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The Impact of Liberalisation Policies on Income Inequality in African countries

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Abstract

Despite over three decades of Liberalisation policies in Africa, income-inequality has stayed persistently high. Using updated panel data of 26 African countries spanning the period 1996-2010, this study examines the effect of liberalisation policies with particular focus on financial, trade, institutional, political and economic liberalisations on income-inequality. We find: that financial liberalisation has a levitated income-redistributive effect with the magnitude of the *de jure* measure (KAOPEN) higher than that of the *de facto* measure (FDI); that exports, trade and 'freedom to trade' have an equality incidence on income-distribution; and that institutional and political liberalisation has a negative impact and we also find that, economic freedom has a negative income-redistributive effect possibly because of the weight of its legal component. The impact of these policies implications are discussed in detail in this study.

JEL Classification: F30; F41; F50; O15; O55

Keywords: Liberalisation Policies; Income Inequality; Poverty; Africa

1. Introduction

Most African countries under the umbrella of the Bretton Wood Institutions, embarked on a series of structural adjustment policies in which economic, trade and institutional liberalisation were central. These Liberalisation policies encompass government policies that promote free trade, deregulation, elimination of subsidies, price controls and rationing system, and, often, the downsizing or privatization of public services (Woodward, 1992).

The goal of financial reforms is to give an impetus to economic growth as well as improving overall economic and financial efficiency (Janine & Elbadawi, 1992). In the first generational reforms, measures adopted included: abolishing explicit controls on the pricing and allocation of credit, reduction of direct government intervention in bank credit decisions, relaxing of controls on international capital movements and allowing interest rates to be market determined. The second generation of reforms targeted structural and institutional constraints, improved legal, regulatory, supervisory and institutional environments; restored bank soundness and rehabilitated the financial infrastructure (Batuo et al., 2010).

The proponents of trade liberalisation imagine that removing trade barriers will lead to a short term welfare gain and in turn reduce poverty and income inequality. They expected trade liberalisation to stimulate economic growth and in the medium term to reap the static (efficiency) benefits of trade which could look rather like growth. In the long run potential positive forces include: access to technology and to appropriate intermediate and capital goods; the benefits of scale and competition; the flexibility induced by relying on market signals, and the constraints on government incompetence or corruption, see Grossman and Helpmann (1991), Lucas (1988). By taking advantage of the fact that countries are endowed with different resource, and therefore some countries have more of a particular resource than others, there could be the opportunity for financial gain for that country. The barriers imposed on economies under protection regimes create inefficient production in that country. When these barriers are removed the country can trade efficiently again and take advantage of the resources that the country is particularly endowed with.

The issues regarding institutions affecting inequality was tackled because most scholars believe that economic reform failure may be the outcome of political circumstances, protecting the interests of the narrow political, –industrial elite (Rajan and Zingales, 2003). The surge of interest by institutions coincided with the shift of concerns, among international agencies and western governments, about the role of the state in promoting growth and reducing poverty and inequality in developing countries, specifically in Africa. The origin of this concern was the setbacks and failures of structural adjustment programs in the 1980s and

the normative and functional ideals of the politics of neo liberal thinking which was at the heart of the Bretton Wood Institution strategies (Leftwich, 1993:606; Campbell, 2001:157). Primarily, the objective was one of adjustment thereby attempting to shatter the dominant post war state led development approach and overcome the problem of economic stagnation by promoting open and competitive market economies, supervised by minimal state intervention. Adjustment involved profound change in the use, production and distribution of resources, giving rise to both winners and losers. Losers often included bureaucrats, public sector workers, party officials, farmers and manufacturers, who suffered from a reduction in the size of public services, a diminution in the power of the party state, more competition, and from a withdrawal of subsidies and free trade. But the burden of change fell more on the poor who lost free services and experienced steep increases in basic necessities and consumer prices as well as in medical and educational costs. These hardships led to protests in many countries which called for a review of the centrality of political factors and of the role of the state in the adjustment process. It became clear that the ability to design and implement adjustment programs was largely a consequence of political commitment, capacity and skill, as well as bureaucratic competence, independence and probity (Leftwich, 1993:607).

This paper will highlight three main strands. Firstly, the effect of capital accounts liberalisation on inequality and poverty. Cobham (2001) has argued that, while the growth benefits of liberalisation are far from clear for poorer countries, there may be a significant cost in poverty terms. The author concludes by inviting more scholarly research in this area. The persistently high rates of inequality and poverty being experienced in the African continent after more than two decades of reform bear out Cobhams recommendation, which inspires this paper.

The impact of trade liberalisation on poverty and inequality has been mixed at best. While many advocates identify strong benefits in terms of both resource allocation and economic growth (especially in the long-run), others fear that in the short-run, trade liberalisation puts great stress on certain factors in the economy and could even leave substantial poverty behind in the long-run (Winters, 2000)[1]. The estimation approach used in this paper will consider both the short and the long-run effects of trade liberalisation in a bid to throw more light on the debate.

[1] Others additionally argue that being too open to trade rather than just the process of opening-up exposes an economy to shocks that generate uncertainty and causes it to operate with higher levels of poverty than would a close economy. They profess that, this ultimately undermines policy measures designed to alleviate poverty and redistribute income (Winters,2001).

Tebaldi & Mohan in their study on "institutions and poverty" (2010) have recently shown that, an economy with robust corruption-control, an effective government and a stable political system will create conditions to promote growth, minimize income distribution conflicts and reduce poverty. Their findings suggest that the quality of the regulatory system, rule of law, voice and accountability and expropriation risk is inversely related to poverty. With growing scholarly interest in the success of an unorthodox Chinese model, this paper seeks to assess the direction of the institutions-inequality nexus in Africa from a very inclusive standpoint[2].

Our approach will be to investigate the impact of liberalisation policies on income inequality in African countries. Examining whether the liberalisation policies have affected the income distribution of everyone equally or they only assist those who are already relatively well off; leaving the poor behind. We also examine how they affect income distribution in the various countries within the continent, and their effect on short and long runs? Firstly , we used the before and after comparison, to examine the response of the level of income inequality and the volatility of income inequality from the time that financial or trade liberalisation took place in each country. The results suggest that countries that liberalize their financial sector tend to gain in the short run rather than in long run. Next, we used the panel data techniques model for a sample of 26 African countries spanning the period 1996-2010 to investigate the effect of liberalization policies on income distribution. Findings show that financial, institution and political liberalization in different measures tends to increase income inequality. Trade liberalization (freedom of trade, openness and export) also tends to reduce income inequality even though most of its outcomes are not statistically significant. While in general economic reform that contains both financial, trade and institutional reforms there is a positive and significant effect on income distribution.

The main reason that this study contributes substantially to the literature contrary to mainstream liberalization-inequality that only focuses on one or two indicators of openness, this study uses three principal areas namely financial, trade and institutional or political liberalisations and within these areas employs different proxies to represent the sectors and

[2] Six of the eight institutional quality indicators used by Tebaldi & Mohan (2010), will be reduced to one index through Principal Component Analysis (PCA). Unlike providing the individual effects of different institutional dynamics like in mainstream literature (Tebaldi & Mohan, 2010), we shall provide the incidence of institutional liberalisation on poverty with a single variable.

also includes the economic freedom index [3] to summarise all the various reforms. This study is exclusively focused on Africa since scholarly attention on inequality literature has not been African-oriented owing to a lack of relevant data.

The rest of the paper is organized as follows. Section 2 examines existing literature. Data and methodology are discussed and outlined respectively in Section 3. Section 4 is devoted to empirical analysis. We conclude with Section 5.

2. Existing literature

2.1 Theory and empirical evidence

There is an enormous amount of literature on the effects of the individual liberalisation policies on inequality and poverty but it is difficult to find any literature on policy interaction concurrently with income inequality. We discuss below our theory and provide empirical evidence.

The mainstream theory was that financial liberalisation was based on a supposed link between financial development, and economic growth, and it was thought that this theory could be put into practice and reduces poverty and income inequality. Financial liberalisation has two dimensions which are domestic financial sector deregulation and the opening of a capital account. The reason for financial deregulation, including international financial liberalisation, can be traced back to the seminal contribution in the early 1970s by McKinnon (1973) and Shaw (1973). They advocated financial liberalisation to combat financial repression and also claimed that one of the reasons for the poor growth performance for many developing countries had been administratively determined at a very low real interest rate which discouraged savings and encouraged inefficient use of capital. Therefore, financial liberalisation – primarily involving deregulation of interest rate- would lead to higher level of savings. Liberalisation would also channel funds to finance more productive projects. Therefore, an increase in the real interest rate following liberalisation should encourage saving and expand the supply of credit available to domestic investors, thereby enabling the economy to grow more quickly. The growth promoting effect of domestic financial sector deregulation should be enhanced by opening a capital account on the balance of payment,

[3] Integrating many liberalization indicators into the equation is on the premise that sustained economic and political reforms must be explicitly linked to reap the benefits of structural adjustment programs in sub-Saharan Africa (Gordon, 1996).

which would allow more foreign capital to flow into the country attracted by higher domestic real interest rates.

Although increases in real interest rates have always been the outcome of liberalisation experiences, their impact on domestic saving and investment has been mixed (Reinhart and Loannis, 2008; Galbis, 1993). Mckinnon recognized that financial liberalisation may lead to episodes of over borrowing. This over borrowing syndrome may be magnified when domestic liberalisation is coupled with capital account liberalisation (Mckinnon and Pill, 1999). A banking crisis is often preceded by financial liberalisation; indeed liberalisation often leads to crisis (Kaminsky and Reinhart, 1999). A world bank study for the period 1980-1995 found that banking crises were more likely to occur in liberalized financial system (Demirguc-kunt and Detragiache,1999) . A study by the Inter-American Development Bank (2007) of 17 Latin American countries for the period 1977-2000 found that financial liberalisation has had a significant effect on increasing inequality and poverty

Differing from the supportive view of financial liberalisation, a number of critical views have been raised stressing the downside risk of financial liberalisation. One prominent critical view was from Stiglitz (2000), who argued that financial liberalisation by itself, does not abate the asymmetric information problem, and may prevent financial intermediation from becoming more efficient in a liberalised market. He pointed out in an early paper with Weiss (1981) that if asymmetric information is an inherent feature of an otherwise competitive market economy, credit rationing may arise even without government intervention. He also pointed out that financial liberalisation has the potential to aggravate information problems. This can happen if banks have to cope with increasing competitive pressure causing them to refrain from relationship leading, and borrowers may therefore have more opportunity to look for the cheapest way of financing their investment. Hellmann et al.(2000) argue that liberalisation reduces the franchise value of banks which makes them more prone to financial disruption and stimulates risk taking in order to try to increase profits under the pressure of falling interest rate margins.

There exists important channels by which financial liberalisation might change the shape of income distribution. One study carried out by Galor and Zeira (1993) looked at the domestic dimension of financial liberalisation, and found that credit market imperfections such as asymmetric information induces banks to restrict leading to low income groups. Thus, these income groups will not benefit from the decreasing cost of external financing in the wake of

interest rate liberalisation. In turn, they will be less likely to start a business and create wealth. As a result, the income distribution becomes more unequal since the proceeds of entrepreneurial activity and wealth accumulation accrue primarily in those individuals in the upper part of income distribution. Another contribution was that of Batuo et al., (2010) in a study restricted to African countries, strongly arguing that its impact on poverty and income distribution has been negative

Trade Liberalisation

Openness and trade liberalisation have been the key components of the Washington Consensus most controversial economics policy. These components identify strong benefits in terms of both resource allocation and economic growth based on the theoretical support of the Hecksher-Ohlin, that predicts that trade openness will lead to great specialisation and a rise in the national income of all participating countries, following a more rational global allocation of production inspired by the principle of comparative advantage. In countries where labour is abundant, trade liberalisation is to switch production from inefficient capital intensive import substitutes to efficient labour intensive exports. As result of this theory, Stolper and Samuelson assume that such shifts will lead to a convergence in the price of goods exchange and in factor remunerations. Due to this, domestic inequality is expected to decline in countries endowed with an abundant labour supply and to rise in those with an abundant endowment of capital, as the demand and remuneration for the latter will increase, while the demand and remuneration for labour will fall. Despite this, there are some opponents to these policies. There is a general recognition that in the long run open economies do better in aggregate than closed ones, and that relatively open policies contribute to long run development. Many observers fear that in the short run trade liberalisation puts greater pressure on certain sectors of the economy and that even in the long run successful open regimes may leave behind some poverty. Meanwhile others argue that being open-rather than just the process of opening up- exposes an economy to shock that generates uncertainty, and causes it to operate with higher levels of poverty than a closed economy would and undermines policy measures designed to alleviate poverty and redistribute income.

However, the empirical evidence of the impact of trade liberalisation on inequality is mixed and does not always support the conclusion of the H0-SS model. Several studies indicate the equalising effect of free trade such as that of Bourguignon and Morrison, 1989 who argue that the removal of trade protection in manufacturing reduces the income share of the richest 20

percent of the population and raises that of the bottom 60 percent in an analysis of 35 developing countries. Alarcon and McKinley, 1998 also came to this conclusion in their case study of Mexico experience from 1985 to 1990 which indicted that increasing openness raised inequality, owing to the contraction of a high skill import substituting sector, the expansion of the semi skilled sector and the contraction of the low skill intensive sector due to rising import from low income countries, (Wood, 1995). Savvides, 1999 found that the most open developing countries experience a rise in inequality between the 1980s and the early 1990s, and a positive correlation between trade protection and the income share of the poorest quintile.

In Africa, there is an increasing interest in the role played by trade policy in relation to economic performance (Rodrik, 1998). This is due largely to the disappointing economic performance of several countries in the region in the 1980 and 1990 and attempts to explain why they have not done well relative to other developing countries in Asia and Latin America. Various explanations have been adduced for Africa‘s dismal economic performance. These include poor domestic economic policies, geography, colonial legacy, political instability, weak institutions, and an inhospitable external environment. While it is generally acknowledged that the inward looking trade policies pursued in the region since independence contributed to its poor export performance, links to growth performance are not well established (Rodrik, 1998).

Institutional or Political Liberalisation

There is a huge amount of literature on the relationship between institutions and aspects of poverty and inequality at both a theoretical and empirical level and in a number of disciplines. The interaction between institutions, poverty and inequality has been debated from different perspective depending on authors' orientations.

From an economic perception, poverty and inequality are considered to be the result of the nature and character of the relationship between the production and distribution of scarce resources and incapacity to adequately produce the basic necessities of life. However, a production process which negatively affected production capacity did not happen in a vacuum, but it mediated by a particular institutional configuration, meaning that production is influenced by the socio-economic and political structural or institutional setting in which they took place. As Novak observed: "despite popular mythology, poverty has not always been with us…. Poverty as we know it, is a much more recent and historically specific

phenomenon. it occurred at certain points in history, and is tied to a particular form of economic and social organisation" (Novak, 1993:3).

Bates' (1999) argument that, in order to understand the nature and character of the economies of developing countries or "the politics and the economics growth", the roles of both economic and non-economic institutions (particularly the wide variety of social institutional forms) within which development initiative take place is imperative. She provides a justification for the primacy of institutional analysis, firstly, by offering ways of understanding the economic significance of the features of developing societies and cultures that market based reasoning might misunderstand or ignore, and secondly, by showing how an exploration of the political and economic institutional configurations helps in understanding group dynamics, power relations and resource flow and control. Generally she believes that the restructuring of political institutions (specifically, the reorganisation of the structure of a government) and economic institutions does inhibit the capacity of the government, groups and individual persons in their struggle for material production by influencing their access to and control over the key resources.

Berggren's (1999) assessment found some evidence that increasing economic freedom can decrease income inequality. Chang and Calderon (2000), taking a cross sectional approach with a sample covering 70 developing and developed countries, found that institutional quality, measured by a composite index based on political risk data by International Country Risk Guide (ICRG) and Business Environmental Risk Intelligence (BERI) displays a quadratic relationship with income inequality. For poor economies institutional quality is positively linked with income inequality, but the inverse holds for rich economies.

Chong and Gradstein's (2007) study employs a large panel of countries which consists of ex-colonies (including the USA, Canada, Australia and New Zealand). They used a composite index of institutional developments consisting of political right and civil liberties, political stability, government effectiveness, limits to government regulation and adherence to rule of law and controlling for unobserved heterogeneity, the correlation between income inequality and a number of institutional indicators capturing democratic and institutional stability aspects. Their results showed that better institutions predict a reduction in income inequality, as well as increasing inequality they predict poorer institutional quality.

Very few studies have assessed the political dimensions which restrict to African countries. According to Hickey (2005), Uganda offers a particularly interesting 'case study' for the

political analysis of poverty reduction, given that its success in reducing poverty in the 1990s has been closely associated with 'getting the politics right'. The country offers a showcase for the type of politics that can underpin pro-poor policy reforms. Hickey argues that the poorest groups in Uganda are both under and misrepresented by the government's poverty reduction policies and broader development projects. Employing the concept of political space reveals close insights into the ways in which chronic poverty is represented in the country. Hickey concludes by stating that the Uganda case study suggests that a system of direct democracy has enabled a more sustained period of pro-poor policy reform and greater inclusion for marginal voices throughout the political system than is generally the case under multiparty representative democracy. This study will investigate the Uganda hypothesis using a panel of African countries as in Gordon's (1996)[4]

3. Data and Methodology

3.1 Data

We assess a sample of 28 African countries with annual data from the African Development Indicators (ADI) of the World Bank (WB), Chinn & Ito (2002) and Gwartney et al. (2011) for the period 1996 to 2010. The limitation to a 15 year span is based on constraints in institutional indicators which only saw the light of day in 1996. Other issues on data availability limit our sample to 28 countries out of 53 African countries but in the sample we have the most important African countries in term of population and GDP Growth. Summary statistics and presentation of countries (Table 2), correlation analysis (Table 3) and variable definitions (Table 4) are presented in the appendices. The descriptive statistics of the variables used in the panel regressions show that there is a fair degree of variation in the data utilised so that one should be confident that reasonable estimated relationships should emerge. Both the standard deviations and minimum/maximum values validate this assertion and further support the inappropriateness of a linear model that assumes a particular functional distribution. The purpose of the correlation matrix is to mitigate issues of overparametisation and multi collinearity. Based on the correlation coefficients, there do not appear to be any serious problems in terms of the relationships to be estimated.

The measure for inequality is the GINI coefficient which appreciates disparity among values of the frequency income-distribution. A value of zero expresses perfect equality while a coefficient of one denotes maximal inequality. The GINI coefficient which is commonly used

[4] On "sustaining economic reforms under political liberalisation in Africa", Gordon (1996) has emphasized that the gains to be reaped from economic reforms will only be fully realized in conjunction with improvements in governance and expansion of democratic representation.

as a measure of income distribution or wealth has found application in diverse disciplines studying inequality, such as sociology, economics, health science, agriculture, etc.

In this study we distinguish between four areas of liberalisation policy: financial, trade, institutional and political liberalisation. Financial liberalisation is measured by: *de jure* capital account openness (KAOPEN), developed by Chinn & Ito (2002); and *de facto* capital account openness (foreign direct investment: FDI). KAOPEN is the first principal component of four binary variables in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) and it takes higher values for more open financial regimes. We are poised to add subtlety to the analysis by complementing KAOPEN with FDI because: the former may not capture the actual ebb and flow of cross border capital and its impact (Aizenman et al., 2009); the private sector often circumvents capital account restrictions, nullifying the expected effect of regulatory capital controls (Edwards, 1999) and; more recently, China's *de facto* openness, despite its *de jure* closeness has been subject to discussion in research circles (Prasad & Wei, 2007; Aizenman & Glick, 2009; Shah & Patnaik, 2009).

Trade liberalisation is measured by trade openness, exports and freedom to trade. While openness is the sum of imports and exports of commodities as a % of GDP, the export is only consists of commodity exports on GDP. Freedom of trade is a component of the Economic Freedom Index and combines measures of trade taxes, tariff rates and trade barriers and capital control to create a composite index.

For Institutional liberalisation, we use a principal component analysis (PCA) to reduce the dimensions of government effectiveness, corruption control, rule of law, regulation quality, voice and accountability and political stability. PCA is a widely used statistical technique applied to reduce a larger set of correlated variables into a smaller set of uncorrelated variables called principal components (PC) that represent most of the information in the original data set. In the selection of the PCs, the criteria applied to determine how many common factors to retain are taken from Kaiser (1974) and Jolliffe (2002). Therefore, only PCs with an eigenvalue greater than one are retained. As shown in Table 2, the first PC is appropriate since it has an eigenvalue of 4.705 and represents more than 78% of information in the institutional indicators combined. The first PC will subsequently represent the Institutional Liberalization Index (instidex).

For political liberalisation, we exploit as proxy the Polity Index which is a combined polity score, which varies from 10(strongly democratic) to -10(strongly autocratic), and is obtained from the polity IV dataset (Marshall et al., 2003). The polity variable was designed to record

the regimes institutional authority characteristics. Firstly, the dataset recorded a democracy score (ranging from 0 to 10) for each country, based on the openness of the political process, defined as the extent to which citizens can effectively express preference about policies and leader through elections and the degree of restraints on the power of the chief executive. Secondly, each country has an autocracy (again ranging from 0 to 10) based on how political leaders are selected (by designation or chosen from a closed list), the constraints on their powers and regulations and the competitiveness of political participation.

One of the indicators included in the estimation was the Economic Freedom Index (Gwartney, 2011), which has many different components. The components are as follows: economic freedom representing, taxes on international trade (international trade tax revenues as % of trade sector; mean tariff rate and standard deviation of tariff rates); regulatory trade barriers (non-tariff trade barriers and the compliance cost of exporting and importing); the size of the trade sector in relation to that expected; black market exchange rates and international market capital controls ('foreign ownership /investment' restrictions and capital controls). Economic freedom broadly represents: the freedom to trade internationally; the legal structure and security of property rights; access to sound money; size of government (expenditures, taxes and enterprises) and; the regulation of credit, labour and business.

Control variables include: inflation, government expenditure and economic prosperity (GDP growth). We expect: high inflation to fuel inequality (Albanesi, 2007) and low inflation to reduce it (Bulir, 1998; Lopez, 2004); government expenditure to not be tainted by corrupt malpractices that mitigate inequality and, GDP growth to reduce inequality condition that even distribution of the fruits of economic prosperity. The impact on inequality of the last two control variables is contingent on the quality of the institutions.

Figure.1 presents the partial regression coefficient between income inequality and the liberalisation policies for the whole sample. The different slopes do not seem to be determined by outliers but rather seem to reflect a robust pattern in the data. It can be noticeably understood that the relationship between income inequality and political openness, export freedom of trade economic freedom, FDI and institutional liberalisation is much harsher and tends to increase inequality, with only capital account openness decreasing inequality. Figure. 2 indicate2 the poverty headcount at 1.25$ a day (PPP) and 2$ a day(PPP) tend to reduce with respect to freedom trade, trade openness, institutional and capital account liberalisation while increases in respect to political and FDI Liberalisation.

3.2 Estimation technique

We assessed two main issues in this study. Firstly, we investigate the incidence of various liberalization policies on inequality. This involved assessing the income redistributive impacts of financial, trade, institutional, political and other liberalisation policies.

In order to achieve the objectives above, we conducted a panel data analysis. This estimation technique has some important advantages and one disadvantage when compared to cross-country analysis (Demirgüç-Kunt & Levine, 2008). One advantage is that it makes use both of time-series and the cross sectional variation in the data. In cross-country regression, the unobserved country-specific effect is part of the error term, so that correlation between the error term and the explanatory variables results in biased estimated coefficients. Also, in cross-country regressions, if the lagged dependent variable is included among the regressors, the country-specific effect is certainly correlated with the regressors. A means of controlling the presence of unobserved country-specific effects is to first-difference the regression equation to eliminate the country-specific effect, and then use instrumental variables to control for endogeneity. Endogeneity is another advantage of dynamic panel data analysis. Uncontrolled endogeneity can substantially bias estimates and lead to inappropriate inferences. Dynamic panel data analysis takes care of this endogeneity issue by using lagged values of regressors as instruments.

The main issue associated with dynamic panel data analysis is using data averages over shorter time spans. This implies that the estimated result will reveal shorter-term impacts and not long term effects, which should be kept in mind when interpreting and discussing results. We shall overcome this problem by using both 'full data' and 'data averages'. The dynamic panel regression model is expressed as follows:

$$Iq_{i,t} = \sigma_0 + \sigma_1 Iq_{i,t-1} + \sigma_2 F_{i,t} + \sigma_3 T_{i,t} + \sigma_4 I_{i,t} + \sigma_5 P_{i,t} + \sigma_6 O_{i,t} + \sigma_y W_{i,t} + \eta_i + \xi_t + \varepsilon_{i,t} \quad (1)$$

Where't' stands for the period and 'i' represents a country. Iq is the inequality rate; $Iq_{i,t-1}$ is the lagged value of the inequality rate, F, financial liberalisation (KAOPEN and FDI); T, is trade liberalisation (trade and exports); I, is institutional liberalisation (instidex); P, is political liberalisation (Polity IV); O, is other liberalisations (economic freedom and freedom to trade). $W_{i,t}$ is a vector of the control variables (government expenditure, inflation and

economic prosperity)[5] with $6 < y < 10$, η_i is a country specific effect, ξ_t is a time specific constant and $\varepsilon_{i,t}$ is an error term.

Estimates will be unbiased if and only if, the independent variables above are strictly exogenous. Unfortunately, this is not the case in the real world because although they have a substantial effect on inequality, the reverse effect cannot be ruled out because the redistributive quality of income in an economy also has some bearing on the plethora of regressors. The regressors could be correlated with the error term ($\varepsilon_{i,t}$). Country and time specific effects could also be correlated with other variables in the model, which is often the case with lagged dependent variables included in the equations. Therefore, an issue of endogeneity arises owing to endogenous regressors. A way of dealing with the problem of the correlation between the individual specific-effect and the lagged dependent variables involves eliminating the individual effect by first differencing. Therefore Eq. (1) becomes:

$$Iq_{i,t} - Iq_{i,t-1} = \sigma_1(Iq_{i,t-1} - Iq_{i,t-2}) + \sigma_2(F_{i,t} - F_{i,t-1}) + \sigma_3(T_{i,t} - T_{i,t-1}) + \sigma_4(I_{i,t} - I_{i,t-1})$$
$$+ \sigma_5(P_{i,t} - P_{i,t-1}) + \sigma_6(O_{i,t} - O_{i,t-1}) + \sigma_y(W_{i,t} - W_{i,t-1}) + (\xi_t - \xi_{t-1}) + (\varepsilon_{i,t} - \varepsilon_{i,t-1}) \qquad (2)$$

However Eq. (2) presents another issue; estimation by Ordinary Least Square (OLS) is still biased because there remains a correlation between the lagged endogenous independent variable and the disturbance term. To address this issue, we estimate the regression in differences jointly with the regression in levels using the Generalised Method of Moments (GMM) estimation. The procedure uses lagged levels of the regressors as instruments in the difference equation, and lagged differences of the regressors as instruments in the levels equation, thus exploiting all the orthogonality conditions between the lagged dependent variables and the error term. Between the difference GMM estimator (Arellano & Bond, 1991) and system GMM estimator (Arellano & Bover, 1995; Blundell & Bond, 1998), we choose the later with respect to Bond et al. (2001, 3-4)[6]. The system GMM has been

[5] We have already discussed the expected signs of control variables in the Data section.

[6] "We also demonstrate that more plausible results can be achieved using a system GMM estimator suggested by Arellano & Bover (1995) and Blundell & Bond (1998). The system estimator exploits an assumption about the initial conditions to obtain moment conditions that remain informative even for persistent series, and it has been shown to perform well in simulations. The necessary restrictions on the initial conditions are potentially consistent with standard growth frameworks, and appear to be both valid and highly informative in our empirical application. Hence we recommend this system GMM estimator for consideration in subsequent empirical growth research". Bond et al. (2001, pp.3-4).

confirmed to be better in recent liberalisation-poverty studies (Arestis & Caner, 2010; Enowbi-Batuo & Kupukile, 2010[7]).

In specifying the dynamic panel system estimation, we opted for the *second-step* GMM because it corrects the residuals for heteroscedasticity. In the *first-step* the residuals are assumed to be homoscedastic. The assumption of no auto-correlation in the residuals is crucial as past lagged variables are to be used as instruments for the dependent variables. Also, the estimation depends on the assumption that the lagged values of the dependent variable and other independent variables are valid instruments in the regression. When the error terms of the level equation are not auto-correlated, the first-order auto-correlation of the differenced residuals should be significant while their second-order auto-correlation: *AR(2)* should not be. The validity of the instruments is assessed with the Sargan over-identifying 0restrictions test (OIR). To sum up, the main arguments for using the system GMM estimation are that it does not eliminate cross-country variation, it mitigates potential biases of the difference estimator in small samples, and it can control for the potential endogeneity of all regressors.

Beside the control for endogeneity, further robustness of our models is ensured by the following: use of both 'full data' and 'average data' with non-overlapping intervals to capture both the long-term and short-run tendencies of estimated coefficients respectively; employment of robust Heteroscedasticity and Autocorrelation Consistent (HAC) Fixed Effect regressions to capture the unobserved heterogeneity; and the use of alternative measures of liberalization indicators.

4. Empirical analysis

4.1 Presentation of results

The estimation presented in Tables 5-7 have four things in common. We notice that the initial level of inequality is positive and statistically highly significant suggesting that inequality is divergence to income inequality across Africa. The results also report the serial correlation test used to examine the null hypothesis of no serial correlation of residuals in first-difference. There is overwhelming absence of any significant second order serial correlation across tables and specifications. The Sargan OIR test for the validity of the instruments compares the

[7] "To address the potential endogeneity of regressors and to incorporate fixed effects, we employ the system-GMM estimator from Blundell and Bond (1998). The Blundell-Bond estimator is arguably a superior approach to the Arellano-Bond difference-GMM as adding lagged differenced variables as instruments in the level equations may generate substantial efficiency gains when the time window is relatively short. Another advantage of the system-GMM estimation is its ability to identify the coefficients of time-invariant variables in the level equation."Enowbi-Batuo & Kupulike (2010, p.46).

sample moment conditions with their population analogue. The null hypothesis of this test is the positions that, the lagged difference of the explanatory variables are uncorrelated with the errors in the level equations. In other words, the instruments explain inequality through no other channels beside the endogenous liberalisation regressors, conditional on other covariates (control variables). The overwhelming rejection of the null hypothesis of the OIR test (across specifications and tables) points to the validity of the instruments. The Wald test for the joint significance of estimated coefficients also provides appealing results at the 1% significance level.

Table 5 (on full data with no overlapping intervals), suggests that, while financial and political liberalisation have increased inequality, trade liberalisation has reduced it, and column C, suggests that the magnitude of inequality (0.261) resulting from financial liberalisation cannot be compensated by the positive income redistributive effect of trade liberalisation (-0.016). It is worth pointing out that this comparison is valid because both measures in are ratios of GDP. Also, the absence of no overlapping intervals indicates the estimates are long-run.

Table 6 presents two year non-overlapping interval results. We divided the sample (1996-2010) into 8 non-overlapping sub-periods. Based on the signs and significance of estimated coefficients, the following findings could be established. Financial liberalisation from *de jure* and *de facto* capital openness perspectives mitigate income-inequality, with the redistributive effect of the former much higher than that of the latter. Economic freedom, political and institutional liberalisation increases inequality. With respect to trade liberalisation, freedom to trade has a negative and statistically significant relationship with income-redistributive effect while export and trade openness have the same sign but it's not statistically significant. Government expenditure needs to be controlled because of corrupt practices surrounding public spending in Africa, especially in investment allocation (Ndikumana, 2008) which has increased .

Table 7 presents 'Three year non-overlapping interval' results. We divided the sample (1996-2010) into 5 non-overlapping sub-periods. The following could be drawn from the findings: Financial and trade liberalisation mitigates income inequality. Economic freedom increases inequality while 'freedom to trade' reduces it. Inflation and government expenditure have appealing and unfavourable redistributive-income effects respectively.

4.2. Liberalization Transition and income inequality

In this section we studied the effect of liberalisation transition on income inequality by using a before and after approach to the group of countries that are in our sample. The sample section depends on the availability of the countries data and the year that the countries started to undergo liberalisation policies, particularly with regard to trade and financial liberalisation.

The data and the year each country started the process of trade liberalisation was taken from the UNCTAD, (2004b) it shows that the pace of reform differs across countries, but in general demonstrates that countries have made substantial progress in opening their economies in the 1990s. Even though trade policy in Africa is still regarded by some analysts as more protectionist than those of its trading partners and competitors (Sharer, 1999; Hinkle, Herrou-Aragon, and Kubota 2003).The data for the year which was considered as a turning point in which countries started external financial liberalization was based on information found in Mehran et al. (1998), Gelbard and Pereira Leite (1999), numerous IMF staff country reports for the countries in the sample and Sources obtanied from national monetary authorities in the respective countries.

This analysis is interested in the effects of the change in the income inequality index from the year that was considered the turning point of the particular liberalisation policy (trade or financial liberalization). Therefore the before and after approach would compare each individual country's income inequality performance from the year of liberalisation, looking at five or ten year average of income inequality previously and subsequently from the year the liberalisation policy was established.

The outcome shows that both the 10 and 5 year averages of income inequality for the sample of 24 countries before the year of financial liberalisation exhibits a decrease of -6.1 and -1.3 and more than half the countries exhibit a decline in income inequality (see Table 8). Observing the inequality performance of each individual country, we find that homogeneity runs across countries, with a 0 standard deviation for the differences between the average of 10 year before and after turning point. These results confirm the findings that the positive effects of financial liberalisation are reaped in the long run.

With respect to trade liberalisation, results display a minor decline in inequality of -4.1 and -1.8 for both the 10 and 5 year average of income inequality (See Table 9). The standard deviation of the performance of the countries shows a divergent pattern among countries in the sample suggesting that, apart from trade liberalisation, the level of income inequality in

each country may be affected by numerous factors including the educational system and macroeconomic instability. However, the fact that the effect of trade liberalisation has not appeared to be so pronounced within the 5 and 10 year averages is evidence that the effect is stable in the medium run and long run.

4.3 Discussion and Policy Implications

Before discussing the results, it is worthwhile pointing to the circumstances motivating this paper. Poverty and inequality undoubtedly remain important challenges to economic and human developments. This fact is particularly relevant in Africa where, in spite of over two decades of reform poverty and inequality remain stubbornly high. In this paper, we have assessed the income-redistributive incidence of various liberalisation policies and our findings could be discussed in four strands.

4.3.1 The Impact of Financial Liberalization

Financial liberalisation mitigates inequality with the magnitude of the *de jure* KAOPEN indicator higher than that of FDI. The two financial liberalization measures differ principally from the perspective that, KAOPEN measures *de jure* capital openness by accounting for regulatory restrictions on capital account transactions, while FDI is capital account openness. Thus, KAOPEN tends to increase as capital markets are more liberalised; so with FDI, KAOPEN increases. Complementing KAOPEN with FDI to incorporate the effect of external financing has been important because, most recently China's *de facto* openness, despite its *de jure* closeness has been subject to much discussion in research and policy making circles (Prasad & Wei, 2007; Aizenman & Glick, 2009; Shah & Patnaik, 2009). Hence, we can establish that based on the magnitude of significance in the financial liberalisation indicators, *de jure* capital openness (KAOPEN) has a more income-redistributive effect than *de facto* capital openness (FDI). It follows that policy measures that favor less restrictions on capital account transactions (KAOPEN) and particularly target FDI will have an a substantial equalising income distribution effect in the African continent. This recommendation should be taken with a caution on 'naked capital account openness': "*Although financial repression is not desirable, its alternative is not traditional liberalisation. When financial liberalisation is applied without first maintaining macroeconomic stability and establishing the supporting institutions and policies, even when it brings economic expansion, it often comes at the cost of devastating crises and increasing economic inequality*" (Arestis & Caner, 2004, 23).

The findings of this paper on capital account liberalisation run counter to mainstream literature on several counts. Firstly, Cobham (2001) concluded a decade ago on the effect of capital liberalisation on poverty in the following sentence: "*The key conclusion is that*

although the growth benefits of liberalisation are far from clear for poorer countries, there may be significant costs in poverty terms. While further research is required in a number of areas identified, the main policy implication is that capital controls must be retained as part of the toolbox of pro-poor macroeconomic policymaking". Secondly, Arestis & Caner (2010) have found no statistically significant relationship between the degree of capital account liberalisation and the poverty rate. Thirdly, there have been relatively few studies focused on Africa owing to a lack of relevant data on inequality for the continent[8]. Using the same time span (1980-2002) and measure of inequality, Kai & Hamori(2010) and Asongu (2011a) have used the *de facto* FDI as a measure of capital account openness and found financial liberalization to fuel income-inequality. Besides conceptual and methodological differences, the present paper steers clear of those above in its use of updated data.

4.3.2 The Effects of Trade Liberalization and Economic Freedom

For more subtlety in our analysis, we have used three different measures of trade liberalisation: trade; exports and 'freedom to trade', all of which significantly mitigate income-inequality. Given the primary sector focus on exports in African countries, it is only logical that trade liberalisation has an equalisation effect on income-distribution. Also, from an import perspective, the influx of affordable Chinese goods could partly explain the equalising impact of trade openness. These findings differ substantially from earlier African 'trade liberalisation-inequality' literature. The literature states that cross-country evidence has shown the positive correlation between trade policies and income inequality through the channel of land abundance (Fischer, 2000) and through political economy factors (Easterly, 2002); intra-household inequality through changes in employment opportunities between male and female household members (Winters, 2000b), as well as through changes in the composition of the whole workforce (UNDP, 2003); overall inequality tends to rise in Africa even if more women are employed with the expansion of textile industries in the wake of trade liberalisation (Blackden, 2003).

[8] To the best of our knowledge, there are currently only two empirical studies on the inequality-FDI nexus that are Africa focused (Kai & Hamori, 2010; Asongu, 2011a).

4.3.3 The Impact of Institutional and Political Liberalisation

The conventional line of thinking predicts higher institutional quality to be correlated with lower poverty rates (Arestis & Caner, 2010). However our findings suggest, institutional quality fuels inequality; which has not been unexpected given our initial positive correlation between institutional quality and inequality. Even the USA that is credited with benchmark institutions has seen its inequality rise over the decades (Stiglitz, 2012; Krueger, 2012)[9]. As postulated by Chong & Calderon (2000) and sustained by Arestis & Caner (2010), a possible explanation to this positive association between inequality and institutional quality may be understood from transaction costs on the poor. According to them, after liberalisation (reform), the poor have to learn new mechanisms to survive, as the former mechanisms are no longer useful. Such transaction costs may be high, especially for the poorest and least educated category of the lower-income strata.

The positive impact of political liberalisation (democratisation) on inequality is not unexpected in Africa. The advent of democratisation doesn't really bring alongside good politicians that equitably share the fruits of economic prosperity. The case of many developing countries in Southeast Asia (Scott, 1972), India (Wade, 1985) and Turkey (Sayari, 1977); post-communist countries like Russia (Varsee, 1997) and many Latin American countries upon the waves of democratisation (Weyland, 1998) confirm this fact. It is in this vein that Asongu (2011b) advises that democracy once initiated in Africa should be accelerated to edge the appeals of authoritarian regimes and reap the benefits of time and level hypotheses.

Economic freedom has been observed to have a positive incidence on income-distribution. Its positive effect on inequality may be due to the weight of its legal structure component: which is undoubtedly positively associated with the institutional impact to be covered below and this finding is supported by evidence from Atkinson and Brandoline, 2003 whi point out that the overall liberalisation policies may have led to an increase in domestic inequality, especially in economies with weak institutions.

[9]According to Stiglitz (2012), the magnitude of inequality in the USA has dramatically increased. The fraction of the income that goes to the upper 1% has almost tripled since the 1980s. In the same vein, Krueger (2012) has affirmed that the share of all income accruing to the top 1% increased by 13.5% from 1997 to 2007; which is the equivalent of shifting $1.1 trillion of annual income to the top 1% of families. Put another way, the increased in the share of income going to the top 1% over this period exceeds the total amount of income that the entire bottom 40% of household receives.

4.3.4 On the Effect of Control Variables

The main control variables such as Government expenditure may or may not reduce inequality, depending on how the expenditure is allocated to different social classes in the country (Arestis & Caner, 2010). In this paper, this variable has consistently been noticed to increase income-inequality. This could be the case when strong institutions are not in place to oversee the execution of public investments. Hence, the positive association between public investment and corrupt bureaucrats seeking to increase capital expenditure (over maintenance expenditure) to maximise private gains and rent-seeking (Ndikumana, 2008,). The inflation rate was also included to control the macroeconomic environment and was expected to either have a positive or negative sign depending on its rate. Though inflation has been generally seen to fuel inequality (Albanesi, 2007) owing to decreased purchasing power, low inflation however has a negative incidence on inequality (Bulir, 1998; Lopez, 2004). The relative low inflation rate in the descriptive statistics confirms this later inflationary effect. Controlling for economic prosperity, the expected sign of the estimated coefficient was negative. The absence of any significant nexus between GDP growth and income-inequality confirms growing fears that the relatively high growth rates enjoyed by African countries (4.27% in the mean) does not trickle down from the macro-economic to the micro-economic level. There are many explanations to this uneven distribution of macro-economic prosperity. However, we shall point only two that can be backed by our findings. Institutional liberalization and government expenditure have been found to fuel income-inequality above; implying the quality of institutions are not conducive to oversee the fruits of economic prosperity trickling down to the microeconomic level through government expenditure.

5. Concluding Remarks

We examined the impact of liberalisation policies specifically financial, trade, institutional and economic liberalisations and we also examined their impact on income inequality, using an up to date dataset covering (1996-2010), in a sample of countries restricted to Africa. We applied two methods, the dynamic panel econometric method and the "before and after" approach. In the first method, findings showed that financial liberalisations tend to escalate income inequality for the *de jure* measure (KAOPEN) than for the *de facto* measure (FDI): the outcome of trade liberalisations is mixed and not clear, so we concluded that it has an equality incidence on income-distribution. While freedom of trade illustrates a negative and statistically significant coefficient, export and openness shows dissimilar results; institutional

and political liberalisation have a negative impact and in the same vein, economic freedom has a negative income-redistributive effect.

The "before and after" analysis shows that financial liberalization has made considerable progress toward decreasing income inequality particularly in the short run while the effect of trade liberalizations has been less significant

In general, this study provides a variegated picture, findings tend to suggest that overall the reforms have increased income inequality in African countries. It would be risky to prescribe a general policy because of the diversity of the country. However, African countries' better performance can be attributed to a combination of policies. For example avoiding the Marco price mixture of real exchange rate appreciation and high domestic interest rates; having capital controls and prudential financial regulations which would enable them to contain the negative consequence of capital flows; putting a system in place to direct export between African countries and encouraging sub regional integration agreement. The government should put in place countervailing social policies in order to withstand social coherence and smooth the adverse transition of liberalisation policies.

Table 1: Principal Component Analysis (PCA) of Institutional Index (Instidex)

Principal Components	Component Matrix(Loadings)						Proportion	Cumulative Proportion	Eigen Value
	V & A	R.L	R.Q	G.E	PS	CC			
First P.C	0.369	0.435	0.412	0.425	0.388	0.416	0.784	0.784	4.705
Second P.C	-0.690	0.103	0.258	0.436	-0.453	0.227	0.083	0.867	0.499
Third P.C	-0.591	0.187	-0.299	-0.051	0.724	0.002	0.054	0.922	0.327

P.C: Principal Component. V& A: Voice & Accountability. R.L:Rule of Law. R.Q: Regulation Quality. G.E: Government Effectiveness. PS: Political Stability. CC: Control of Corruption.

Table2: Summary statistics and presentation of countries

Panel A: Summary Statistics

		Mean	Standard deviation	Minimum	Maximum	No.Obser.
Inequality	GINI Coefficient	43.104	6.828	29.760	67.400	356
Financial Liberalization	KAOPEN	-0.505	1.278	-1.843	2.477	392
	Foreign Direct Investment	2.777	4.252	-8.629	36.114	346
Trade Liberalization	Trade	68.687	29.967	21.574	187.68	401
	Exports	30.245	14.618	5.820	69.032	401
Institutional & Political Liberalization	Institutional Index	0.088	2.152	-4.569	5.233	320
	Polity IV	1.857	5.106	-7.000	10.000	420
Other liberalizations	Freedom to Trade	6.060	0.917	3.400	8.100	250
	Economic Freedom	6.118	0.632	4.710	7.820	250
Control Variables	Inflation	7.239	9.496	-100.00	46.561	395
	Government Expenditure	4.304	10.670	-34.882	61.364	298
	Economic Prosperity	4.273	3.710	-16.740	27.462	420

Panel B: Presentation of Countries

Botswana, Cameroon, Ivory Coast, Egypt, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mauritania, Mauritius, Morocco, Nigeria, Senegal, Sierra Leone, South Africa, Tanzania, Tunisia, Uganda, Zambia, Niger, Mali, Guinea, Burkina Faso, Burundi.

Table 3: Correlation analysis

GINI	KAOPEN	FDI	Trade	Exports	Instidex	Polity IV	T Free	Eco.Free	Inflation	Gov.Ex	GDPg	
1.000	-0.032	0.094	0.144	0.154	0.255	0.352	0.063	0.273	0.044	0.090	-0.148	GINI
	1.000	0.060	0.049	0.113	0.320	0.120	0.512	0.673	0.137	0.039	0.077	KAOPEN
		1.000	0.434	0.117	0.095	0.111	0.267	0.258	-0.177	0.109	0.110	FDI
			1.000	0.843	0.417	0.258	0.445	0.335	-0.040	0.023	-0.024	Trade
				1.000	0.446	0.167	0.458	0.370	-0.007	-0.002	-0.070	Exports
					1.000	0.374	0.557	0.674	0.016	0.036	0.107	Instidex
						1.000	0.245	0.254	0.124	0.024	0.032	Polity IV
							1.000	0.756	0.200	0.036	0.075	TFree
								1.000	0.067	0.090	0.098	EcoFree
									1.000	-0.083	0.008	Inflation
										1.000	0.208	Gov.Ex.
											1.000	GDPg

GINI: Income Inequality Index. KAOPEN: De Jure measure of Capital Openness. FDI: Foreign Direct Investment. Instidex: Institutional Development Index. Polity IV: Measure of Political liberalization. TFree: Freedom to Trade. EcoFree: Economic Freedom. Gov. Ex: Government Expenditure. GDPg: GDP growth rate.

Table 4: Variable definitions

Variable	Definition	Source
Gini	Income inequality	WIDER-WIID and WDI
KOPEN	Capital Account Openness : is based on the four binary dummy variables reported in the IMF Annual Report on exchange restriction (AREAER)	Chinn and Ito (2010)
Financial liberalisation 2	Accounting for current account openness : Foreign direct investment (% of GDP)	WDI (WorldBank)
Trade liberalisation 1	Openness (import + export) of good and service (% of GDP)	WDI (WorldBank)
Trade liberalisation 2	Export of good and service (% of GDP)	WDI (WorldBank)
Trade liberalisation 3	Freedom of Trade index combines measures of trade taxes, tariff rates and trade barriers and capital control to create a composite index	Fraser institute (Gwartney et al. (2011)
Institutional Liberalisation	First principal component of government effectiveness, corruption control, rule of law, regulation quality, voice and accountability and political stability	World bank (2011)
Political Liberalisation	Is an indicator of "combined polity score" which varies from 10 (strongly democratic) to -10 (strongly autocratic)	Marshall et al., 2003
Economic Freedom	The components are as follows: economic freedom representing, taxes on international trade (international trade tax revenues as % of trade sector; mean tariff rate and standard deviation of tariff rates); regulatory trade barriers (non-tariff trade barriers and the compliance cost of exporting and importing); the size of the trade sector in relation to that expected; black market exchange rates and international market capital controls ('foreign ownership investment' restrictions and capital controls).	Fraser institute (Gwartney et al. (2011)
Inflation	Consumer Price Index	WDI (WorldBank)
Government Expenditure	Government final expenditure (% of GDP)	WDI (WorldBank)
Growth rate of GDP	Real GDP per capita.	WDI (WorldBank)

Table 5: Two-step System GMM estimates (Full data with no overlapping intervals)

Dependent variable: GINI coefficient		A	B	C	D	E	F	G	H
Constant		5.803	**10.382***	10.987	**9.539***	15.979	12.371	10.441	10.317
		(0.519)	**(1.756)**	(1.231)	**(1.728)**	(1.079)	(1.446)	(1.004)	(0.785)
GINI_1		**0.898*****	**0.742*****	**1.021*****	**0.840*****	**0.851*****	**0.895*****	**0.934*****	**0.799*****
		(3.357)	**(5.769)**	**(5.499)**	**(7.344)**	**(3.913)**	**(5.436)**	**(4.172)**	**(3.015)**
Financial Liberalization	Kaopen	-0.030	---	0.282	---	---	---	0.064	-0.114
		(-0.079)		(0.783)				(0.197)	(-0.298)
	FDI	0.108	0.047	**0.261*****	**0.137***	0.247	**0.207***	**0.190****	0.034
		(1.334)	(0.584)	**(2.764)**	**(1.701)**	(1.232)	**(1.809)**	**(2.266)**	(0.516)
Trade Liberalization	Trade	-0.0002	0.004	**-0.016***	---	---	---	---	---
		(-0.013)	(0.344)	**(-1.778)**					
	Exports	---	---	---	---	-0.017	-0.025	-0.018	---
						(-0.366)	(-0.809)	(-0.699)	
Institutional &Political Liberalization	Instidex	-0.035	0.129	0.229	0.235	0.259	0.256	0.215	---
		(-0.159)	(0.303)	(1.539)	(0.976)	(0.757)	(1.000)	(1.335)	
	Polity IV	0.064	**0.147***	0.049	0.119	0.186	0.109	0.075	0.166
		(0.553)	**(1.706)**	(0.616)	(1.565)	(1.258)	(1.186)	(0.782)	(0.901)
Freedom of Trade		-0.339	-0.088	---	---	-1.570	---	---	---
		(-0.965)	(-0.345)			(-0.791)			
Economic Freedom		---	---	-1.864	-0.481	---	-1.230	-1.250	-0.306
				(-1.145)	(-0.475)		(-1.022)	(-0.888)	(-0.365)
Inflation		-0.005	---	---	---	---	---	---	-0.005
		(-0.121)							(-0.115)
Government Expenditure		---	---	0.033	0.047	0.049	0.045	0.037	0.023
				(0.755)	(1.215)	(1.229)	(1.167)	(0.758)	(0.410)
Economic Prosperity		0.003	0.001	-0.013	-0.074	-0.084	-0.059	-0.025	-0.052
		(0.063)	(0.069)	(-0.207)	(-1.208)	(-1.539)	(-0.905)	(-0.416)	(-1.010)
Test for AR(2) errors		**1.130**	**1.155**	**1.242**	**1.159**	**0.821**	**1.181**	**1.213**	**0.394**
		[0.258]	**[0.2481]**	**[0.214]**	**[0.246]**	**[0.411]**	**[0.237]**	**[0.225]**	**[0.693]**
Sargan OIR test		**8.197**	**10.317**	**4.565**	**4.756**	**6.265**	**4.905**	**4.358**	**7.413**
		[1.000]	**[1.000]**	**[1.000]**	**[1.000]**	**[1.000]**	**[1.000]**	**[1.000]**	**[1.000]**
Wald(joint) test		**522.1*****	**251.6*****	**700.5*****	**717.3*****	**3465*****	**397.0*****	**841.4*****	**170.6*****
		[0.000]	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**
Number of Instruments		51	49	49	47	48	48	49	53
Number of Countries		21	21	17	17	17	17	17	18
Number of Observations		132	138	109	109	109	109	109	125

Notes. */**/*** significance levels of 10%, 5% and 1% respectively. Z-statistics in parentheses. [ ]: P-values. GINI: Inequality coefficient. OIR Overidentifying restrictions. Instidex: Institutional index. Polity IV: Political liberalization measure. FDI: Foreign Direct Investment. Kaopen: de jure measure of capital openess

Table 6: Two-step System GMM estimates (Two year non overlapping intervals)

Dep.variable: GINIcoefficient		A	B	C	D	E	F	G	H
Constant		**17.853****	**-20.03****	**-25.444***	**-16.06****	**-14.628***	**16.863****	-9.226	**-25.209***
		(2.335)	**(-2.212)**	**(-1.787)**	**(-2.474)**	**(-1.759)**	**(2.454)**	(-1.085)	**(-1.854)**
GINI_1		**0.905*****	**0.928*****	**0.905*****	**0.819*****	**0.783*****	**0.899*****	**0.800*****	**1.019*****
		(9.441)	**(3.963)**	**(7.988)**	**(12.10)**	**(9.202)**	**(9.043)**	**(8.994)**	**(3.489)**
Financial Liberalization	Kaopen	0.504	---	**-0.744****	**-0.688****	**-0.770***	0.386	-0.620	-0.559
		(1.206)		**(-2.016)**	**(-2.280)**	**(-1.877)**	(0.921)	(-1.286)	(-1.101)
	FDI	---	**-0.30*****	**-0.21*****	**-0.220****	**-0.195****	---	**-0.148***	**-0.206***
			(-2.813)	**(-2.982)**	**(-2.333)**	**(-2.127)**		**(-1.882)**	**(-1.827)**
Trade Liberalization									
	Trade	-0.006	0.005	-0.0005	-0.004	---	---	---	---
		(-0.578)	(0.427)	(-0.052)	(-0.282)				
	Exports	---	---	---	---	-0.029	-0.017	-0.039	-0.026
						(-0.937)	(-0.592)	(-1.355)	(-1.040)
Institutional &Political Liberalization	Instidex	---	-0.094	-0.121	---	0.058	0.233	---	-0.057
			(-0.504)	(-0.528)		(0.297)	(0.907)		(-0.202)
	Polity IV	0.141	-0.008	-0.019	---	---	0.103	**0.065***	-0.067
		(1.212)	(-0.067)	(-0.220)			(0.966)	**(1.749)**	(-0.373)
Freedom of Trade		**-2.161***	---	---	---	---	**-2.014****	---	---
		(-1.855)					**(-2.562)**		
Economic Freedom		---	**3.619****	**4.668****	**3.81*****	**3.933****	---	2.974	**3.954****
			(2.224)	**(2.479)**	**(2.998)**	**(2.322)**		(1.590)	**(2.520)**
Inflation		-0.029	-0.018	---	0.0137	---	---	---	-0.019
		(-0.319)	(-0.339)		(0.352)				(-0.342)
Government Expenditure		**0.080*****	**0.065****	**0.073*****	**0.082*****	**0.086*****	**0.090*****	**0.090*****	**0.060***
		(3.369)	**(2.245)**	**(3.309)**	**(3.164)**	**(3.827)**	**(3.123)**	**(3.762)**	**(1.795)**
Economic Prosperity		-0.063	0.114	0.080	0.028	0.021	-0.007	---	0.167
		(-0.331)	(0.560)	(0.603)	(0.216)	(0.176)	(-0.045)		(0.645)
Test for AR(2) errors		**0.023**	**0.397**	**0.232**	**0.214**	**0.134**	**0.073**	**0.008**	**0.230**
		[0.981]	**[0.691]**	**[0.815]**	**[0.830]**	**[0.893]**	**[0.941]**	**[0.993]**	**[0.818]**
Sargan OIR test		**10.821**	**5.345**	**5.260**	**8.121**	**9.040**	**13.991**	**9.886**	**6.332**
		[0.984]	**[1.000]**	**[1.000]**	**[0.999]**	**[0.998]**	**[0.927]**	**[0.996]**	**[0.999]**
Wald(joint) test		**6466*****	**1767*****	**3063*****	**1120*****	**529.6*****	**2554*****	**698.2*****	**3750*****
		[0.000]	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**
Number of Instruments		32	35	35	34	34	32	33	36
Number of Countries		20	18	18	18	18	20	18	18
Number of Observations		84	75	75	75	75	84	75	75

*;**;***: significance levels of 10%, 5% and 1% respectively. Z-statistics in parentheses. [ ]:P-values. GINI: Inequality coefficient. OIR: Overidentifying restrictions. Instidex: Institutional liberalization index. Polity IV: Political liberalization measure. FDI: Foreign Direct Investment. Kaopen: de jure measure of capital account openness

Table 7: Two-step System GMM estimates (Three year non overlapping intervals)

Dep. variable: GINI coefficient		A	B	C	D	E	F	G	H
Constant		**13.91****	**-13.688**	**-18.205***	10.458	1.606	-14.023	**-17.347***	**-8.368***
		(2.127)	**(-1.498)**	**(-1.865)**	(1.009)	(0.251)	(-1.467)	**(-1.859)**	**(-1.737)**
GINI_1		**0.920*****	**0.744*****	**0.727*****	**0.880*****	**0.924*****	**0.857*****	**0.720*****	**0.909*****
		(7.388)	**(3.829)**	**(4.601)**	**(8.571)**	**(6.839)**	**(5.187)**	**(3.606)**	**(21.23)**
	Kaopen	0.319	**-0.914****	**-0.97*****	0.222	---	---	**-1.005****	**-0.414****
Financial		(0.958)	**(-1.985)**	**(-2.748)**	(0.646)			**(-2.107)**	**(-2.141)**
Liberalization	FDI	---	-0.226	-0.213	**-0.203***	---	-0.271	-0.211	-0.195
			(-0.739)	(-0.901)	**(-1.927)**		(-1.490)	(-0.735)	(-1.147)
Trade	Trade	-0.017	-0.050	-0.042	-0.025	---	---	---	---
Liberalization		(-1.006)	(-1.490)	(-1.535)	(-0.996)				
	Exports	---	---	---	---	**-0.050****	-0.075	-0.090	**-0.059***
						(-2.339)	(-1.313)	(-1.182)	**(-1.927)**
Institutional	Instidex	---	---	---	---	0.141	-0.064	---	0.162
&Political						(0.640)	(-0.246)		(0.996)
Liberalization	Polity IV	0.039	0.082	---	---	-0.026	0.077	0.081	0.020
		(0.416)	(1.049)			(-0.378)	(1.299)	(1.231)	(0.263)
Freedom of Trade		**-1.538****	---	---	-0.562	---	---	---	---
		(-2.047)			(-0.560)				
Economic Freedom		---	**4.393***	**5.189****	---	0.546	**3.649*****	**5.125****	**2.334****
			(1.837)	**(2.574)**		(0.516)	**(3.318)**	**(2.013)**	**(2.296)**
Inflation		---	---	---	---	---	**-0.187***	---	-0.046
							(-1.680)		(-0.753)
Government Expenditure		**0.079****	**0.148*****	**0.150*****	**0.108****	**0.121*****	**0.140*****	**0.156*****	---
		(1.995)	**(3.243)**	**(3.376)**	**(2.252)**	**(2.924)**	**(3.532)**	**(3.106)**	
Economic Prosperity		-0.017	-0.010	-0.085	0.009	-0.118	0.114	-0.137	---
		(-0.087)	(-0.020)	(-0.331)	(0.036)	(-0.514)	(0.284)	(-0.272)	
Test for AR(2) errors		**-0.486**	**0.758**	**0.867**	**-0.033**	**-0.421**	**0.445**	**0.976**	**-0.887**
		[0.626]	**[0.448]**	**[0.385]**	**[0.973]**	**[0.673]**	**[0.655]**	**[0.328]**	**[0.374]**
Sargan OIR test		**7.724**	**11.999**	**11.759**	**8.579**	**8.393**	**6.620**	**11.253**	**6.808**
		[0.460]	**[0.151]**	**[0.162]**	**[0.379]**	**[0.3960]**	**[0.578]**	**[0.187]**	**[0.557]**
Wald(joint) test		**700.4*****	**1231*****	**967.7*****	**1557*****	**2007*****	**1582*****	**1388*****	**6387*****
		[0.000]	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**	**[0.000]**
Number of Instruments		16	17	16	16	16	18	17	17
Number of Countries		18	16	16	16	18	16	16	20
Number of Observations		54	49	49	49	54	49	49	61

*;**;***: significance levels of 10%, 5% and 1% respectively. Z-statistics in parentheses. [ ]:P-values. GINI: Inequality coefficient. OIR: Overidentifying restrictions. Instidex: Institutional liberalization index. Polity IV: Political liberalization measure. FDI: Foreign Direct Investment. Kaopen: de jure measure of capital account openness.

Table 8: Change in Gini index (income inequality) before and after Financial Liberalization.

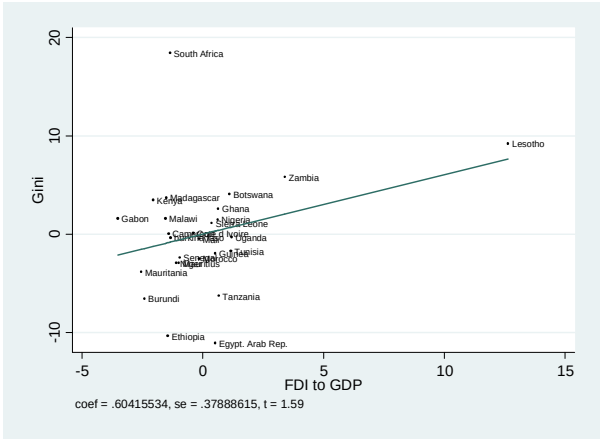
Countries	Fin. Lib.Year	Before 10	after 10	d10	Before 5	after 5	d5
Botswana	1996	55.6	44.7	-10.9	48.5	47.5	-1
Burkina Faso	1996	51	42.31	8.69	49.9	43.95	-5.95
Burundi	1996	n/a	33.27	n/a	33.33	42.39	9.06
Cameroon	1996	n/a	38.91	n/a	55.8	44.56	-11.24
Cote d Ivoire	1996	48.2	41.5	-6.7	45.9	44	-1.9
Egypt. Arab Rep.	1991	37	32.7	-4.3	33	30.13	-2.87
Gabon	1996	n/a	41.5	n/a	52.38	50.38	-2.00
Gahana	1996	48.5	42.76	-5.74	52.5	50.9	-1.6
Kenya	1993	57.3	45.43	-11.87	55.61	45.5	-10.11
Lesotho	2003	51.16	n/a	n/a	51.15	55.61	4.46
Madagascar	1996	48.5	47.5	-1	43.36	45.4	2.04
Malawi	1995	59.9	46.02	-13.88	49.8	48.9	-0.9
Mali	1996	n/a	38.99	n/a	36.5	40.01	3.51
Mauritania	1995	42.4	39.04	-3.36	39.06	38.9	-0.16
Mauritius	1993	47.7	39.5	-8.2	39.8	40.7	0.9
Morocco	1993	48.4	40.63	-7.77	39.46	40.8	1.34
Niger	1996	39	34.04	-4.96	37	42.5	5.5
Nigeria	1995	48.7	42.9	-5.8	44.9	45.7	0.8
Senegal	1996	53.6	39.16	-14.44	54.14	41.25	-12.89
South Africa	1983	51	59.33	8.33	47	45	-2
Tanzania	1996	52	37.58	-14.42	33.83	34.62	0.79
Tunisia	1986	48.5	41.66	-6.84	43	41.66	-1.34
Uganda	1990	n/a	43.07	n/a	44.3	37.13	-7.17
Zambia	1994	n/a	50.74	n/a	52.61	53.44	0.83
Average		49.4	41.9	-6.1	45.1	43.8	-1.3
Median Value		48.6	41.5	-6.7	45.4	44.0	-0.9
standard Deviation		5.8	5.8	0	7.3	5.8	1`.5

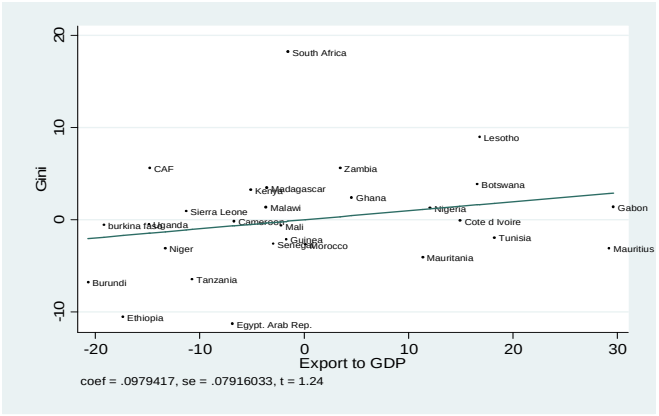
Note: the ‘before10’ or ‘after10’ is the average of Gini index 10 years before or after transition. The ‘d10’ is the difference between the Two periods. Same application for ‘before5’. ‘after5’ and ‘d5’.

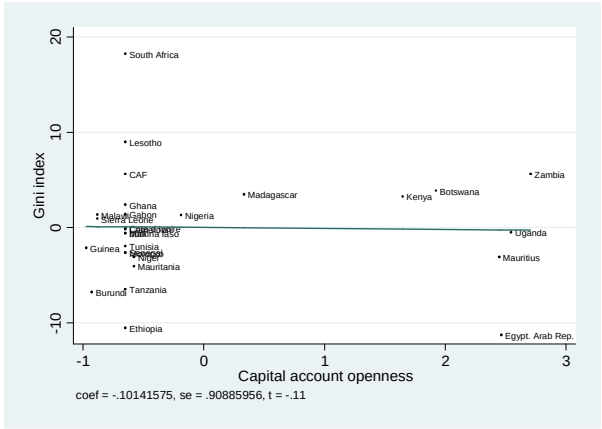
Table 9: Change in Gini index (income inequality) before and after trade liberalization

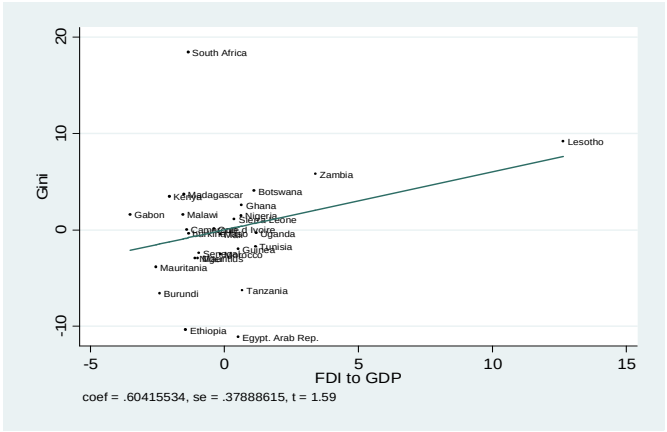
Countries	Year Trade. Lib.	before10	after 10	d10	before5	after 5	d 5
Botswana	1985	52	50.2	-1.8	47.5	45.3	-2.2
Burkina Faso	1991	n/a	39.6	n/a	50.71	49.9	-0.81
Burundi	1999	33.33	33.27	-0.06	40.5	33.27	-7.23
Cameroon	1993	49	44.56	-4.44	55.8	46.82	-8.98
Cote d Ivoire	1994	45.21	44	-1.21	37.16	44.4	7.24
Egypt. Arab Rep.	1995	37	31.44	-5.56	30	31.7	1.7
Gahana	1985	n/a	51.5	n/a	51.3	52.5	1.2
Kenya	1993	57	45	-12	44.6	45.5	0.9
Mali	1988	36.5	36	-0.5	n/a	50.5	n/a
Mauritania	1992	49	39	-10	n/a	39.04	n/a
Mauritius	1968	n/a	35.2	n/a	n/a	41.9	n/a
Morocco	1984	59	39.5	-19.5	39.7	38.2	-1.5
Niger	1994	n/a	43.8	n/a	35.9	41.5	5.6
Senegal	1993	n/a	41.2	n/a	63.9	41.4	-22.5
South Africa	1991	49	56.7	7.7	49	54.5	5.5
Tanzania	1995	52	37.58	-14.4	33.84	34.62	0.78
Tunisia	1989	36	40.24	4.24	43	41.66	-1.34
Uganda	1988	39.6	44.3	4.7	44.3	42.6	-1.7
Zambia	1993	n/a	42.08	n/a	59.1	53.4	-5.7
Average		45.7	41.9	-4.1	45.4	43.6	-1.8
Median Value		49.0	41.2	-1.8	44.5	42.6	-1.1
standard Deviation		8.5	6.3	2.2	9.4	6.6	2.8

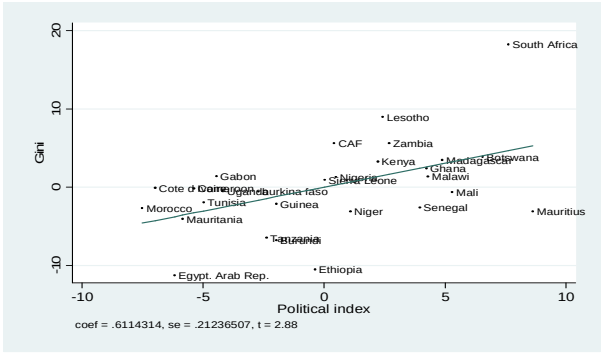
Note: the 'before10' or 'after10' is the average of Gini index 10 years before or after transition. The 'd10' is the difference between the two periods. Same application for 'before5'. 'after5' and 'd5'.











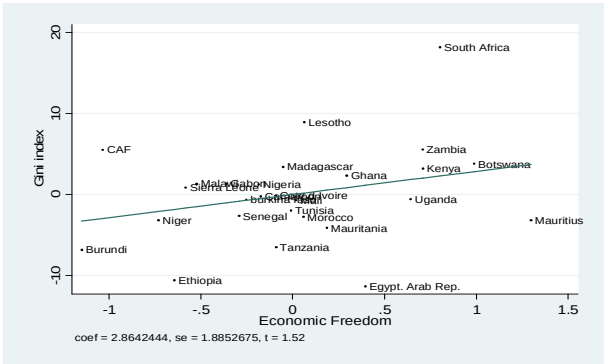


Fig.1. Gini index and Liberalization Policies in a cross section of countries: Partial regression of Gini index and trade liberalization indicators (trade freedom, trade openness, export); financial liberalization indicators (capital account openness, FDI as GDP); institutional liberalization indicators, (instidex, Polity IV).

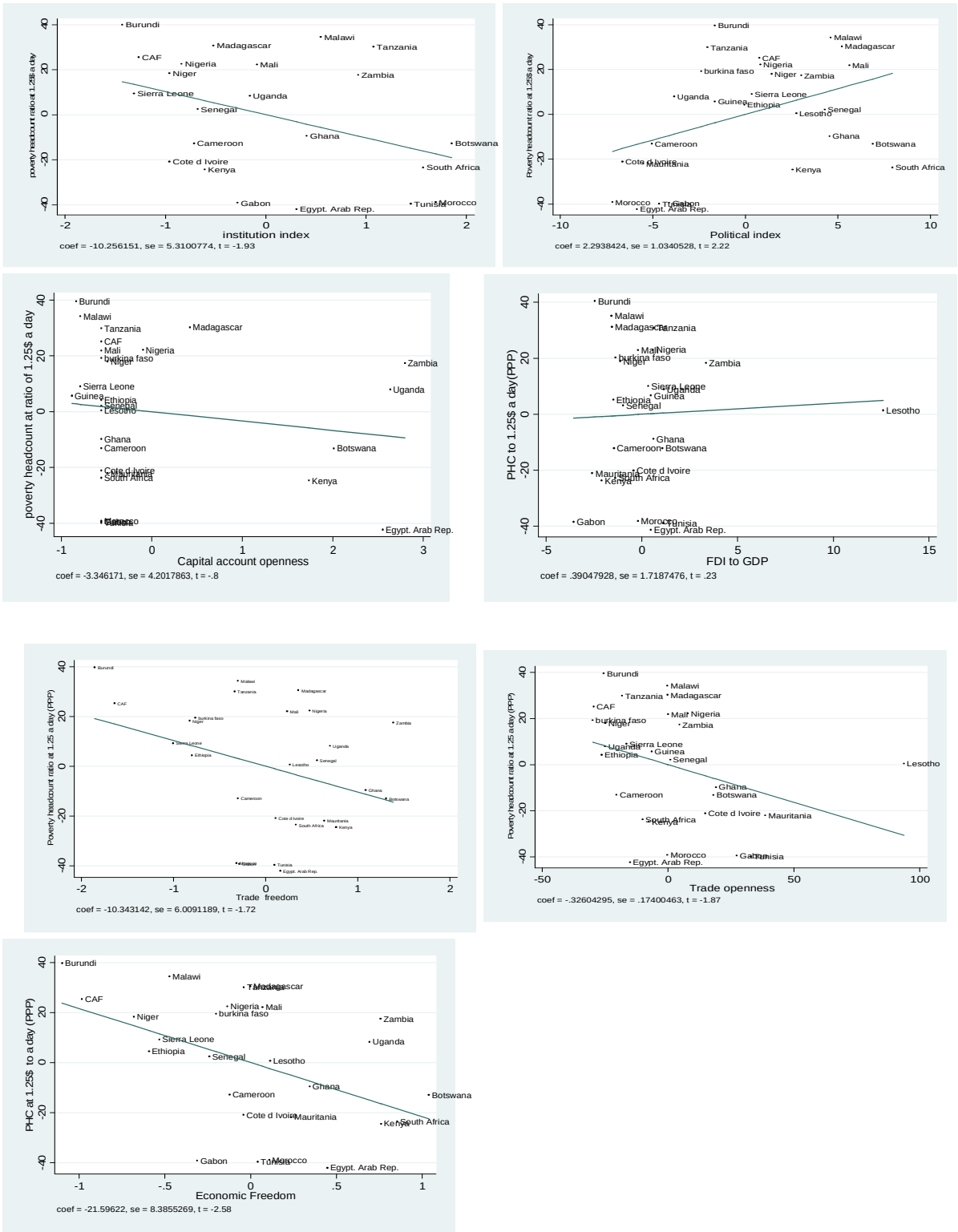


Fig 2. Poverty headcount ratio at 1.25$ a day (PPP) and Liberalisation policies in a cross section of countries; Partial regression of PHR and Liberalisation policies

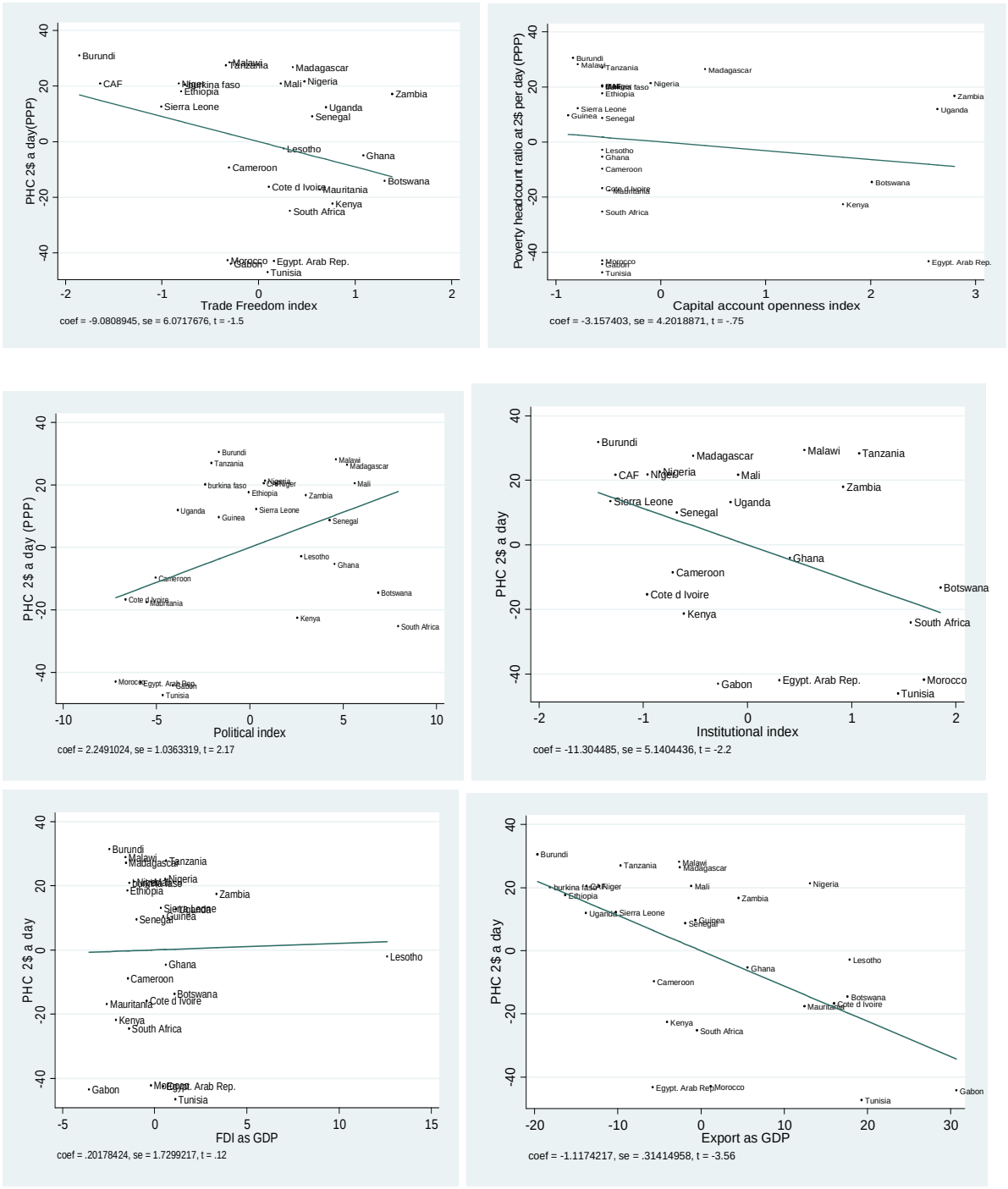


Fig 3. Poverty headcount ratio at 2$ a day (PPP) and Liberalisation policies in a cross section of countries; Partial regression of PHC at 2 a day and Liberalisation policies

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