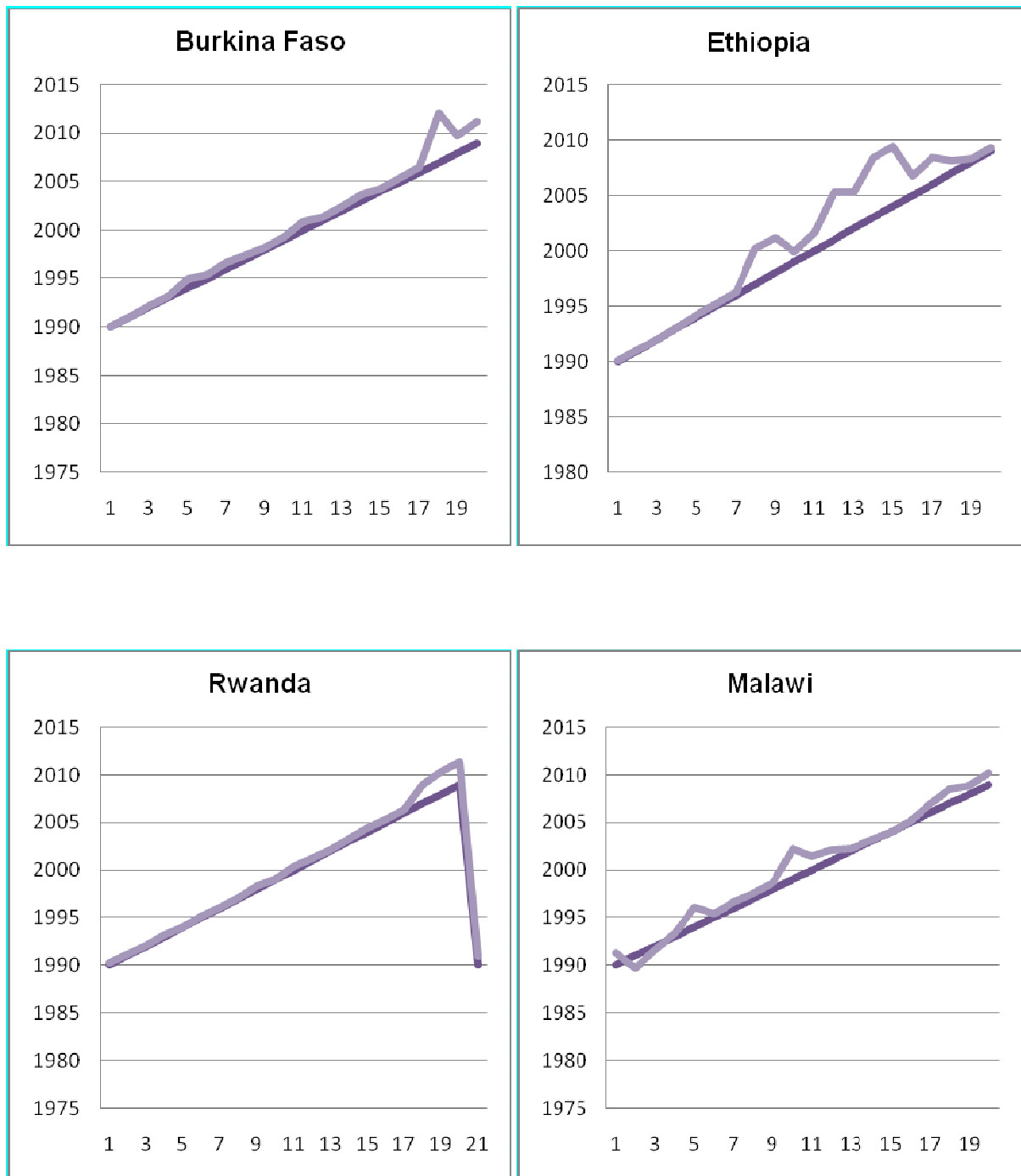
Source: Constructed based on data from WDI Statistics (1990 - 2009)

Figure B3: FDI/GDP growth trend of selected “Medium development” nations in SSA, 1990-2009



Source: Constructed based on data from WDI Statistics (1990 - 2009)

**Figure B4: FDI/GDP growth trend of selected “Low development” nations in SSA,
1990-2009**



Source: Constructed based on data from WDI Statistics (1990 - 2009)

Annex: C

Regression C1: One-step System GMM

Dynamic panel-data estimation, one-step system GMM

Group variable: country	Number of obs	=	679
Time variable : year	Number of groups	=	39
Number of instruments = 19	Obs per group: min	=	10
F(4, 675) = 1258.38	avg	=	17.41
Prob > F = 0.000	max	=	19

lnhdi	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnhdi						
L1.	.2527188	.0735949	3.43	0.001	.1082163	.3972214
lngdppc	.0581354	.0190024	3.06	0.002	.0208245	.0954463
lnfdigdp	.0509466	.0101039	5.04	0.000	.0311077	.0707855
lnopenness	-.2556199	.0404127	-6.33	0.000	-.3349695	-.1762703

Instruments for first differences equation

Standard

D.(lngdppc lnfdigdp lnopenness)

Instruments for levels equation

Standard

lngdppc lnfdigdp lnopenness

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL2.L.lnhdi

Arellano-Bond test for AR(1) in first differences: z = **-10.12** Pr > z = **0.000**

Arellano-Bond test for AR(2) in first differences: z = **0.53** Pr > z = **0.594**

Sargan test of overid. restrictions: chi2(15) = **13.07** Prob > chi2 = **0.597**

(Not robust, but not weakened by many instruments.)

Difference-in-Sargan tests of exogeneity of instrument subsets:

iv(lngdppc lnfdigdp lnopenness)

Sargan test excluding group: chi2(12) = **11.69** Prob > chi2 = **0.471**

Difference (null H = exogenous): chi2(3) = **1.39** Prob > chi2 = **0.709**

Regression C2: Two-step System GMM

Dynamic panel-data estimation, two-step system GMM

Group variable: country	Number of obs	=	679
Time variable : year	Number of groups	=	39
Number of instruments = 19	Obs per group: min	=	10
F(4, 39) = 580.99	avg	=	17.41
Prob > F = 0.000	max	=	19

lnhdi	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnhdi						
L1.	.2828737	.02447	11.56	0.000	.2333783	.332369
lngdppc	.0435701	.0170445	2.56	0.015	.0090944	.0780459
lnfdigdp	.0457158	.0071548	6.39	0.000	.0312438	.0601878
lnopenness	-.218998	.0276656	-7.92	0.000	-.274957	-.1630389

Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

Standard

D.(lngdppc lnfdigdp lnopenness)

Instruments for levels equation

Standard

lngdppc lnfdigdp lnopenness

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL2.L.lnhdi

Arellano-Bond test for AR(1) in first differences: z = **-1.14** Pr > z = **0.256**

Arellano-Bond test for AR(2) in first differences: z = **1.52** Pr > z = **0.129**

Sargan test of overid. restrictions: chi2(15) = **13.07** Prob > chi2 = **0.597**
(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(15) = **21.86** Prob > chi2 = **0.111**
(Robust, but can be weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

iv(lngdppc lnfdigdp lnopenness)

Hansen test excluding group: chi2(12) = **20.80** Prob > chi2 = **0.053**

Difference (null H = exogenous): chi2(3) = **1.06** Prob > chi2 = **0.787**

Regression C3: Robust Regression of One-step System GMM

Dynamic panel-data estimation, one-step system GMM

Group variable: country	Number of obs	=	679
Time variable : year	Number of groups	=	39
Number of instruments = 19	Obs per group: min	=	10
F(4, 39) = 236.11	avg	=	17.41
Prob > F = 0.000	max	=	19

lnhdi	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lnhdi						
L1.	.2527188	.0378392	6.68	0.000	.1761818	.3292558
lngdppc	.0581354	.0441229	1.32	0.195	-.0311116	.1473823
lnfdigdp	.0509466	.0113612	4.48	0.000	.0279664	.0739268
lnopenness	-.2556199	.0606469	-4.21	0.000	-.3782898	-.1329501

Instruments for first differences equation

Standard

D.(lngdppc lnfdigdp lnopenness)

Instruments for levels equation

Standard

lngdppc lnfdigdp lnopenness

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL2.L.lnhdi

Arellano-Bond test for AR(1) in first differences: z = -1.12 Pr > z = 0.263

Arellano-Bond test for AR(2) in first differences: z = 1.29 Pr > z = 0.197

Sargan test of overid. restrictions: chi2(15) = 13.07 Prob > chi2 = 0.597

(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(15) = 21.86 Prob > chi2 = 0.111

(Robust, but can be weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

iv(lngdppc lnfdigdp lnopenness)

Hansen test excluding group: chi2(12) = 20.80 Prob > chi2 = 0.053

Difference (null H = exogenous): chi2(3) = 1.06 Prob > chi2 = 0.787

Regression C4: Robust Regression of Two-step System GMM

Dynamic panel-data estimation, two-step system GMM

Group variable: country	Number of obs	=	679
Time variable : year	Number of groups	=	39
Number of instruments = 19	Obs per group: min	=	10
F(4, 39) = 129.98	avg	=	17.41
Prob > F = 0.000	max	=	19

lnhdi	Coef.	Corrected Std. Err.	t	P> t	[95% Conf. Interval]	
lnhdi						
L1.	.2828737	.0510557	5.54	0.000	.1796037	.3861436
lngdppc	.0435701	.0373604	1.17	0.251	-.0319985	.1191388
lnfdigdp	.0457158	.0120281	3.80	0.000	.0213867	.0700449
lnopenness	-.218998	.052266	-4.19	0.000	-.3247159	-.11328

Instruments for first differences equation

Standard

D.(lngdppc lnfdigdp lnopenness)

Instruments for levels equation

Standard

lngdppc lnfdigdp lnopenness

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL2.L.lnhdi

Arellano-Bond test for AR(1) in first differences: z = **-1.13** Pr > z = **0.257**

Arellano-Bond test for AR(2) in first differences: z = **1.52** Pr > z = **0.129**

Sargan test of overid. restrictions: chi2(15) = **13.07** Prob > chi2 = **0.597**
(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(15) = **21.86** Prob > chi2 = **0.111**
(Robust, but can be weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

iv(lngdppc lnfdigdp lnopenness)

Hansen test excluding group: chi2(12) = **20.80** Prob > chi2 = **0.053**

Difference (null H = exogenous): chi2(3) = **1.06** Prob > chi2 = **0.787**

Regression C5: Regression with Time dummies :One-step System GMM

Dynamic panel-data estimation, one-step system GMM

Group variable: country	Number of obs	=	679
Time variable : year	Number of groups	=	39
Number of instruments = 19	Obs per group: min	=	10
F(4, 675) = 1258.38	avg	=	17.41
Prob > F = 0.000	max	=	19

lnhdi	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnhdi						
L1.	.2527188	.0735949	3.43	0.001	.1082163	.3972214
lngdppc	.0581354	.0190024	3.06	0.002	.0208245	.0954463
lnfdigdp	.0509466	.0101039	5.04	0.000	.0311077	.0707855
lnopenness	-.2556199	.0404127	-6.33	0.000	-.3349695	-.1762703

Instruments for first differences equation

Standard

D.(lngdppc lnfdigdp lnopenness)

Instruments for levels equation

Standard

lngdppc lnfdigdp lnopenness

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL2.L.lnhdi

Arellano-Bond test for AR(1) in first differences: z = **-10.12** Pr > z = **0.000**

Arellano-Bond test for AR(2) in first differences: z = **0.53** Pr > z = **0.594**

Sargan test of overid. restrictions: chi2(15) = **13.07** Prob > chi2 = **0.597**

(Not robust, but not weakened by many instruments.)

Difference-in-Sargan tests of exogeneity of instrument subsets:

iv(lngdppc lnfdigdp lnopenness)

Sargan test excluding group: chi2(12) = **11.69** Prob > chi2 = **0.471**

Difference (null H = exogenous): chi2(3) = **1.39** Prob > chi2 = **0.709**

Regression C6: Regression with Time dummies :Two-step System GMM

Dynamic panel-data estimation, two-step system GMM

Group variable: country	Number of obs	=	679
Time variable : year	Number of groups	=	39
Number of instruments = 37	obs per group: min	=	10
F(4, 39) = 120472.22	avg	=	17.41
Prob > F = 0.000	max	=	19

lnhdi	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lnhdi						
L1.	.7434365	.0052836	140.71	0.000	.7327495	.7541235
lngdppc	.0007028	.0027156	0.26	0.797	-.0047901	.0061957
lnfdigdp	.0168411	.0021106	7.98	0.000	.0125721	.0211102
lnopenness	-.0558387	.003705	-15.07	0.000	-.0633328	-.0483446

Warning: Uncorrected two-step standard errors are unreliable.

Instruments for first differences equation

Standard

D.(lngdppc lnfdigdp lnopenness)

GMM-type (missing=0, separate instruments for each period unless collapsed)

L2.L.lnhdi

Instruments for levels equation

Standard

lngdppc lnfdigdp lnopenness

GMM-type (missing=0, separate instruments for each period unless collapsed)

DL.L.lnhdi

Arellano-Bond test for AR(1) in first differences: z = **-1.20** Pr > z = **0.231**

Arellano-Bond test for AR(2) in first differences: z = **2.47** Pr > z = **0.013**

Sargan test of overid. restrictions: chi2(33) = **81.44** Prob > chi2 = **0.000**
(Not robust, but not weakened by many instruments.)

Hansen test of overid. restrictions: chi2(33) = **38.43** Prob > chi2 = **0.237**
(Robust, but can be weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:

GMM instruments for levels

Hansen test excluding group: chi2(16) = **32.20** Prob > chi2 = **0.009**

Difference (null H = exogenous): chi2(17) = **6.23** Prob > chi2 = **0.991**

iv(lngdppc lnfdigdp lnopenness)

Hansen test excluding group: chi2(30) = **37.38** Prob > chi2 = **0.166**

Difference (null H = exogenous): chi2(31) = **1.05** Prob > chi2 = **0.789**

Regression C7: the Covariance Matrix of Coefficients of xtabond2 model

```
. vce
```

Covariance matrix of coefficients of xtabond2 model

e(V)	L.lnhdi	lmgdppc	lmgdgdgdp	lmgopenness	_cons
L.lnhdi	.00126088				
lmgdppc	-.00030553	.00028003			
lmgdgdgdp	-.0001073	.00004809	.00007798		
lmgopenness	-.00015596	-.00018453	-.00015276	.00113477	
_cons	.00375882	-.00123177	.0002304	-.00374965	.0268779

Regression C8: Pair wise correlation coefficients. Period 1990-2009

```
. correlate
(obs=734)
```

	time	hdi	gdppc	fdgdgdp	openness
time	1.0000				
hdi	0.0561	1.0000			
gdppc	0.1718	0.1053	1.0000		
fdgdgdp	0.1655	0.0025	0.2022	1.0000	
openness	0.1888	0.0480	0.4795	0.5468	1.0000

Notes: * means that the correlation coefficient is significant at 5% level.

Declaration

I, undersigned, declare that this project is my original work and has not been presented for a degree in any other university, and that all source materials used for the project have been duly acknowledged.

Declared by:

Name: _____

Signature: _____

Date: _____

Confirmed by Advisor:

Name: _____

Signature: _____

Date: _____

Place and Date of Submission: _____