

The Anatomy of Fragile States in Sub-Saharan Africa

Understanding the inter-relationship between fragility and deprivation

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Abstract

According to most classifications, Sub-Saharan Africa is the region of the world with the highest presence of fragile states. In this paper we examine the relationship between fragility and poverty, suggesting that countries may become trapped in a vicious circle of fragility and high levels of deprivation. We consider fragility as a continuum and begin by reviewing available measures. These show the high presence of fragility in Sub-Saharan Africa and allow the more fragile countries to be identified. There is seen to be a strong association between fragility, poor growth performance and deprivation in Sub-Saharan Africa. Building on the strong evidence for the two-way relationship between economic growth and poverty, we present an analysis of how the vicious circle linking deprivation and fragility may be able to be broken. We argue that building successful institutions is key here, and this can be enabled by specific policy interventions which are both poverty reducing and productive.

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1. Introduction

Most analyses show that Sub-Saharan Africa (SSA) continues to be the world region characterized by having the largest share of fragile states. Fragility may take many different forms, and can include some or all of economic, political and social fragility. In some of the worst cases, fragility has been associated with open conflict. In the 1990s in particular, many countries in SSA suffered civil wars, and some countries even now suffer from widespread violence, the threat of it or even civil war. Whatever form it takes, fragility will commonly be strongly associated with underdevelopment. It is highly likely that fragility and underdevelopment will feed on and sustain each other.

While high levels of fragility remain, there has also been significant progress in SSA over the past 15-20 years. The extent of fragility in SSA, particularly its more extreme forms of violence or civil war, has fallen since the 1990s. But in addition, and partly related to the reduced fragility, SSA has achieved a significant, now widely recognized, growth recovery over the last 15 years or so. Recent World Development Indicators data shows an average growth of US dollar denominated GDP (2012 values) of 4.4% over the 1995-2015 period and 4.9% over the period 2005-15. In per capita terms the growth rates for these same periods were 1.9% and 2.1% respectively. It has also at last managed to reduce its levels of poverty. The poverty headcount for SSA using the World Bank's \$1.90 international poverty line was 58.0% of its population in 1999. This fell to 50.5% by 2005, 46.1% in 2010 and 42.7% in 2012. For the continent as a whole, poverty fell in line with growth.

But this was not necessarily the experience of all countries. In a recent multi-country analysis edited by Arndt et al (2016) of SSA's poverty reduction record, they identify different groups of countries in relation to poverty reduction. In several cases poverty fell along with economic growth. In others good growth performance was not associated with significant poverty reduction. And a number of countries did not manage to attain sustained growth in the last 15 years; not all countries shared in the growth recovery in SSA. There is a diversity of experience. In still other countries information is lacking to make an adequate judgment on poverty reduction.

It is highly likely that there is a strong association between more fragile states and poorer performance in terms of growth and poverty reduction, and understanding this relationship is the main focus of this paper. To add to the complexity though, the more fragile states are also the ones which are more likely to suffer a lack of adequate data to assess their record in poverty reduction, and maybe even in extreme cases in terms of growth.

We focus in this paper on the interrelation between fragility and deprivation. To begin with we recognize that there are degrees (and different dimensions) of fragility, and that the degree of fragility can evolve over time. We begin in section 2 with a discussion of approaches to the measurement of fragility, focusing on two important and influential approaches; these approaches measure the degree of fragility of a country as a continuum, and also recognize that there are different dimensions to fragility which may or may not all be present in a particular case. In section 3 we discuss the classification of countries according to our preferred measure, highlighting the high representation of SSA among the most fragile countries. Then in section 4 we examine in some detail the association of fragility with both economic growth and its volatility, and with different measures of deprivation. As it is hard to obtain reliable information on the link between fragility and *changes* in poverty, we instead briefly discuss two country cases of descent into and emergence from fragility. This analysis establishes a strong association between fragility and deprivation. Section 5 discusses the interrelations between growth, poverty and inequality, looking both at how growth impacts on poverty and on how poverty can affect growth. Having established a clear and strong association between fragility and underdevelopment, sections 6 and 7 then discuss ways in which this vicious circle might be broken; this is a major challenge which many more fragile countries have failed to rise to. We argue that institutions which directly address poverty reduction can play a key role in achieving this. Section 8 concludes.

2. Meaning and Measurement of Fragile States

There are many definitions of fragile states. Among the most concise and clear definitions is that of Wikipedia: “A **fragile state** is a low-income country characterized by weak state capacity and/or weak state legitimacy leaving citizens

vulnerable to a range of shocks”¹. At the limit a fragile state can become a **failed state** defined as “a political body that has disintegrated to a point where basic conditions and responsibilities of a sovereign government no longer function properly. Likewise, when a nation weakens and its standard of living declines, it introduces the possibility of governmental collapse.” (Wikipedia).

In its most recent (2014-2019) strategy for “Addressing Fragility and Building Resilience in Africa”, the African Development Bank defines fragility as a “condition of elevated risk of institutional breakdown, societal collapse, or violent conflict”. Similarly, the World Bank recently adapted its approach to fragility to reflect multi-dimensional risks (World Bank, 2014). Typically, a fragile state is confronted with i) elevated risks that emanate from the interaction of internal pressures and external shocks; and ii) a limited capacity of the state and its institutions to mitigate the negative effects of those pressures and shocks.

Clearly there are degrees of fragility and drawing the line where a fragile state becomes a failed state is arbitrary. This is why it has been suggested that one could better think in terms of a “state capabilities continuum” (Boehner and Young, 2012).

Given the highly multi-dimensional and complex nature of the concept of fragility applied to states, the measurement issue is of paramount importance. Here again there are many indicators of state fragility. Arguably the most comprehensive and relevant ones are i) the Fragile States Index (FSI) put out by the Fund for Peace (FFP); and ii) the State Fragility Index (SFI) produced by the Center for Systemic Peace.

Next we provide a brief description of these indicators before using them in this study. The FFP-FSI Index is constructed on the basis of twelve indicators consisting of four social components (demographic pressures, refugees and internally displaced persons, group grievance, and human flight and brain drain); two economic indicators (uneven economic development and poverty and economic decline); and six political indicators (state legitimacy, public services, human rights and rule of law, security apparatus, factionalized elites, and external intervention). Each of the twelve indicators above is derived from a number of sub-components. For example, the rating composite score of *uneven economic*

¹ Cited on 1 September 2016.

development is derived from a whole set of sub-components² as is that of “*poverty and economic decline*”³. Scores are obtained through a hierarchical process from the most detailed and specific criteria to sub-components, to components and, finally, to a highly aggregated scalar composite index.⁴ Each of the twelve main components of the FFP-FSI is scored between 0 (best) and 10 (worst), with a higher number indicating a higher level of fragility. The scores of the twelve components are added together to obtain the composite index – so that the range of the FFP-FSI is from 0 to 120 (from least to most fragile).

While the process needed to generate the FFP-FSI index is not transparent and is essentially arbitrary in its choice of components and sub-components, as well as in its (equal) weighting of the components, it provides useful information on fragility for almost 180 countries on a continuous annual basis over the period 2005-2016. The very wide coverage of factors correlated with fragility makes this index very comprehensive.

The second Indicator of fragility we propose to use is the Center for Systemic Peace's State Fragility Index (SFI). The Fragility Matrix scores each country on both Effectiveness and Legitimacy in each of four performance dimensions: Security, Political, Economic, and Social⁵. The State Fragility Index, then, combines scores

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Group-based inequality, or perceived inequality, in education, jobs, and economic status can create uneven commitments to the social contract within a state. Measurements include group-based poverty and education levels, existence of slums, and fairness of housing and hiring practices.

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Progressive economic decline of the society as a whole (measurements: per capita income, GNP, economic deficit, unemployment, poverty levels, business failures, and inflation) strains a state's ability to provide for its citizens, and can create inter-group friction. Also includes failure of the state to pay salaries of government employees and armed forces, or to meet other financial obligations to its citizens, such as pension payments.

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According to Wikipedia “Scores are obtained via a process involving content analysis, quantitative data, and qualitative review. In the content analysis phase, millions of documents from over 100,000 English-language or translated sources (social media are excluded) are scanned and filtered through the Fund for Peace's Conflict Assessment Systems Tool (CAST), which utilizes specific filters and search parameters to sort data based on Boolean phrases linked to indicators, and assigns scores based on algorithms

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Each of the Matrix indicators is rated on a four-point fragility scale: 0 “no fragility,” 1 “low fragility,” 2 “medium fragility,” and 3 “high fragility” with the exception of the Economic Effectiveness indicator, which is rated on a five-point fragility scale (including 4 “extreme fragility”).

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on the eight indicators and ranges from 0 “no fragility” to 25 “extreme fragility.” A country’s fragility is closely associated with its state capacity to manage conflict; make and implement public policy; and deliver essential services, as well as its systemic resilience in maintaining system coherence, cohesion, and quality of life; and its ability to respond effectively to challenges and crises, and sustain progressive development. The SFI and the Matrix showing the scores for effectiveness and legitimacy (and their components) is available annually from 1995 to 2014 for up to around 170 countries. The same critique of lack of transparency and relative arbitrariness in the selection and scoring of components applied to the previously described FSI indicator also applies to the SFI indicator.

While the FSI and SFI differ somewhat in the choice of factors correlated with fragility and even more so in their scoring and aggregation methodologies, their domain and coverage overlap significantly.

3. Identifying Degrees of Fragility

Next, in this section we use these two indicators to identify and analyze fragile states in SSA. First we focus on patterns of fragility for the latest available year, looking especially at Sub-Saharan African countries while briefly also considering countries from other regions. Following this we examine trends over time.

Table 1 shows the 30 most fragile states in the world in 2016 according to the Fragile States Index for 2016 based on a total of 178 countries, reporting also the detailed components of the index. In this year 6 of the worst 10 countries world-wide were in SSA, as were 21 of the top 30 and 32 of the top 50. This highlights that SSA is very disproportionately represented among the world’s most fragile states. Only six African countries do not number among the most 100 fragile countries in the world (Cape Verde, Namibia, Ghana, South Africa, Botswana, Mauritius).

Table 1 here

The most fragile SSA states in 2016 are Somalia, South Sudan, Central African Republic, Sudan, Chad and Democratic Republic of Congo. The first four in particular score very badly across almost all indicators. These countries suffer

from periodic open conflict and/or political instability. Chad and DR Congo, the other countries in the top 10 fare better in one or two indicators, but are otherwise not that much better.

The last column of Table 1 shows the ranking of the 30 most fragile states worldwide in 2006, the first year for which the index covered this number of countries. In that year SSA accounted for 6 of the worst 10 fragile countries and 17 of the worst 30, suggesting that over this period countries outside SSA may have done relatively better at reducing their fragility. But there is still a high degree of consistency in the general ranking of countries over the period; 19 of the 30 most fragile countries in 2006 still feature among the 30 most fragile countries in 2016. And six of the top 10 in 2006 still featured in the top 10 in 2016, the exceptions being Côte d'Ivoire, Iraq, Zimbabwe and Pakistan.

An interesting and revealing observation that can be derived from Table 1 is the high inter-correlation among the 12 components of the FSI indicator within most of these fragile countries (thus, for example, in Somalia all the 12 components' scores are between 9 and 10). This would suggest that, generally speaking, political, social and economic fragility are strongly interrelated and associated.

Table 2 focuses exclusively on SSA countries and shows changes in the Fragile States Index between 2006 and 2016. What this table immediately reveals is that many more SSA countries have had worsening scores for the State Fragility Index than have had improving scores. Only 9 countries have shown a reasonable degree of improvement in the absolute values of their scores over this period, 12 have shown relatively little change, while 28 have shown significant worsening. Eight indicated an increase in their index values of more than 10 points over this period. None have improved by more than 10 points over this period.

Table 2 here

Among the eight countries showing large worsening in fragility are cases like Central African Republic, Eritrea and Mali where increasing conflict or serious political instability over the period are obvious explanations. But in other cases like Senegal and South Africa the explanations are much less obvious.

We now turn to a brief analysis and discussion of fragility based on the *second* composite indicator, the State Fragility Index, which is available for a longer period but is currently only available up to 2014. Table 3 lists the 31 states with

the highest degrees of fragility according to this measure. What is remarkable is that 27 of these states figure in the top 31 list of the previously discussed FSI fragility indicator, and the two indicators agree on eight of the top nine most fragile states. The fact that two different indicators using essentially similar correlates of fragility but different methodologies yield such similar results increases one's confidence in the robustness of these indicators in capturing the essence of fragility.

Table 3 here

4. Fragility and its Correlation with Development Outcomes in SSA

A key issue is the extent to which and how fragility impacts on the process of economic development and vice versa. As will be discussed subsequently the interrelationship between development and fragility is circular.

Underdevelopment breeds fragility and fragility impedes development. In this section we proceed to estimate simple correlations between indicators of fragility and indicators of development outcomes, before attempting later in the paper to break through the above circularity and suggest some plausible causal channels in the subsequent sections.

As noted above the Fund for Peace FSI measure included among its components demographic pressures⁶, uneven economic development and economic decline. While these can be considered as aspects of fragility, they can also be thought of as being direct consequences of fragility and *development outcomes*. For this reason we have sought to construct an alternative measure of fragility using the FSI index excluding these three components. We therefore construct an alternative measure of fragility (denoted as FSI*) as the sum of the other nine components⁷ (see Table 1 for the list of the 12 components of the FSI aggregate

⁶ The "Demographic Pressures" component is built on and includes measures related to natural disasters, disease, environment, pollution, food scarcity, malnutrition, water scarcity. Population growth, youth bulge and mortality. "Uneven economic development" includes measures of inequality, access to services and living in slums among others; and "Economic decline" includes measures of debt, deficits, unemployment, growth and inflation, among others.

index). In this way we can consider the correlation between the sum of these other nine aspects of fragility (FSI*) and development outcomes.

Figure 1 shows a kernel density plot of this fragility measure (FSI*) based on the 46 sub-Saharan African countries for which it can be constructed; and Table 4 classifies these sub-Saharan African countries into quartiles based on this amended fragility index. In the Table countries are listed in each column in increasing order of fragility; Tanzania is the least fragile and Guinea Bissau the most fragile.

[Figure 1 around here]

The figure shows significant variation in the fragility measure FSI*, and the classification of countries by this measure of fragility makes intuitive sense in most cases, with highly fragile countries including Central African Republic, Democratic Republic of Congo, Somalia and South Sudan, while countries like Ghana, Mauritius and South Africa are in the least fragile quartile.

[Table 4 around here]

For the same 46 countries we now consider the association between the FSI* and different measures of economic development taken from the most recent round of the World Development Indicators. We analyze the association between fragility (FSI*) as measured in 2014 and the following variables: per capita income in 2014 (expressed in 2005 US dollars); recent growth of per capita GDP and its volatility; and similar measures of each of the following development indicators: poverty, inequality, infant and child mortality, incidence of stunting and underweight, literacy rates and enrollment rates at primary and secondary school. Table 5 reports the precise variables chosen and the time period considered. In the case of growth and its fluctuations (measured by the standard deviation) we consider measures over both a five and fifteen year period up to the year for which the fragility measure is available; for the education variables and mortality we consider averages over the 2010-14 period; and for the poverty, inequality and malnutrition data where observations are less frequent we consider averages over the 2006-14 period to try to have as many observations as possible.

These nine components consist of three social indicators (refugees and internally displaced persons; group grievance, human flight and brain drain); and six political indicators (state legitimacy, public services, human rights and rule of law, security apparatus, factionalized elites, and external intervention).

[Table 5 around here]

Table 5 then reports the correlation coefficients between each of these development indicators and our fragility measure (FSI*), as well as their statistical significance and the number of observations on which this calculation is based. The main results can be summarized as follows. Fragility has a very strong negative correlation with the constant price dollar values of per capita GDP, as also seen in the scatter plot in Figure 2; more fragile countries have significantly lower levels of per capita GDP⁸. Fragility is negatively correlated with the average growth rate of per capita real GDP, which is significant over the fifteen year period but not the five year period. There is also a strongly statistically significant positive correlation between fragility and the standard deviation of per capita GDP growth, as shown in Figure 3. Fragility tends to be associated with lower growth rates than average, but much more strikingly it is associated with substantially higher growth volatility. The outliers in the top right of the diagram are Central African Republic and South Sudan, which show even higher levels of volatility than might be implied by the very high values of their fragility measures.

[Figure 3 around here]

There is a large and strongly significant association between fragility and higher levels of infant and child mortality, as also shown in Figure 4 for the case of under five mortality. This figure shows a relatively good fit between the measure of fragility and this measure of mortality and the correlation coefficient is high; more fragile states clearly show worse outcomes for children. Furthermore there is also a large and statistically strongly significant association between fragility and higher levels of the two measures of malnutrition considered here.

[Figure 4 around here]

In relation to poverty and inequality only a smaller number of observations is available. Surveys to measure poverty and inequality are conducted relatively infrequently in most countries, and a number of countries do not have any poverty or inequality measures available at all. These countries without poverty and inequality measures are frequently the most fragile states (e.g. Somalia) who frequently lack the capacity and institutions to be able to collect data. By

⁸ The outlier in Figure 2 which is a rather exceptional case. It has a very high per capita GDP value while at the same time being a quite fragile country.

considering any estimates of poverty and inequality available between 2006 and 2014 we were able to obtain poverty and inequality data for 36 of the 46 countries. For inequality we use the Gini coefficient, for poverty we consider values relative to the World Bank's international poverty lines of \$1.90 and \$3.10 in purchasing power parity values. Figures 5 and 6 show scatterplots of the Gini coefficient and the poverty headcount relative to the \$1.90 line.

[Figure 5 around here]

[Figure 6 around here]

The relationship between income inequality and fragility appears tenuous. Figure 5 reveals a wide scatter with no significant correlation shown between inequality and fragility; countries with low levels of fragility, such as Botswana, Namibia and South Africa (the three countries in the upper left side of the plot), often also have high levels of inequality. There is no evidence from this data or plot that more fragile countries are more unequal. In contrast we find a significant positive association between fragility and levels of poverty. Figure 6 shows this for both the headcount ratios at the \$1.90 poverty lines. A similar correlation exists between fragility and the poverty gap index as well as these measures for the \$3.10 line. On average fragile countries have higher levels of poverty, though there is quite a wide scatter about the line. And this is the case even though a number of fragile countries are not included in this analysis for lack of data.⁹

Finally we consider education, where again there is a strongly negative association between fragility and literacy levels as well as with enrollment, especially at secondary levels as shown in Figure 7 (the pattern for primary education is quite similar). More fragile countries have much poorer rates of educational attendance and much poorer educational outcomes. These low levels of education can of course also be important contributory factors to current and future fragility.

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Incidentally, we also ran a cross-sectional regression between within SSA countries' *changes* in poverty incidence (as measured by the headcount ratio) and *changes* in fragility over time. The correlation coefficient was close to zero showing no correlation. We suspect that the World Bank Povcalnet data set may not reflect accurately *changes* in poverty incidence—particularly changes over short periods.

[Figure 7 around here]

Almost all of the correlations considered here show a strong association between greater levels of fragility and higher levels of deprivation. We define deprivation here as individuals being poor in one or more of the various dimensions of poverty such as nutrition, health, income, and education. In each country setting thresholds can be established for each of these dimensions below which an individual is considered poor. This is seen in the above figures with lower income levels (as well as in slower and especially more volatile growth) being correlated with greater fragility; it is also seen in worse outcomes in almost all the dimensions of poverty considered here: child mortality, child malnutrition, monetary poverty levels and depth and educational outcomes. Some of the scatterplots also show a very close association between fragility and poorer development outcomes, for instance in relation to child mortality or secondary education. With the income poverty headcount measure there is perhaps more variation, though this is a more select sample and is also an indicator which is more difficult to compute on a comparable basis across countries. Of course these associations do not allow conclusions to be drawn about causality; but it is quite clear that higher levels of fragility in countries are associated with worse development outcomes across the board.

In this section we have been able to obtain data on a number of variables for both more and less fragile countries. But it is in relation to the key variables of poverty and inequality, at the heart of this paper, that the challenge is particularly severe. More specifically, information on income inequality and poverty depends crucially on well-designed household surveys. Most African countries only run those surveys sporadically if at all. Collecting data on the consumption and income of households is particularly challenging in fragile states that typically have weak institutions and often lack independent and professional statistical offices. Furthermore, data collection is particularly difficult in environments affected by conflict or social instability. The absence of reliable and continuous data series in more fragile environments is therefore hardly surprising. Even in the cases where the estimates of poverty and inequality exist in such environments, their quality is likely to be more questionable than in well-functioning states. The greater shortage of estimates available for multiple years in more fragile settings, such that one can assess changes and trends over time, is a serious handicap in any

attempt to compare rates of poverty reduction in more or less fragile environments.

Given this situation, a more promising way to learn lessons about how fragility interacts with changes in poverty and inequality may be by focusing on country case studies, looking at countries which emerged from fragility as well as countries which descended into fragility. Quite a few SSA countries have emerged from a past of moderate or extreme fragility (e.g. Ghana, Mozambique, Rwanda and Uganda), while others which were previously stable fell into fragility or outright civil war (e.g. Côte d'Ivoire, Democratic Republic of Congo). Here we focus on a comparison between the evolution over a longer period of time of Côte d'Ivoire and Ghana, the former a case of a formerly stable country which descended into fragility and conflict, the latter a previously very fragile country which achieved stability and generally impressive development outcomes.

In the 1960s and 1970s Côte d'Ivoire was considered a model of stability and progress in SSA, at a time when many other countries were highly fragile. Felix Houphouët-Boigny, who became president at Independence in 1960, played a very important role in maintaining the internal stability of the ethnically and religiously diverse country, maintaining close political relations with different groups within the country as well as keeping close relations with France, the former colonial power (Cogneau et al, 2016). The former contributed to political and social stability; the latter resulted in significant inflows of foreign aid; and this plus the expansion of growing of cash crops, notably cocoa, in a period when world prices were favorable, resulted in a strong economic performance. With the collapse in cocoa prices, starting at the beginning of the 1980s, the economic situation deteriorated substantially, requiring the country to undertake a series of structural adjustment programs in the 1980s. The economy was in serious decline in the late 1980s and early 1990s, but Houphouët-Boigny still won the first multi-party election in 1990. His death in late 1993 enabled the devaluation of the CFA franc in January 1994 which provided a temporary boost to the economy; but his death also broke the previous political alliance between the Centre-South and the North of the country which had underlain the stability of the previous regime. The country descended into an erratic civil war, taking place at different periods and at different degrees of intensity in the interval 1998-2012; and the country was effectively split into two along north-south lines between 2002 and 2008.

Cogneau et al (2016) studied the evolution of poverty over the 1988-2008 period based on available household survey data. Poverty substantially increased from an estimated national headcount of 0.24 in 1988 to 0.49 in 1993; it fluctuated over the period between 1993 and 2008, but reached particularly high levels in the conflict affected years of 2002 and 2008. Even if it is more difficult to measure poverty in situations of extreme instability, the Côte d'Ivoire experience shows that fragility is clearly associated with higher and increasing levels of deprivation compared to more stable situations.

Ghana between 1965 and 2010 provides an opposite example. This is a country which experienced extreme political, and associated economic, instability between 1965 and 1981, and then gradually moved to greater economic stability by the end of the 1980s after which it made a democratic transition, experiencing its first multi-party election in 1992.

The highly influential post-Independence leader in Ghana, Kwame Nkrumah, was deposed in a coup in 1966; following this there was a period of extreme instability with eight governments (several military) between 1966 and when Flight Lieutenant Jerry Rawlings took power for the second time in December 1981. There are no poverty data available over this period (there were few poverty measures anywhere at this time), but the GDP per capita data give a very clear picture; apart from a couple of very short lived upturns in the 1970s, there was almost consistent decline over this period. Per capita GDP in 1981 was more than 20% below where it had been in 1966. The country was then hit by severe droughts over the 1981-83 period, and had to adopt an initially very unpopular, comprehensive Economic Recovery Program with the IMF and World Bank from 1984 onwards. But this program and/or the substantial aid flows which accompanied it succeeded in turning the corner for Ghana; since 1984 the country's per capita GDP has risen consistently every year.

After all the instability that preceded him, Jerry Rawlings was then president of Ghana from the end of 1981 to 2000. For the last eight years of his term he was a democratically elected leader, winning the first elections in 1992 and 1996. The economic progress over this period was no doubt an important factor behind this stability. But in addition Ghana has many of the same ethnic diversity and especially north-south issues as neighboring Côte d'Ivoire, and the government needed to ensure benefits across the country. Ghana has a long history of seeking

to include representatives from the north and from the south in significant roles, and Rawlings certainly continued this policy. He also invested significantly in rural areas, for instance through a widespread electrification program.

Democracy was also strongly consolidated over this period and became very popular. Rawlings chose not to stand in the 2000 election; but in that year and again in 2008 Ghana has had two peaceful changes in the governing political party through democratic elections. Economic progress has continued consistently since then, even if the recent discovery and extraction of oil off the coast introduces new challenges.

This period of economic progress from 1984 has also been a period of strong poverty reduction. Without doubt poverty increased over the period of instability from 1966 to 1981 given that per capita GDP fell sharply; but there is plenty of evidence of sharp falls in poverty since at least 1987/88 to date. An emergence from fragility (even if not in this case open conflict) to stability has been associated with strong poverty reduction; poverty fell by more than half between 1991/92 and 2012/13.

These examples suggest a sharp association between fragility and poverty increase, as seen for Côte d'Ivoire, and also in the case of Ghana between a recovery of stability and impressive poverty reduction. Other examples can of course be given. The case of Ghana shows also that stability is not just about having the same political leader; Ghana is rather a case where stability is based on a popular democracy. In both cases institutions played a key role in maintaining the periods of stability, as issue we will revisit later in the paper.

5. The Interrelationship among Growth, Inequality and Poverty

Poverty reduction is widely recognized as the key development objective. Given the analysis of the previous section, this is potentially an especially pressing issue in more fragile countries given the generally higher levels of deprivation in such environments. Internationally and in SSA specifically, there is extensive evidence of a strong association between economic growth and poverty reduction, mediated by the extent of inequality and its changes over time. The tendency

seen above of more fragile states to have potentially slower, and almost certainly more volatile, economic growth, may have important implications for the extent to which they may be able to achieve consistent poverty reduction.

In reality the causality linking economic growth, poverty reduction and inequality is complex. In a recent article, Thorbecke and Ouyang (2016) consider two main channels linking growth and poverty reduction. They explore two different nexuses; the Growth-Inequality-Poverty (G-I-P) nexus and the Poverty-Inequality-Growth (P-I-G) nexus. In the first case the causality goes from growth to poverty (and inequality) and in the second case causality goes from poverty to growth (and inequality). Economic growth shapes the level of poverty reduction a country is able to achieve, depending also on inequality (an issue discussed by Bourguignon, 2003, in terms of a poverty-growth-inequality triangle); but the extent of poverty can also shape the rate and the structure of subsequent growth a country is able to achieve. Starting with the G-I-P nexus, Thorbecke and Ouyang consider how a country's development strategy combined with the effects of globalization influence the level and distributional pattern of growth which a country is able to achieve, which in turn affects poverty reduction. More equal and inclusive patterns of growth generate faster poverty reduction, other factors being equal. The poverty reduction resulting from different levels and patterns of growth has been extensively studied in a wide literature looking at pro-poor growth, inclusive growth and shared growth.

Next they focus on the P-I-G nexus and investigate the reverse causality, i.e. how initial poverty and a change in the incidence of poverty are likely to affect the future pace and structure of growth a country is able to achieve. In particular high levels of poverty, which may be associated with low levels of human capital and with the presence of poverty traps of various forms may limit the subsequent achievable pace of growth. The underlying arguments for this are well surveyed by Duclos and O'Connell (2015), but, in addition, draw on a wide literature among which Perry et al (2006) was an early contribution. Empirical evidence in support of this relationship between initial poverty and subsequent growth has been provided by Lopez and Serven (2009) and Ravallion (2012) among others. They do report evidence that higher levels of initial poverty have an adverse effect on future growth. These are essentially poverty trap arguments where the very fact of being poor limits to factors which would be important for growth.

Thorbecke and Ouyang revisit these issues in the specific context of sub-Saharan Africa, estimating cross country models for both the impact of growth and inequality on changes in poverty; and for the impact of poverty on growth. These relations were estimated based on cross country data from the World Bank's Povcalnet data sets covering the 1987-2006 and 1986-2012 periods. They estimate and compare the results of regressions models run specifically on a SSA sample of countries with a sample covering the whole developing world. For the G-I-P case they find that in the earlier period both the growth and inequality elasticities of poverty reduction for SSA were substantially lower than for the developing world as a whole; both growth and inequality were less effective in translating into poverty reduction than was the case elsewhere in the developing world. But in the later period they found that not only were growth rates higher but the growth and poverty elasticities were now also significantly higher (though still lower than for the developing world as a whole). They interpret this result as reflecting a significant structural break in the structure of growth dating back to around 2000, after which the pace of GDP growth per capita increased markedly and the pattern of growth became somewhat more inclusive as reflected by a significant fall in the poverty headcount ratio.

In terms of the P-I-G relationship, Lopez and Seven found that higher poverty headcounts were associated with lower subsequent per capita income growth. Ravallion argued that there is a lack of poverty convergence between countries (in spite of convergence in income or consumption) again because initial poverty limits later income growth (as well as reducing the growth elasticity of poverty reduction). But when Thorbecke and Ouyang estimate the model specifically for SSA, they do not find a significant impact of poverty on growth there, although they too find a negative result for the developing world as a whole. If these results can be further confirmed they suggest that SSA differs from the rest of the developing world in that initial poverty did not necessarily dampen subsequent growth in this region during 1978-2007 while it did in the rest of the developing world during the same time period. In fact, SSA countries with the highest initial poverty incidence appeared to grow subsequently faster --- leading to poverty convergence. The same finding was further confirmed at the interregional level in Ethiopia and to a lesser degree in Rwanda by Shimeles *et al* (2016). One possible explanation for this poverty convergence in SSA, might be that anti-poverty interventions by governments and foreign public and private aid were selected to be inversely proportional to the depth of poverty.

To summarize there is evidence that in SSA: (i) growth rates have increased since 2000; (ii) growth has become more effective at translating into poverty reduction; and (iii) high initial poverty incidence does not necessarily put a damper on future growth. They argue though that pro-growth poverty reduction strategies, for instance social protection, can play a key role in both accelerating growth and enabling a more inclusive pattern of growth as discussed in section 7.

6. How Can the Vicious Circle between Fragility and Under-Development Be Broken?

It is clear that the interrelationship between fragility and the state of development as captured by the Growth-Inequality-Poverty nexus and the Poverty-Inequality-Growth nexus is strongly circular. A fragile state and civic environment tends to impede growth and encourage a more exclusive than inclusive growth pattern. At the same time, a country suffering from low and stagnating growth, high income inequality (a skewed income distribution), high poverty incidence and overall deprivation is fertile ground for an unstable, if not, failing state and civil conflicts. The variables (components) of fragility and the variables reflecting development appear to be jointly and endogenously determined. The issue we explore in this section is whether, and to what extent, this circular bi-causality can be broken and some uni-directional causal channels suggested. This question is essential in any attempt to recommend policy interventions. As will be discussed and made clearer subsequently, the issue that needs to be addressed is how some exogenous intervention can break the vicious circle between fragility and under-development.

Before embarking on this search for some exogenous trigger mechanism that could jointly reduce fragility and contribute to a more inclusive growth, it is important to recall a key finding discussed in section 3 that the great majority of the more fragile states display a high inter-correlation among the 12 components of the FSI aggregate fragility indicator. A quick look at Table 1 shows that the 30 worst performers scored typically between 8 and 10 across the 12 fragility components on a scale from 0 (best) to 10 (worst). This implies, of course, a societal collapse across all dimensions – political, social and economic.

Figuratively such a country might be compared to a building standing on quicksand. A strong case can be made that the only solution consists of building an institutional foundation to provide the necessary stability.

Indeed there are two strands (approaches) to the literature on fragility that argue convincingly that the lack of appropriate institutions is the predominant cause of fragility. The first approach is quantitative and attempts to identify the major proximate causes of fragility and disentangle as much as possible the inherent endogeneity between fragility and development in order to suggest some causal channels to break the vicious circle. The second approach is conceptual relying largely on historical experiences of the process of development in different settings over the long run and learning from both countries that were successful and unsuccessful in their development patterns.

We start by summarizing briefly the first approach. Bertocchi and Guerzoni (2010) provide a useful review of this literature and even more importantly undertake a thorough quantitative analysis of the determinants of state fragility in SSA. They use a data set consisting of 41 SSA countries comparing performance over two sub-periods (1992-1999 and 2000-2007). They run a large number of regressions on a dummy dependent variable taking the value of 1 if a country is fragile and 0 otherwise. They consider a large number of economic, demographic, historical, ethnic fractionalization and institutional regressors that could potentially have affected fragility. After running multiple regressions they conclude that: “institutional variables are the key determinants of fragility: the probability for a country to be fragile decreases with the level of civil liberties and increases with the number of revolutions” (p. 6) and “To sum up, after controlling for omitted variables and endogeneity, we find that institutions prevail on economic factors as the central drivers of fragility in Africa” (p. 6). A unidirectional causal link from institutions to fragility was the main finding of the above study. Thus, the essential implication here is that institutions could potentially provide the exogenous trigger mechanism or lever to break the vicious circle linking fragility and depravation. Two issues inherent in the above work that need to be clarified further are (i) the limited definition of institutions (civil liberties and revolutions) that give little operational guidance with respect to the specific forms that institutions should take in a fragile country to provide the institutional framework and foundation necessary to initiate an inclusive growth and development

process; and (ii) the binary nature of the dependent variable (fragile or non-fragile) that requires an arbitrary cut-off and loses useful information on the degree of fragility. These questions are addressed in the next section.

The second approach to the relation between fragility and development includes a vast literature in political science and economics and draws on historical case studies and theoretical models of functioning states. This approach is best exemplified by the influential work of Acemoglu and Robinson (2012) who make an extremely compelling and convincing case, based on a myriad of historical episodes world-wide, that growth (and, more generally development) can only be sustained in the long run if it is anchored on and supported by inclusive political and economic institutions. Central to their theory “is the link between inclusive economic and political institutions and prosperity. Inclusive economic institutions that enforce property rights, create a level playing field, and encourage investments in new technologies and skills are more conducive to economic growth than extractive economic institutions that are structured to extract resources from the many by the few and that fail to protect property rights or provide incentives for economic activity.” (Acemoglu and Robinson, 2012, p. 430).

The tragedy of Africa according to them is that independence rather than creating a critical juncture for improvements in the highly extractive colonial institutions in place, created an opening for unscrupulous leaders to build on and intensify further the prevailing extraction process. The end of the Colonial period left SSA with a vacuum of inclusive institutions.¹⁰ To complement this, Herbst (2000) also presents a strong and highly relevant analysis of the immediate post-colonial environment in Africa.

Other tenets of Acemoglu and Robinson’s thesis are that there exists a virtuous circle between inclusive political institutions and economic institutions. For example under inclusive economic institutions, wealth is not concentrated in the hands of a small group that can use that power to obtain greater political power and vice versa.

It was seen earlier that of all SSA countries, Botswana, by a long shot, displayed the best aggregate FSI fragility score. It is revealing that Acemoglu and Robinson (2012) focused on this extreme outlier within SSA to capture some of the

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These last two paragraphs are taken from Thorbecke (2014).

institutional features that provided the foundations for the Botswana miracle as the following quotations indicate: “At independence Botswana was one of the poorest countries in the world;...Botswana would become one of the fastest growing countries in the world...How did Botswana break the mold? By quickly developing inclusive economic and political institutions after independence.....Botswana had some amount of state centralization and relatively pluralistic tribal institutions that survived colonialism....Botswana had its coalition in favor of secure property rights, the Tswana chiefs, and elites who owned the major assets in the economy, cattle. Even though land was held communally, cattle was private property in the Tswana states, and the elites were similarly in favor of well-enforced property rights.” (pp. 409-10)

“The first big diamond discovery was under Ngwato land, (chief) Seretse Khama’s traditional homeland. Before the discovery was announced, Khama instigated a change in the law so that all subsoil mineral rights were vested in the nation, not the tribe. This ensured that diamond wealth would not create great inequities in Botswana.’(p. 412)

The examples of Côte d'Ivoire and Ghana discussed above also highlight the importance of inclusive political institutions in underlying their periods of stability, and the absence of such institutions being associated with fragility.

Bates (2008a and b) also presents a careful analysis of the role of institutions in influencing state fragility which also supports these arguments; and Bates et al (2013) argue that institutional reform can result in productive changes in SSA, the argument which this paper now turns.

7. Examples of Poverty-Reducing and Productive Institutions to Combat Fragility

We saw in section 5 that poverty reduction per se can contribute to a more inclusive growth pattern. By intervening directly on alleviating poverty, the P-I-G nexus can be transformed into a virtuous circle or spiral. A case for a *pro-growth poverty reduction strategy*, in addition and complementary to the previously discussed *pro-poor growth strategy*, can be made on the grounds already mentioned above that there are multiple channels through which the existence of

poverty acts as a major obstacle to growth. Many poor households are caught in a variety of poverty traps. Breaking at least some of these traps can unleash the potentially productive forces of the poor. The underlying logic of a *pro-growth poverty reduction strategy* is that by attacking poverty directly and reducing it, some major constraints on the behavior of the poor will be removed. They will be better able to acquire more education and skills, invest in their farms and informal activities and adopt riskier but, on average, more productive technologies. Policies and institutions alleviating poverty directly can engender a virtuous spiral bringing about a faster and more inclusive growth structure as Figure 8 illustrates (see Thorbecke, 2014, for a comprehensive case in support of a *pro-growth poverty reduction strategy*).

In section 6, it was argued that inclusive political and economic institutions were the main drivers to reduce fragility and provide the foundations for a stable and sustainable development process. The question that needs to be addressed at this point is whether there are specific institutions that are both (i) poverty-reducing and productive; and (ii) potentially transferable to conform to the African initial conditions and settings. A number of comprehensive evaluations of social protection programs and labor schemes (SPLs) have unambiguously answered the question affirmatively (Alderman and Yemtsov, 2013; World Bank, 2012; FAO, 2012) and given many examples of productive SPLs. In answer to the second question, Thorbecke (2013) provides an extensive list of already successful inclusive institutions in some African countries and additional institutions that proved to have contributed to poverty reduction and productive growth in Asia and Latin America and that could be transplanted and adapted to the special conditions prevailing in SSA. These institutions can be grouped into three areas: small scale agriculture, infrastructure and social protection schemes. Next we provide very briefly some selective examples of potentially transferable institutions based on Thorbecke (2013).

Since many SSA countries are still at an early development stage characterized by small subsistence farms, raising agricultural productivity is a key to any take-off and structural transformation is the pathway to moving out of stagnation and poverty. Africa can learn much from the experience and early development history of Japan, Eastern and Southeastern Asian countries. For example the multipurpose farmers' associations in Taiwan were very successful from the mid 1950's to the mid 1970's in raising the bargaining power of small farmers when selling their products and buying inputs. These associations were an important

arm of the *Joint Commission on Rural Reconstruction (JCRR)* that operated as a kind of super Ministry of Agriculture. Other functions of the JCRR included research on new varieties and improved practices suited to the local environment disseminated to these farmers' associations by extension agents, the provision of supervised credit, training and vocational education. The above experience and similar ones in South Korea, Indonesia and other Asian countries suggest strongly that the current agricultural strategy in SSA countries be designed and implemented in a more centralized and coordinated fashion under the authority of an institution that has control over many instruments such as research, extension, credit, insurance and rural infrastructure. The major impact of such an institution would be to boost agricultural productivity and provide new skills to farm households and thereby contribute to a more successful structural transformation and labor migration out of agriculture. There has been significant recent progress in this area in Ethiopia for example.

A relevant and key question to the potential transferability of the type of institutions described above is whether SSA countries have the administrative capacity to modify them to conform to the specific settings of their countries and implement them. In this connection the experience of the Bangladesh BRAC program in Uganda (BRAC, 2010) is instructive. The main goal of BRAC within agriculture is to raise the productivity of the small scale subsistence farmers "by encouraging them to forgo rudimentary traditional practices through: training and access to information on crop production; providing credit services through the BRAC microfinance program; and supplying high quality inputs- disease resistant seeds, fertilizers and pesticide...; and introducing technology-enabled farming (low lift pumps, power tillers etc." (BRAC, 2010, pp. 27-8). Furthermore, BRAC recruits 'model farmers" as demonstration unit to influence less productive farmers. This kind of model of technical and institutional assistance where a more advanced country (or foundation) provides the technical know-how and some of the funding can greatly facilitate the process of institutional building.

Another area which is crucial and complementary to a faster and more successful structural transformation is the provision of adequate physical infrastructure particularly in the rural areas. Improved farm to market roads, for example, can reduce significantly transportation, and more generally, transaction costs incurred by farmers and traders. A successful institution is Ethiopia's *Productive Safety Nets Program (PSNP)* that, among others, made major contributions to public works such as road building and rehabilitation. The PNSP is one of the largest

social protection interventions in Africa reaching eight million Ethiopians in 2011. There is persuasive evidence that public works in Ethiopia have contributed to: i) a large scale network of rural roads and other physical infrastructure; ii) the protection and improvement of household level food security; and iii) asset security and new household asset formation.

A third area in which institutions can make a major contribution to reducing poverty and fragility is that of social protection schemes. An important distinction is between unconditional and conditional grants. *Unconditional* cash transfers typically benefit vulnerable groups such as older people and children. The *Old Person Grants* and *Child Support Program* in South Africa are both based on unconditional cash transfers. There is strong evidence that these schemes have not only contributed to improving the well-being of the recipients but also had a positive impact on production and inclusive growth. Some of the more developed countries in SSA might consider experimenting with some variants of these programs.

But, potentially, *conditional* cash transfers, that are currently rare in the context of SSA, could play an even more crucial role in reducing poverty and building human capital. Such schemes as *Oportunidades* in Mexico and *Bolsa Familia* in Brazil have had much success in reducing poverty. The former was designed to target poverty by providing cash payments to families conditional on their children attending school regularly, health clinic visits and learning more about nutrition. More than one quarter of Mexico's population participates in *Oportunidades*. The design and coverage of *Bolsa Familia* is essentially similar. Both of these programs are prime examples of pro-growth poverty reduction institutions in that the initial area of intervention in the P-I-G nexus is directly on poverty. Here again these schemes would need to be appropriately modified and adapted to the settings of the African countries in order for the transplant to be successful.

8. Summary and Conclusions

The main objective of this study was to investigate and understand better the state of fragility in SSA. The first step was to define fragility and identify indicators capable of measuring this concept and its evolution over time. We selected two such aggregate indicators: the Fragile State Index and the State Fragility Index.

While both of these indicators are (i) comprehensive in their choice of correlates of fragility and their almost universal coverage of countries; and (ii) available annually over fairly long periods, they suffer from a lack of transparency. Yet the fact that these two indicators based on different methodologies yielded very similar results strengthens one's confidence in the robustness of their capacity to capture the essence of fragility.

In section 3 we attempted to identify the most fragile states and changes in degrees of fragility over time, we found that the SSA region is disproportionately represented among the world's most fragile states and that the rest of the world has performed better than Africa at reducing its fragility over the last ten to fifteen years. Furthermore, there were more countries in the SSA region whose fragility performance worsened over that same period than countries in which performance improved. An interesting but hardly surprising observation is the high inter-correlation among the multiple components of the aggregate fragility indicators within the more fragile countries. The worst performers, such as Somalia, scored almost universally poorly on each of those components (twelve in the case of the Fragile State Index). This suggests that high fragility permeated all areas of society (social, political and economic) resulting in the breakdown of the state across all dimensions.

Next, we attempted to test quantitatively the relationship between fragility and development. As the aggregate Fragile State Index included a number of development outcomes such as "poverty and economic decline", we constructed an alternative measure of fragility excluding those economic variables. In turn, this alternative measure of fragility was regressed on a number of variables reflecting development outcomes (poverty, inequality, infant and child mortality, incidence of stunting and underweight, literacy rates and enrolment rates at primary and secondary school) based on a sample of 46 SSA countries in 2014. The main results of the cross-country regressions were as follows. Fragility was negatively correlated with per capita GDP and its average growth rate indicating that fragility tended to be greater in poorer and slower growing countries. Fragility was also strongly associated with growth volatility. Even more revealing for the present analysis is the high and typically significant correlation between fragility, on the one hand, and monetary poverty and human development indicators (such as infant mortality, malnutrition and school enrolment). The main

conclusion that can be drawn from the quantitative analysis undertaken in section 4 is that there exists a strong association between greater levels of fragility and greater degrees of deprivation. While the above results cannot tell us anything about causality, they infer that fragility and under-development are two sides of the same coin.

If poverty and fragility are intrinsically linked then it suggests that interventions that are successful in reducing poverty could also reduce fragility. The positive link between growth and poverty reduction has been thoroughly investigated and documented and has been at the heart of development strategies such as pro-poor growth and shared growth. The reverse link between poverty and subsequent growth has only recently become a focus of interest among researchers. A better understanding of this reverse link helps to clarify how interventions reducing poverty directly influence the pace and structure of growth and thereby the degree of fragility in a given country. Hence in section 5 we investigated the interrelationship among growth, inequality and poverty first at both the conceptual level and within the context of SSA. There is evidence that (i) growth has accelerated in SSA since 2000 and become somewhat more effective in translating it into poverty reduction; and (ii) high initial poverty incidence does not appear to dampen subsequent growth in contrast with the rest of the world. There appears also to be scope for measures that by focusing directly on alleviating poverty can help engender a more inclusive growth pattern and thereby combat fragility.

Given the inherent causal circularity between fragility and the state of development we explored how this vicious circle could be broken. The underlying idea was to search for an exogenous intervention that can simultaneously affect development and fragility favorably. Expressed in a technical sense the issue is to identify some exogenous intervention that can break the endogeneity by affecting fragility causally in a unidirectional way. Two approaches to the literature on fragility argue convincingly that the lack of appropriate institutions is the predominant cause of fragility. The first approach is quantitative relying on statistical regression analysis of a large number of potential determinants of fragility. One of the more comprehensive of these studies concluded that institutional variables are the key determinant and central drivers of fragility.

After controlling for endogeneity a unidirectional link from institutions to fragility was established.

The second approach to the relation between fragility and development is conceptual and draws on historical experiences. This approach is best exemplified by the work of Acemoglu and Robinson (2012) who make a compelling case, based on a myriad of historical episodes world-wide, including Africa, that growth (and development) can only be sustained in the long run if anchored on and supported by inclusive economic and political institutions.

In the penultimate section of this paper specific institutions are identified that are both (i) poverty-reducing and productive; and (ii) potentially transferable to the initial conditions and settings prevailing in SSA. These institutions are in three different areas: small scale agriculture, infrastructure and social protection schemes. The initiation of such institutions in SSA could be the exogenous trigger mechanism necessary to reduce poverty and fragility simultaneously and become part of a successful *pro-growth poverty reducing strategy*.

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Tables and Figures

Table 1: Thirty Most Fragile Countries World-wide in 2016 according to the Fragile States Index (each of the 12 individual components is scored between 0 (best) and 10 (worst))

Fragile States Index 2016	Total	Demographic Pressures	Refugees and IDPs	Group Grievance	Human Flight	Uneven Development	Poverty and Economic	Legitimacy of the State	Public Services	Human Rights	Security Apparatus	Fractionalized Elites	External Intervention	2006 ranking	
Somalia	114.0	9.7	9.7	9.4	9.5	9.3	9.0	9.5	9.0	9.7	9.7	10.0	9.5	1	Sudan
South Sudan	113.8	9.9	10.0	9.9	6.6	9.0	9.3	9.7	10.0	9.7	10.0	9.7	10.0	2	Congo, D.R.
Central African Republic	112.1	8.7	10.0	9.3	7.2	9.9	8.6	9.8	10.0	9.9	9.2	10.0	9.5	3	Cote d'Ivoire
Sudan	111.5	9.0	10.0	9.8	9.1	7.6	8.7	9.8	9.1	9.3	9.2	10.0	9.9	4	Iraq
Yemen	111.5	9.5	9.6	9.5	7.5	8.4	9.4	9.4	9.3	9.4	10.0	9.5	10.0	5	Zimbabwe
Syria	110.8	8.4	10.0	10.0	8.6	7.4	7.8	10.0	8.9	9.8	10.0	9.9	10.0	6	Chad
Chad	110.1	9.9	9.8	8.5	8.9	9.3	8.0	9.2	9.8	9.3	9.1	9.8	8.5	6	Somalia
Congo (D. R.)	110.0	9.1	9.7	9.7	6.8	8.9	8.1	9.3	9.7	10.0	9.2	9.8	9.7	8	Haiti
Afghanistan	107.9	9.5	9.5	8.6	8.4	7.5	8.5	9.1	9.6	8.7	10.0	8.6	9.9	9	Pakistan
Haiti	105.1	9.2	7.9	6.7	9.0	9.5	8.9	9.4	9.4	7.7	7.9	9.6	9.9	10	Afghanistan
Iraq	104.7	8.1	9.4	9.8	7.9	7.5	6.8	9.2	7.8	8.9	10.0	9.6	9.7	11	Guinea
Guinea	103.8	8.9	8.4	8.8	7.5	7.4	9.4	9.8	9.2	7.9	9.0	9.9	7.6	11	Liberia
Nigeria	103.5	9.1	7.7	9.4	7.4	8.8	7.7	8.8	9.4	9.1	9.7	9.9	6.5	13	Central African Republic
Pakistan	101.7	8.9	8.9	9.7	7.3	7.0	7.4	8.3	8.2	8.2	9.3	8.9	9.6	14	North Korea
Burundi	100.7	9.5	9.1	8.1	6.5	7.4	8.2	9.0	8.2	8.5	9.0	8.5	8.7	15	Burundi

Zimbabwe	100.5	8.6	8.7	7.5	8.1	8.2	8.3	8.9	8.5	8.4	7.8	9.8	7.7	16	Sierra Leone
Guinea Bissau	99.8	8.3	7.5	5.4	8.3	8.7	8.5	8.9	9.5	7.5	9.1	9.6	8.5	16	Yemen
Eritrea	98.6	9.1	8.5	6.6	8.0	7.5	8.3	9.5	8.6	9.1	7.4	8.1	7.9	18	Myanmar
Niger	98.4	9.5	8.0	7.7	7.2	8.2	8.0	7.8	9.2	6.7	8.9	8.9	8.3	19	Bangladesh
Kenya	98.3	9.1	8.0	9.1	7.8	8.0	7.4	7.8	8.2	7.2	8.5	8.9	8.3	20	Nepal
Cote d'Ivoire	97.9	8.2	8.0	8.3	7.0	8.2	6.8	8.1	8.7	8.1	7.7	9.4	9.4	21	Uganda
Cameroon	97.8	8.3	8.0	8.5	7.8	8.1	6.3	8.7	8.9	7.7	8.1	9.4	8.0	22	Nigeria
Uganda	97.7	8.7	9.1	9.0	7.6	7.6	6.7	8.3	8.5	8.0	7.3	8.9	8.0	22	Uzbekistan
Ethiopia	97.2	9.3	9.5	8.6	7.3	6.7	6.7	7.7	8.3	8.5	8.1	8.3	8.2	24	Rwanda
Libya	96.4	5.1	8.0	8.3	6.5	5.8	8.0	9.5	7.2	9.3	9.6	9.4	9.7	25	Sri Lanka
Myanmar	96.3	7.3	8.3	9.9	6.0	7.9	6.4	8.7	8.7	8.6	8.4	8.6	7.5	26	Ethiopia
Liberia	95.5	9.2	8.9	6.0	6.9	8.6	8.3	7.0	9.5	6.7	6.6	8.3	9.5	27	Colombia
Mauritania	95.4	8.9	8.2	7.2	6.6	7.0	7.9	8.2	9.2	8.1	7.1	8.8	8.2	28	Kyrgyzstan
Mali	95.2	8.7	8.1	7.9	8.7	7.6	7.9	6.3	9.0	7.0	9.2	5.2	9.6	29	Malawi
North; Korea	93.9	7.9	4.6	6.0	4.1	7.7	8.9	10.0	8.8	9.6	8.5	8.5	9.3	30	Burkina Faso

Source: Fund for Peace website <http://fsi.fundforpeace.org/>

Table 2: Frequency Distribution of Sizes of Changes in the Fragile States Index in Sub-Saharan Countries between 2006 and 2016

	2006 Score	2016 Score	Change
Significant Improvement			
None			
Strong Improvement			
Cape Verde	81.1	71.5	-9.6
Zimbabwe	110.1	100.5	-9.6
Cote d'Ivoire	107.3	97.9	-9.4
Some Improvement			
Sao Tome & Principe	78.6	72.9	-5.7
Malawi	92.2	87.6	-4.6
Equatorial Guinea	88.2	85.2	-3
Botswana	66.4	63.5	-2.9
Sierra Leone	93.4	91	-2.4
Sudan	113.7	111.5	-2.2
Marginal Improvement			
Gabon	73.3	72	-1.3
Congo (Republic)	93	92.2	-0.8
Togo	86.6	85.8	-0.8
Burkina Faso	89.7	89.4	-0.3
Lesotho	81.2	80.9	-0.3
Namibia	71.3	71.1	-0.2
Mauritius	42.7	43.2	0.5
Marginal Worsening			
Chad	108.8	110.1	1.3
Uganda	96.4	97.7	1.3
Ethiopia	95.3	97.2	1.9
Some Worsening			
Rwanda	89.2	91.3	2.1
Tanzania	79.3	81.8	2.5
Guinea	101.3	103.8	2.5

Liberia	92.9	95.5	2.6
Somalia	111.1	114	2.9
Congo (D. R.)	105.5	110	4.5
South Sudan		113.8	5.4
Burundi	95.2	100.7	5.5
Angola	84.9	90.5	5.6
Zambia	80.6	86.3	5.7
Comoros	77.8	83.8	6

Worsening

Swaziland	81.3	87.6	6.3
Benin	72	78.9	6.9
Kenya	91.3	98.3	7
Niger	91.2	98.4	7.2
Madagascar	76.5	84.2	7.7
Nigeria	95.6	103.5	7.9
Cameroon	89.4	97.8	8.4
Mauritania	86.7	95.4	8.7
Ghana	61.9	71.2	9.3
Djibouti	80.3	89.7	9.4

Significant Worsening

Gambia	76	86.8	10.8
Mozambique	76.9	87.8	10.9
Guinea Bissau	88.8	99.8	11
Central African Republic	101	112.1	11.1
South Africa	57.4	69.9	12.5
Eritrea	85.5	98.6	13.1

Critical Worsening

Senegal	66.9	83.6	16.7
Mali	75.5	95.2	19.7

Source: Fund for Peace website <http://fsi.fundforpeace.org/>

Table 3: Most Fragile Countries World-wide according to the State Fragility Index (SFI) 2014 and Correspondence with FSI Index.

	SFI score	if country is also among top 31 fragile countries according to FSI Index
South Sudan	24	x
Central African Republic	24	x
Dem. Rep. of Congo	23	x
Sudan (North)	22	x
Yemen	21	x
Afghanistan	21	x
Somalia	20	x
Ethiopia	20	x
Chad	19	x
Burundi	18	x
Guinea	18	x
Myanmar (Burma)	18	x
Iraq	18	x
Niger	18	x
Uganda	18	x
Guinea-Bissau	17	x
Syria	17	x
Cote d'Ivoire	17	x
Zimbabwe	17	x
Mali	17	x
Nigeria	17	x
Pakistan	16	x
Angola	16	
Rwanda	16	
Mauritania	16	x
Malawi	15	
Cameroon	15	x
Liberia	15	x
Gambia	15	
Eritrea	15	x
Haiti	15	x

Source: Center for Systemic Peace: <http://www.systemicpeace.org/inscrdata.html>

Table 4: Distribution of Sub-Saharan African Countries by Quartile of the revised Fragility Index (FSI*)

Lowest fragility	Second	Third	Highest fragility
Tanzania	Zambia	Cameroon	Guinea
South Africa	Comoros	Congo	Chad
Madagascar	Burkina Faso	Burundi	Dem. Rep. Congo
São Tomé and Príncipe	Mozambique	Mali	Somalia
Mauritius	Sierra Leone	Rwanda	Zimbabwe
Botswana	Togo	Uganda	Central African Republic
Namibia	Senegal	Eritrea	Sudan
Gabon	Malawi	Niger	Nigeria
The Gambia	Djibouti	Liberia	South Sudan
Cabo Verde	Equatorial Guinea	Kenya	Côte d'Ivoire
Ghana	Angola	Mauritania	Guinea-Bissau
Benin		Ethiopia	

Source: computed by authors based on the components on the FFP-FSI measure.

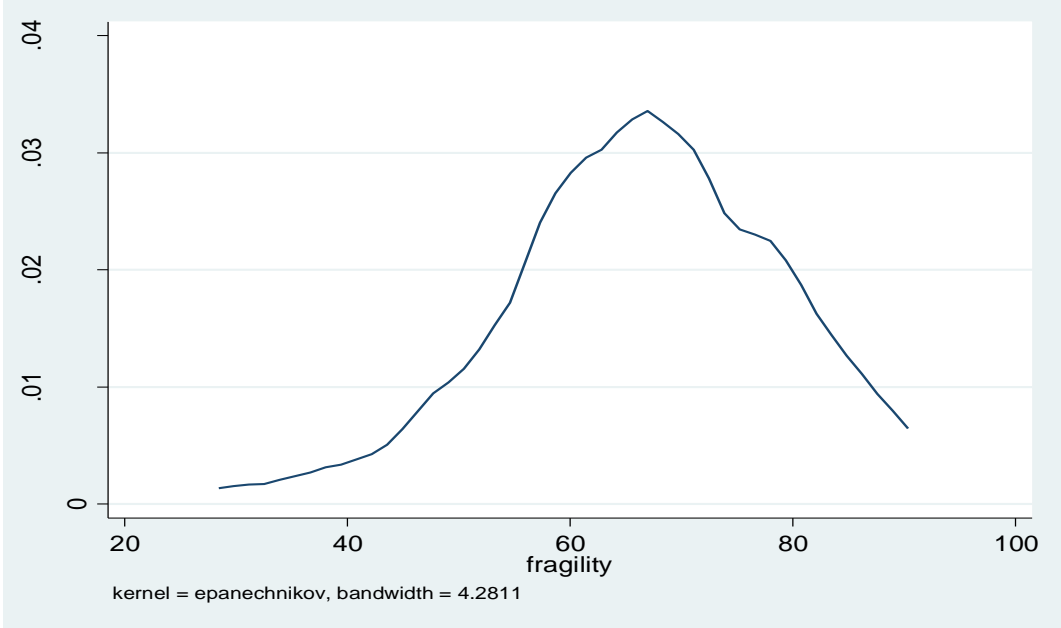
Table 5: Different Development Indicators for SSA Countries and their Correlation with Fragility measure (FSI*)

Variable	correlation with fragility	number of observations
Average USD GDP per capita, 2010-2014	-0.5056*	43
Average per capita GDP growth, 2000-14	-0.2971*	45
Average per capita GDP growth, 2010-14	-0.2231	44
Standard deviation of per capita GDP growth, 2000-14	0.3616*	45
Standard deviation of per capita GDP growth, 2010-14	0.4595*	44
Average Gini coefficient over 2006-14	-0.2759	36
Average poverty headcount (\$1.90) over 2006-14	0.3734*	36
Average poverty headcount (\$3.10) over 2006-14	0.4617*	36
Average poverty gap index (\$1.90) over 2006-14	0.3540*	36
Average infant mortality 2010-15	0.5849*	46
Average under 5 mortality 2010-14	0.5926*	46
Average stunting prevalence, 2006-16	0.3593*	44
Average underweight prevalence, 2000-14	0.5138*	42
Average literacy rate, 2006-14	-0.4459*	44
Average gross primary enrolment, 2010-14	-0.3066*	45
Average gross secondary enrolment, 2010-14	-0.6792*	39

* denotes statistical significance of the correlation coefficient at the 5% level.

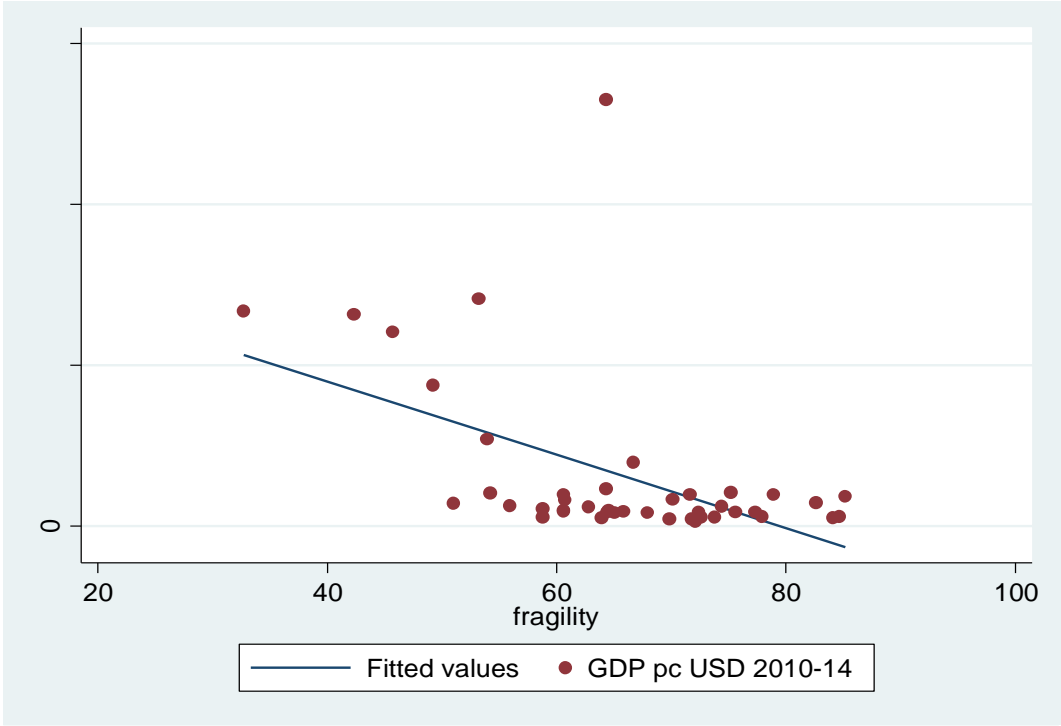
Source: computed by authors based on modified FFP-FSI measure and indicators from World Development Indicators 2016..

Figure 1: Kernel Density Plot of the modified FFP-FSI measure of fragility (FSI*) used in this paper (for definition of FSI* see text)



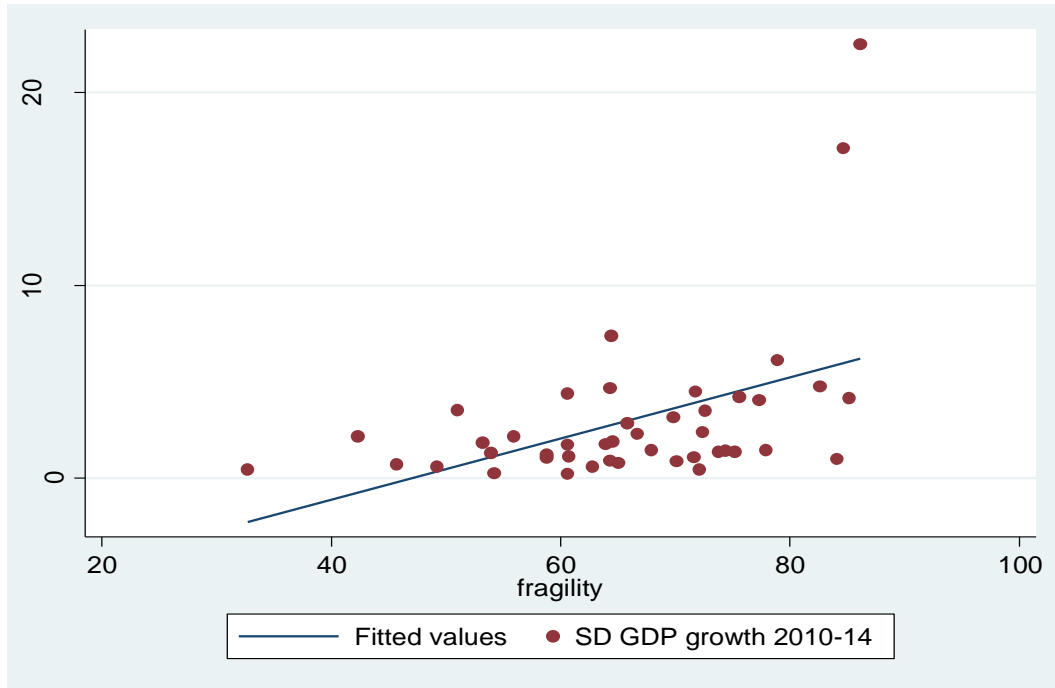
Source: computed by authors based on the components on the FFP-FSI measure.

Figure 2: Scatterplot between US Dollar measure of per capita GDP (2005 values) and Fragility measure (FSI*) SSA Countries



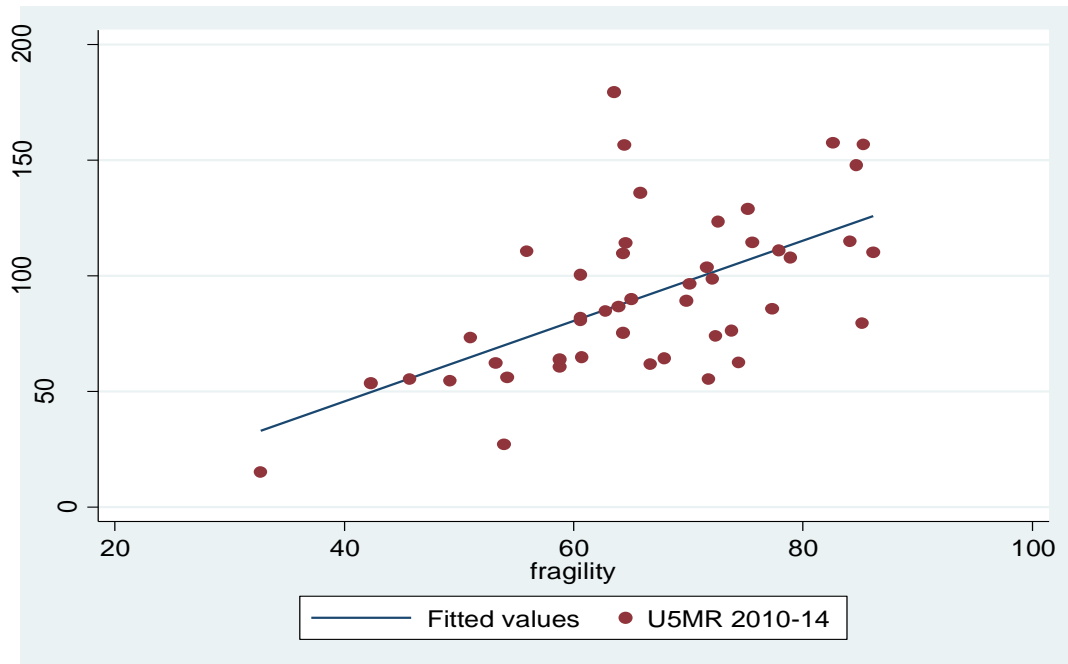
Source: computed by authors based on modified FFP-FSI measure and indicators from World Development Indicators 2016..

Figure 3: Scatter Plot between Standard Deviation of per capita GDP Growth over 2010-14 and Fragility Measure (FSI*)



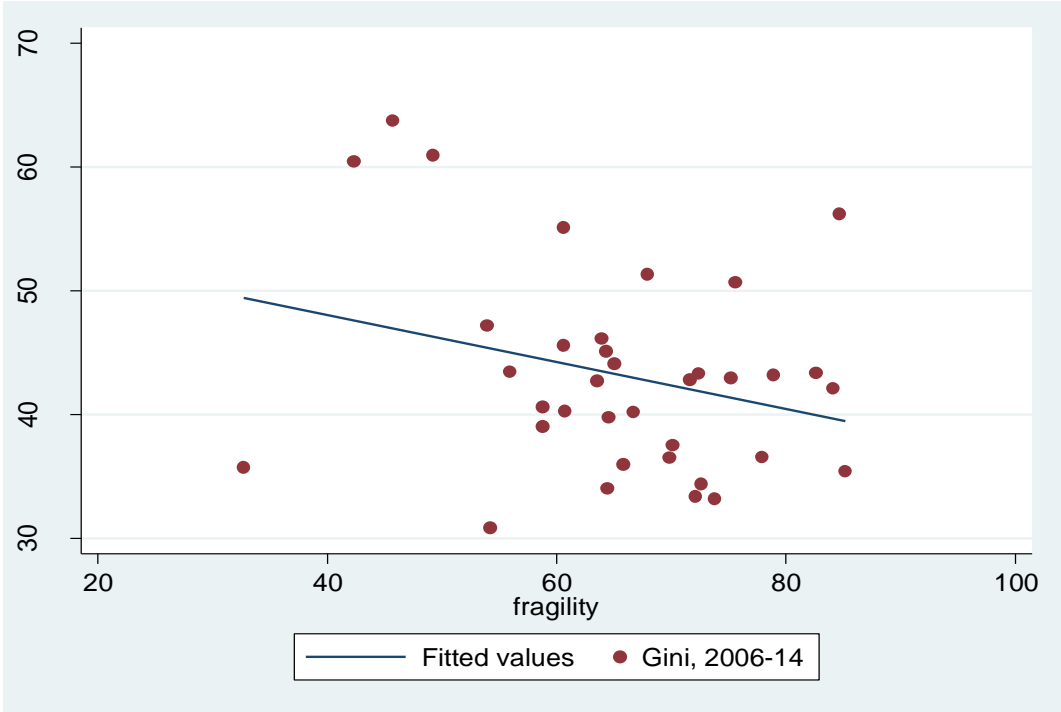
Source: computed by authors based on modified FFP-FSI measure and indicators from World Development Indicators 2016..

Figure 4: Scatter Plot between under five Mortality Rate (2010-14 average) and Fragility Measure (FSI*)



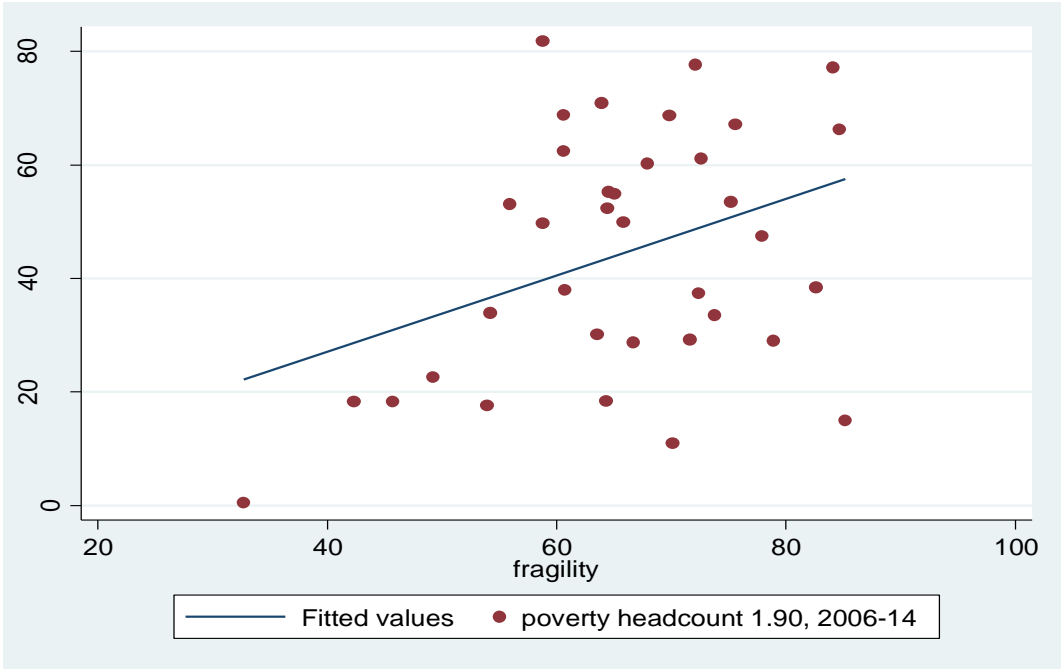
Source: computed by authors based on modified FFP-FSI measure and indicators from World Development Indicators 2016..

Figure 5: Scatter Plot between Gini coefficient (2006-14 average) and Fragility Measure (FSI*)



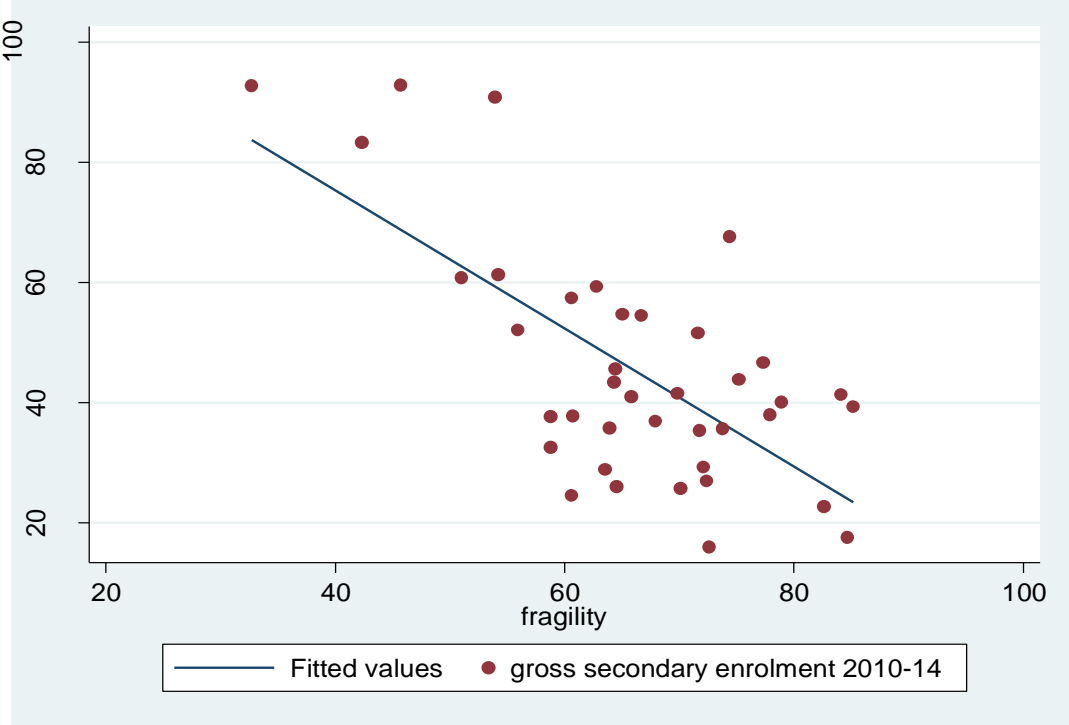
Source: computed by authors based on modified FFP-FSI measure and indicators from World Development Indicators 2016..

Figure 6 Scatter Plot between Poverty Headcount Measure (\$1.90 World Bank line) and Fragility Measure (FSI*)



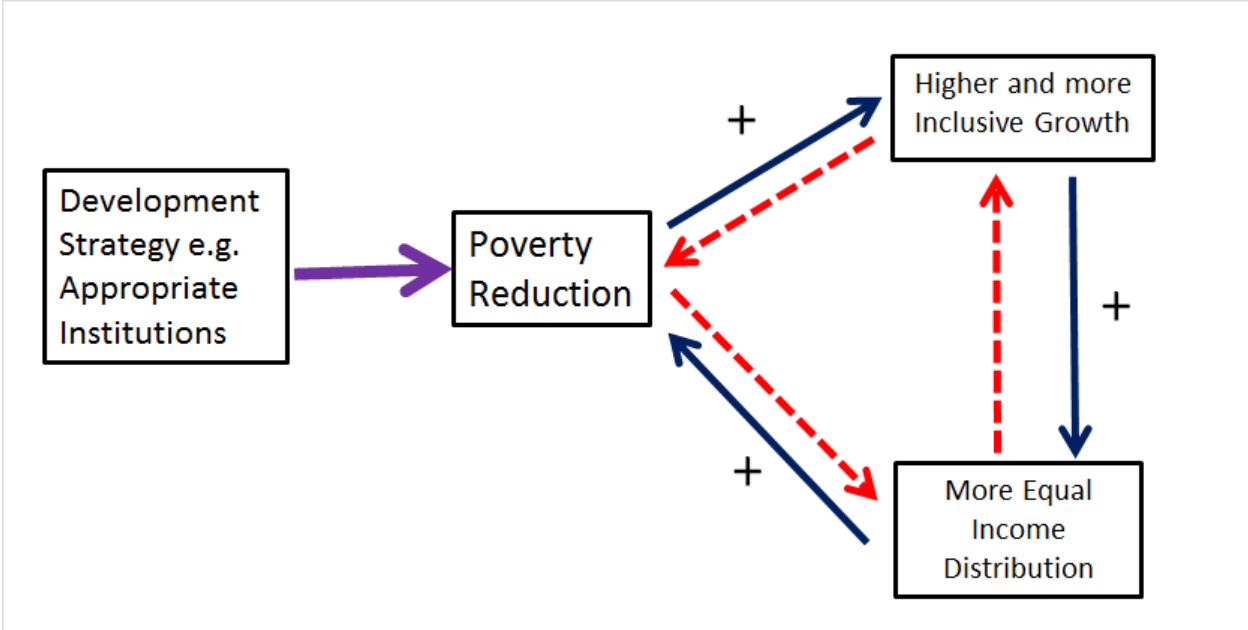
Source: computed by authors based on modified FFP-FSI measure and indicators from World Development Indicators 2016..

Figure 7: Scatter Plot between Gross Secondary Enrolment and Fragility Measure (FSI*)



Source: computed by authors based on modified FFP-FSI measure and indicators from World Development Indicators 2016..

Figure 8: Impact of Poverty Reducing Institutions on Inclusive Growth and Income Distribution



Source: Thorbecke (2014)