RECent
Center for Economic Research

WORKING PAPER SERIES

The Fragile Definition of State Fragility

Graziella Bertocchi and Davide Guerzoni

Working Paper 43

March 2010

www.recent.unimore.it

RECent: c/o Dipartimento di Economia Politica, Viale Berengario 51, I-41100 Modena, ITALY
Phone +39 059 2056856, Fax +39 059 2056947, E-mail: RECent@unimore.it

The Fragile Definition of State Fragility

Graziella Bertocchi[a]

Andrea Guerzoni[b]

February 2010

ABSTRACT

We investigates the link between fragility and economic development in sub-Saharan Africa over a yearly panel including 28 countries for the 1999-2004 period. Beside the conventional definition of fragility adopted by the OECD Development Assistance Committee, we introduce the more severe definition of extreme fragility. We show that only the latter exerts a significantly negative impact on economic development, once standard economic, demographic, and institutional regressors are accounted for. As a by-product of this investigation we produce up-to-date evidence on the growth performance of the area. We find a tendency to convergence and no influence of geographic and historical factors.

JEL classification codes: O43, H11, N17.

Keywords: State fragility, growth, Africa, aid.

[a] CORRESPONDING AUTHOR: University of Modena and Reggio Emilia, RECent, CEPR, CHILD and IZA, Viale Berengario 51, 41100 Modena, Italy, Phone +39 59 2056856, Fax +39 59 2056947, graziella.bertocchi@unimore.it.
[b] University of Modena and Reggio Emilia, Viale Berengario 51, 41100 Modena, Italy.

1. Introduction

The concept of state fragility (from now on, fragility) has recently reached center stage in the debate on economic development, and in particular on the development prospects of sub-Saharan Africa (SSA). The concept of fragility has been associated with various combinations of the following dysfunctions: inability to provide basic services and meet vital needs, unstable and weak governance, a persistent condition of extreme poverty, lack of territorial control, and high propensity to conflict and civil war. The crucial relevance of fragility for SSA countries is motivated by the fact that they are overrepresented among fragile states, with drastic consequences on the eligibility of the area to substantial aid flows.

Several studies have examined the influence of the condition of fragility on development, either through its direct impact on income and growth, or through its indirect influence through aid allocation. Baliamoune-Lutz (2009) finds that within SSA the impact of fragility on per capita income interacts with several other factors: in fragile countries, beyond a threshold level trade openness may actually be harmful to income, while small improvements in political institutions can have adverse effects. Fosu (2009) finds that the absence of policy syndromes encourages growth in Africa, but only one component of the syndromes he considers, state breakdown, has to do with fragility. Burnside and Dollar (2000) provide evidence that aid is most effective in developing countries with sound institutions and policies, even if this conclusion is challenged by Hansen and Tarp (2001) and Dalgaard et al. (2004). McGillivray e Feeny (2008) study the growth impact of aid for a world sample of fragile countries and find that it depends on the relative degree of fragility. Chauvet e Collier (2007) analyze the preconditions for sustained policy turnarounds in failing states and show that financial aid can be less effective than aid through technical assistance. Overall, a clear impact of fragility on economic outcomes has proved hard to assess, partly because of the different definitions employed.

The purpose of the present paper is to experiment with alternative definitions of fragility, in order to assess the usefuless of the fragility criterion for forecasting growth and allocating aid. We shall focus our attention on SSA, for two reasons. The first reason is that as previously explained this issue is particularly important for policy intervention in this region. The second reason is that fragility has proven such a multi-faceted condition that to concentrate on a specific, relatively homogeneous area may lead to more meaningful conclusions. At the same time, it is recognized that, especially within SSA, fragile states are sufficiently heterogeneous in terms of their economic, social, geographic and political characteristics. The European Report on Development (2009), which is entirely devoted to the problem of fragility in Africa, assembles a full array of stylized facts that confirms this heterogeneity.

The variables which we include in our investigation, as potentially relevant for Africa's growth prospects, are chosen among those which have been found relevant within the literature. We specifically draw on the variables selected by Bertocchi and Canova (2002) to investigate the impact of colonization on growth in Africa. We therefore include, first of all, an initial condition for per capita income, followed by a wide range of economic, demographic, geographic and istitutional regressors. Among economic factors, we consider investment, schooling, government expenditures, trade openness, and inflation. We also introduce demographic factors, namely, life expectancy and the fertility rate, as well as the index of ethnic fractionalization. We capture the quality of institutions, with the index of civil liberties. To these variables we add two alternative definitions of fragility, both based on the the Country Policy and Institutional Assessment (CPIA) ratings developed by the World Bank. The ratings represent the basis of the aid allocation algorithm applied by the International Development Association (IDA) through a specific formula. IDA is the part of the World Bank that helps the world's poorest countries. Established in 1960, IDA aims to reduce poverty by providing interest-free credits and grants. It currently represents one of the

largest sources of assistance for the world's 79 poorest countries, 39 of which are in Africa.

On the basis of the distribution of CPIA ratings, we construct two alternative definitions of fragility, of increasing intensity. The first applies when a country belongs to the bottom two quintiles of the CPIA ratings, or if is unrated. Since this definition coincides with the one employed by the OECD Development Assistance Committee (DAC), we denote it as DAC fragility. We denote instead as extreme fragility the condition under which a country belongs to the bottom quintile of the CPIA ratings, or if it is unrated. We construct a yearly panel dataset including those 28 SSA countries for which we have information on the distribution by quintiles of CPIA ratings over the 1999-2007 period and we perform growth regression analysis adding the two alternative definitions of fragility, one by one, to the standard regressors employed in the growth literature.

Our results can be summarized as follows. DAC fragility, i.e, the conventional measure of fragility, shows an insignificant impact on economic development, once standard regressors are accounted for. However, when we apply the more severe definition of extreme fragility, we find a clear, negative impact of this condition. This result holds in a pooled OLS specification and is robust to panel estimates exploiting the temporal dimension of the data set, as well as to 2SLS estimates controlling for the potential endogeneity of both measures of fragility. This result carries powerful policy implications, since it implies that countries commonly classified as fragile do not show worse performances than non fragiles ones.

As a by-product of our investigation, we also obtain up-to-date estimates of the determinants of growth in SSA during the half decade running from 1999 to 2004. First of all, we find evidence of convergence. Moreover, our OLS estimates show that economic development is facilitated by schooling, government expenditures, and life expectancy, while it is retarded by inflation and by ethnic fractionalization. The impact of civil liberties displays a convex behavior suggesting that

economic development is faster under extreme values of the index, i.e., under extreme autocracies and under very liberal democracies. We do not find any additional explicatory value either for geographic variables such as latitude and sea access, or for colonial variables such as the national identity of the colonizers or settler mortality. These findings are broadly in line with standard predictions from growth theory, suggesting that the sources of underdevelopment in SSA are not specific to this region.

The rest of the paper is organized as follows. Section 2 reports the definitions of fragility and describes our dataset. Section 3 presents our empirical findings. Section 4 concludes and suggests directions for future research. The Data Appendix collects information about the data we employed.

2. Data

The concept of fragility is an elusive one. It has been defined in several different manners by various international organizations. For example, the United Kingdom Department for International Development defines fragile states as those where the government cannot or will not deliver core functions to its people. According to the World Bank, fragile states are defined as low-income countries scoring 3.2 and below (over a 1-6 range) on the CPIA. The OECD-DAC defines as fragile states those countries in the bottom two CPIA quintiles, as well as those which are not rated.[1] Since CPIA ratings are publicly available only since 2005, for the purposes of our empirical investigation we use the OECD-DAC information about the distribution of IDA member countries by CPIA quintiles, which is available from 1999 until 2007. On the basis of this information, we adopt two

[1] Other related indexes are the Failed State Index, the Index of State Weakness, the indicator of Failed & Fragile States, and the Fragility States Index, respectively published by the Fund for Peace, the Brookings Institution, Country Indicators for Foreign Policy, and Polity IV.

alternative definitions of fragility. The first coincides with the one proposed by OECD-DAC, so that we label it DAC fragility. The second, which we label extreme fragility, includes those countries in the bottom CPIA quintile, as well as those which are not rated.

CPIA ratings are prepared annually by World Bank staff and are intended to capture the quality of a country's policies and institutional arrangements, with a focus on the key elements that are within the country's control, rather than on outcomes (such as growth rates) that are influenced by elements outside the country's control. Scores are assigned on the basis of 16 criteria (20 until 2003) which are grouped in four equally weighted clusters: Economic Management, Structural Policies, Policies for Social Inclusion and Equity, and Public Sector Management and Institutions. The ratings reflect a variety of indicators, observations, and judgments based on country knowledge, originated in the Bank or elsewhere, and on relevant publicly available indicators.

For our purposes, to refer to the CPIA ratings offers three advantages. First, the ratings have a crucial practical relevance, since they significantly influence the Bank's concessional lending and grants allocated through IDA. Second, information on their distribution by quintiles is now available for a relatively extended time period, i.e., from 1999 to 2007. Third, because of their design, they do not reflect mechanically any of the other variables that enter our regressions.

We construct a yearly panel dataset including those 28 SSA countries for which we have information on CPIA ratings over the 1999-2007 period. Our dependent variable is real per capita GDP (in log) which, however, is only available until 2004. To capture alternative definitions of fragility, we construct two dummy variables, one for DAC fragility and the other for extreme fragility. The first takes value 1 is a country belongs to the bottom two CPIA quintiles (or is unrated), 0 otherwise. The second takes value 1 is a country belongs to the bottom CPIA quintile (or is unrated), 0 otherwise. Among standard regressors, we include economic variables, namely

investment, schooling, government expenditures, trade openness, and inflation. We also introduce demographic factors, such as life expectancy and the fertility rate, as well as the index of ethnic fractionalization. To capture the quality of institutions, we select the civil liberties index. To be noticed is that the index is contructed in such a way that a higher value is associated with fewer civil liberties. More details on the variables employed are available in the Data Appendix.

Table. 1. Summary statistics

Variable	*Obs.*	*Mean*	*Median*	*Min*	*Max*	*Standard deviation*
pc GDP (log)	149	7,30	7,02	5,82	9,74	0,94
DAC fragility	216	0,45	0,00	0,00	1,00	0,50
Extreme fragility	216	0,31	0,00	0,00	1,00	0,46
Investment	149	8,34	7,60	0,15	26,84	4,70
Schooling	252	3,50	1,55	0,10	30,30	5,76
Government expenditures	149	21,53	19,04	2,12	61,43	11,51
Trade	149	68,53	59,96	4,83	171,93	35,36
Inflation	251	62,28	6,08	-3,66	10452,60	663,91
Life expectancy	224	49,95	48,85	36,04	73,17	7,40
Fertility rate (log)	224	1,61	1,67	0,65	2,03	0,30
Ethnic fractionalization	252	0,68	0,73	0,06	0,93	0,21
Civil liberties	252	4,04	4,00	1,00	7,00	1,39

Notes: Panel dataset

Table 1 shows the descriptive statistics for the variables in our dataset. The (unreported) pairwise correlation between the two alternative definitions of fragility is 0,66. Moreover, extreme fragility shows a much higher negative correlation with per capita income, if compared with DAC fragility, while the correlation with civil liberties is very similar under the two definitions.

3. Results

For a panel dataset, the general analog of a standard Barro (1991) cross section growth regression is given by

(1) $\log y_{i,t} = (1+\beta) \log y_{i,t-1} + \gamma X_{i,t} + \varphi F_{i,t} + c_i + \tau_t + v_{it}$

where $y_{i,t}$ is per capita real GDP, $y_{i,t-1}$ is its lagged value, $X_{i,t}$ is a vector including a constant and standard regressors, $F_{i,t}$ is the appropriate fragility dummy, and v_{it} is the error term. To the above specification, one can add a full set of dummies capturing country-specific effects, c_i, as well as a full set of dummies capturing time-specific effects, τ_t. To be noticed is that to regress current output on lagged output implies a different interpretation of the coefficient of the latter, which however can be written as $(1+\beta)$, where β has the conventional interpretation in terms of convergence.

As explained by Durlauf et al. (2005), the obvious advantage of a panel dataset in empirical growth research is that the constraints given by the limited number of countries available can be overcome by using the within-country time variation, with the effect of multiplying the number of observations. This consideration becomes especially important since we focus our attention on a specific area, rather than on a world sample. In the following investigation, however, we are not able to fully exploit the potential of dynamic panel models. In particular, using country fixed effects is prevented by the structure of our sample, with as many as 28 countries against only five years, which would imply a serious loss of degrees of freedom and the danger of multicollinearity. Likewise, random country effects are also precluded by the requirement that the country effects have to be distributed independently of the explanatory variables. This requirement is clearly violated for a dynamic panel by construction, given the dependence of $\log y_{i,t}$ on the country-specific effects on the right-hand side. Therefore, we initially perform pooled OLS estimation, only to add yearly time-specific effects in a subsequent specification.[2]

[2] It follows that, without fixed effects, the interpretation of the convergence results obtained in pooled regressions remain very similar to those in traditional cross section regressions. See Islam (1995).

Table 2. Pooled OLS estimates. Dependent variable is pc GDP (log)

Regressor	*1*	*2*	*3*	*4*	*5*	*6*
Constant	0,4715**	0,6477**	1,0632***	0,4898**	0,6341**	1,0908***
	(0,2070)	(0,2841)	(0,2735)	(0,1959)	(0,2779)	(0,2794)
Lagged pc GDP (log)	0,9763***	0,9572***	0,9216***	0,9751***	0,9561***	0,9189***
	(0,0148)	(0,0250)	(0,0227)	(0,0144)	(0,0254)	(0,0237)
Investment	-0,0022	-0,0032	-0,0032	-0,0021	-0,0029	-0,0029
	(0,0017)	(0,0026)	(0,0022)	(0,0018)	(0,0030)	(0,0025)
Schooling	0,0022**	0,0062*	0,0032	0,0022**	0,0057*	0,0027
	(0,0009)	(0,0032)	(0,0030)	(0,0010)	(0,0034)	(0,0031)
Government expenditures	0,0016***	0,0019***	0,0017*	0,0015***	0,0018***	0,0016*
	(0,0004)	(0,0006)	(0,0009)	(0,0003)	(0,0006)	(0,0009)
Trade	-8,2012e-05	-0,0003	-0,0003	-7,3043e-05	-0,0004	-0,0003
	(0,0003)	(0,0003)	(0,0003)	(0,0003)	(0,0004)	(0,0003)
Inflation	-0,0003***	-0,0003***	-0,0003***	-0,0003***	-0,0003***	-0,0003***
	(3,3490e-05)	(2,0214e-05)	(2,3512e-05)	(2,8930e-05)	(2,1593e-05)	(2,5789e-05)
Life expectancy	0,0014*	-0,0002	-0,0009	-0,0015*	-0,0002	-0,0010
	(0,0008)	(0,0012)	(0,0009)	(0,0008)	(0,0011)	(0,0008)
Fertility rate (log)	-0,0458	-0,0976	-0,1766***	-0,0498	-0,0949	-0,1825**
	(0,0431)	(0,0634)	(0,0661)	(0,0433)	(0,0680)	(0,0717)
Ethnic fractionalization	-0,0568*	-0,0521	-0,0319	-0,0573*	-0,0525	-0,0291
	(0,0332)	(0,0490)	(0,0335)	(0,0327)	(0,0475)	(0,0328)
Civil liberties	-0,0560**	-0,0595**	-0,0658**	-0,0583**	-0,0583**	-0,0666***
	(0,0282)	(0,0287)	(0,0289)	(0,0272)	(0,0248)	(0,0252)
Civil liberties (squared)	0,0061*	0,0065*	0,0084**	0,0063*	0,0063**	0,0085***
	(0,0036)	(0,0034)	(0,0034)	(0,0035)	(0,0029)	(0,0030)
DAC fragility		-0,0104			-0,0101	
		(0,0125)			(0,0140)	
Extreme fragility			-0,0765***			-0,0787***
			(0,0210)			(0,0206)
Time effects	*no*	*no*	*no*	*yes*	*yes*	*yes*
Adjusted R^2	0,99	0,97	0,97	0,99	0,97	0,97
Observations	121	101	101	121	101	101

Notes: Panet dataset. Robust standard errors in parentheses. * significant at 10%,** significant at 5%, *** significant at 1%.

Results are presented in Table 2. In column 1 we start wth a pooled OLS specification including only standard regressors. Even before we move to the discussion of the impact of fragility with the next two columns, a few comments are in order since this regression offers an up-to-date perspective on SSA growth performances. First of all, we find evidence of convergence, with an implied β coefficient of 0.037. Given the presence of the lagged value of the dependent variable on the right-hand side, the adjusted R^2 of the regression is clearly very high, as expected. The inclusion

of the same regressor is a possible explanation of the insignificant impact of investment. Schooling has a positive coefficient, and so has government expenditures, while inflation appears to be detrimental for growth. Life expectancy is positively associated with growth, while ethnic fractionalization is not, as suggested by Easterly and Levine (1997). The impact of civil liberties is positive but the significance of its squared value suggests a convex behavior, which implies that economic development is facilitated under extreme values of the index, i.e., under extreme autocracies and under very liberal democracies. It follows that, under the former type of regime, a gradual improvement can be detrimental for growth. In an unreported variant of the same regression we also include two geographic variables, namely latitude and a dummy for being landlocked (see Sachs and Warner, 1997), but they do not add any explicatory power once the other factors are accounted for. These findings are broadly in line with standard predictions from growth theory, suggesting that the sources of underdevelopment in SSA are not specific to this region.

In column 2 we add to the previous specification our DAC fragility dummy, which turns out to be insignificant. The other coefficients are substantially unvaried, expect for a reduced significance of schooling and life expectancy. In column 3, we insert our extreme fragility dummy and find that it exerts a very significantly negative impact on economic performances. This impact appears to be running through several channels, since its presence interferes with government expenditures, whose significance is reduced, and also with the fertility rate, which now emerges as a significant growth factor. We explore these channels further by interacting each of the two measures of fragility with government expenditures and fertility, but no significant pattern emerges, so that we do not report these extensions.[3]

In columns 4-6 we repeat the same set of regressions by adding a full set of time dummies. As confirmed by inspection of the significance of the dummies, which is generally modest, the

[3] Guerzoni (2009) investigates a full set of interactions between fragility and the main regressors.

previous results can be confirmed: once again DAC fragility does not matter for growth, while extreme fragility does.

Table 3. 2SLS estimates. Dependent variable is pc GDP (log)

Regressor	*1*	*2*
Constant	0,2895 (0,4087)	0,6871** (0,3210)
Lagged pc GDP (log)	0,9794*** (0,0325)	0,9504*** (0,0243)
Investment	-0,0002 (0,0026)	4,5473e-06 (0,0022)
Schooling	0,0042 (0,0048)	0,0022 (0,0043)
Government expenditures	-0,0011 (0,0012)	-0,0007 (0,0009)
Trade	-0,0002 (0,0005)	-0,0003 (0,0004)
Inflation	-0,0003*** (0,0001)	-0,0003*** (8,973e-05)
Life expectancy	0,0001 (0,0021)	-0,0004 (0,0018)
Fertility rate (log)	-0,0158 (0,0603)	-0,0889* (0,0480)
Ethnic fractionalization	-0,0749 (0,0543)	-0,0680 (0,0500)
Civil liberties	-0,0088 (0,0541)	-0,0331 (0,0442)
Civil liberties (squared)	0,0011 (0,0064)	0,0042 (0,0054)
DAC fragility	-0,0378 (0,0285)	
Extreme fragility		-0,0697*** (0,0221)
Adjusted R^2	0,97	0,97
Observations	77	77

Notes: Panet dataset. Robust standard errors in parentheses. The instruments are the lagged values of all regressors. * significant at 10%,** significant at 5%, *** significant at 1%.

The findings presented so far need to be taken with caution, since our investigation may be plagued by endogeneity. Indeed, while it may be the case that fragility affects economic performances, it is

also conceivable that causality runs the other way.[4] Reverse causality may in fact affect all the other variables we employ as regressors. To address this issue, following Acemoglu et al. (2001) we exploit colonial history as a source of possible instruments for fragility. There is in fact a shared perception that fragility, as well as other dysfuntions such as corruption and ethnic conflict, might find their roots in the legacy of colonization. The European Development Report (2009) supports this perception by stressing the shared characteristics of state formation in this region: its artificial character following decolonization, the extractive nature of colonial domination, the political and economic dependence from the metropolitan power, and the system of indirect rule. Acemoglu et al. (2001) develop a theory of institutional development which emphasizes the environmental conditions in the colonies, and in particular settler mortality, as the fundamental cause of subsequent economic performances. Thus settler mortality is employed as an instrument for current institutions, as measured by the risk of expropriation, in the effort to explain how institutions affect income. This approach is closely related to Engerman and Sokoloff (1997), who link institutions to factor endowments. Following this lead, we try to instrument both our fragility dummies with settler mortality. However, this avenue is impeded by the fact that in both cases settler mortality proves to be a very weak instrument, as revealed by the (unreported) first stages of 2SLS regressions we run. This outcome can to be attributed to the fact that, within the limited SSA sample we focus on, there is insufficient cross country variation along the environmental dimension.

An alternative solution for the endogeneity problem is to employ as instruments the lagged values of the regressors. The rationale is simply that this procedures at least ensures that the values of the

[4] Bertocchi and Guerzoni (2010) investigate the determinants of fragility, by explicitly taking into account its potential endogeneity with respect to other relevant economic and non-economic factors, and find that institutions are the main determinants of fragility.

regressors are determined prior to those of the dependent variable. Since all regressors are potentially endogenous, we apply this instrumentation strategy to all of them. The results that we present in Table 3, for two specifications involving each of the two fragility dummies, need to be taken with caution, if anything because of the drastic reduction of the number of observations involved. Concerning the role of standard regressors, we find that only lagged per capita income and inflation, plus fertility in the second column, survive the endogeneity test. What is striking, however, is that extreme fragility retains its full explicatory power, which once again confirms its ability to capture a robust impact on economic performances.

Finally, in an additional set of regressions which we do not report for brevity, we also try to gauge the potential relevance of colonial history along an alternative dimension. Following Bertocchi and Canova (2002), we evaluate the impact of different colonization regimes, as captured by the national identities of the colonizers. This exercise applies an intuition developed within another strand of the literature on colonial influence, which has stressed the identity of the colonizers, rather than the conditions in the colonies as in Acemoglu et al. (2001). La Porta et al. (1998) have focused on the legal systems inherited by the colonies, while Hall and Jones (1999) have studied the consequences of the extent to which the primary languages of Western Europe are spoken as first languages today. Together with Landes (1998) and North et al. (1998), these contributions tend to agree on the conclusion that former British colonies have superior growth performances if compared to the former colonies of other countries. More specifically, Bertocchi and Canova (2002) find that this is the case over a sample of African countries from independence to 1988. However, when we add to our regressions, one by one, a set of dummy variables capturing the national identity of the colonizers, namely Britain, France, or Portugal, we find that their coefficients are not significantly different from zero. Interactions between these variables and fragility prove equally insignificant. This suggests that the lasting influence of the colonial era may finally have faded during the period under our investigation and that fragility does not work through this legacy.

To conclude, we can compare our results regarding the impact of different degrees of fragility with those by McGillivray and Feeny (2008), who investigate the effectiveness of aid on growth and distinguish between different degrees of fragility on the basis of the same criterion we employ in this paper, i.e., on the distribution of countries by CPIA quintiles. They find that, for countries that belong to the bottom CPIA quintile, there is an inverted U-shaped relationship between aid and growth, which can be attributed to absorptive capacity constraints. Therefore, beyond certain levels of inflows, aid can become detrimental to growth, but this conclusion emerges only in the case of highly fragile countries, confirming the relevance of the classification we employ. To refine the definition of fragility is also the scope of Baliamoune-Lutz and McGillivray (2008), who question the conventional classification and develop a fuzzy transformation of the CPIA ratings.

3. Conclusion

With a focus on SSA, we have explored the contribution of different degrees of fragility to economic growth, after controlling for a wide range of standard regressors. Besides economic, demographic, and institutional determinants, we have also considered the unique role of the history and geopraphy of the area. Our estimates of the determinants of growth on SSA confirm the broad predictions from growth theory. Over the 1999-2004 period, we find evidence of convergence. Moreover, our OLS estimates show that faster economic development is associated with schooling, government expenditures, and life expectancy, while it is hampered by inflation, ethnic fractionalization, and intermediate levels of civil liberties. Geography and colonial history do not seem to matter.

Our main results concern the potential role of fragility. We have found that the conventional measure employed by the OECD-DAC exerts an insignificant impact on economic development,

once standard regressors are accounted for. However, when we apply the more severe definition of extreme fragility, we have found a clear, negative impact of this condition. These findings carry powerful policy implications, since that suggest that countries commonly classified as fragile do not show worse performances than non fragiles ones.

How can we interpret these findings, especially in light of their potential implications for aid allocation? On the one hand, to find that extremely fragile countries have significantly worse prospects than mildly fragile ones confirms the concern, among international organizations, that aid may be waisted under these conditions. On the other, the rosier performances of countries which are not at the bottom of the aid distribution mechanism may indeed be due to aid itself, and not to their independent dynamism. This suggests a potential reverse causation between the criteria on which aid allocation is based and aid inflows themselves, which questions the widely accepted policy-based conditionality criteria. While the literature we surveyed is purely empirical, its lack of robustness calls for an appropriate theoretical model that clarifies the channel at work. This is in our agenda for future research.

REFERENCES

Acemoglu, D., Johnson, S., Robinson, J. A., 2001. The Colonial Origins of Comparative Development: An Empirical Investigation. *American Economic Review* 91, 1369-1401.

Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., Wacziarg, R., 2003. Fractionalization. *Journal of Economic Growth* 8, 155-194.

Baliamoune-Lutz, M., 2009. Institutions, Trade, and Social Cohesion in Fragile States: Implications for Policy Conditionality and Aid Allocation. *Journal of Policy Modeling* 31, 877-890.

Baliamoune-Lutz, M., McGillivray, M., 2008. State Fragility: Concept and Measurement. UNU-WIDER Research Paper No. 2008/44.

Barro, R. J., 1991. Economic Growth in a Cross Section of Countries. *Quarterly Journal of Economics* 106, 407-444.

Barro, R. J., Lee, J., 2001. International Data on Educational Attainment: Updates and Implications. *Oxford Economic Papers* 53, 541-563.

Bertocchi, G., Guerzoni, A., 2010, Growth, History or Institutions? What Explains State Fragility in Sub-Saharan Africa. Mimeo. University of Modena.

Bertocchi, G., Canova, F., 2001. Did Colonization Matter for Growth? An Empirical Exploration into the Historical Causes of Africa's Underdevelopment. *European Economic Review* 46, 1851-1871.

Burnside, C., Dollar, D., 2000. Aid, Policies and Growth. *American Economic Review* 90, 847-868.

Chauvet, L., Collier, P., 2007. What are the Preconditions for Turnarounds in Failing States? *Journal of Peace and Conflict Management*, forthcoming.

Carl-Johan Dalgaard, C., Hansen, H., Tarp, F., 2004. On The Empirics of Foreign Aid and Growth. *Economic Journal* 114, F191-F216.

Durlauf, S. N., Johnson, P. A., Temple, J. R. W., 2005. Growth Econometrics. In P. Aghion, P., Durlauf, S. N. (Eds.). *Handbook of Economic Growth, Volume 1A*. North-Holland. Amsterdam. 555-677.

Easterly, W., Levine, R., 1997. Africa's Growth Tragedy: Policies and Ethnic Divisions. *Quarterly Journal of Economics* 112, 1203-1250.

Engerman, S. L., Sokoloff, K. L., 1997. Factor Endowments, Institutions, and Differential Paths of Growth Among New World Economies: A View from Economic Historians of the United States. In Harber, S. (Ed.). *How Latin America Fell Behind*. Stanford University Press. Stanford, CA. 260-304.

European Report on Development (ERD), 2009. *Overcoming Fragility in Africa*. Robert Schuman Centre for Advanced Studies. European University Institute. San Domenico di Fiesole.

Fosu, A. K., 2009. Understanding the African Growth Record: The Importance of Policy Syndromes and Governance. UNU-WIDER Discussion Paper No. 2009/02.

Guerzoni, A., 2009. Fragility and Economic Development in Sub-Saharan Africa, Master's Thesis, University of Modena.

Hall, R. E., Jones, C. I., 1999. Why Do Some Countries Produce So Much More Output Per Worker Than Others? *Quarterly Journal of Economics* 114, 83-116.

Hansen, H., Tarp, F., 2001. Aid and Growth Regressions. *Journal of Development Economics* 64, 547–570.

Islam, N., 1995. Growth Empirics: A Panel Data Approach. *Quarterly Journal of Economics* 110, 1127-70.

Landes, D. S., 1998. *The Wealth and Poverty of Nations: Why Some Are So Rich and Some So Poor*. W. W. Norton & Co.. New York, NY.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R. W., 1998. Law and Finance. *Journal of Political Economy* 106, 1113-1155.

McGillivray, M., Feeny, S., 2008. Aid and Growth in Fragile States. UNU-WIDER Research Paper No. 2008/3.

North, D. C., Summerhill, W., Weingast, B., 2000. Order, Disorder and Economic Change: Latin America vs. North America. In Bueno de Mesquita, B., Root, H. (Eds.). *Governing for Prosperity*. Yale University Press. New Haven, CT. 17-58.

Sachs, J. D., Warner, A. M., 1997. Sources of Slow Growth in African Economies. *Journal of African Economies* 6, 335-376.

DATA APPENDIX

Variable	*Description*	*Source*
pc GDP	Real per capita GDP	Penn World Table 6.2
DAC fragility	Binary variable assuming value 1 for countries in the bottom two CPIA quintiles or without a CPIA rating, 0 otherwise	World Bank and Baliamoune-Lutz (2009)
Extreme fragility	Binary variable assuming value 1 for countries in the bottom CPIA quintile or without a CPIA rating, 0 otherwise	World Bank and Baliamoune-Lutz (2009)
Investment	Investment over real GDP	Penn World Table 6.2
Schooling	Secondary school attainment over official school age population of age 15 and over.	Center for International Development and Barro and Lee (2001)
Government expenditures	Government expenditures over real GDP	Penn World Table 6.2
Trade	Sum of import and export over real GDP	Penn World Table 6.2
Inflation	Consumer price index	International Monetary Fund
Life expectancy	Number of years of life expectancy at birth	Cross-National Time Series (2001)
Fertility rate	Number of children per woman	World Bank World Development Indicators (2008)
Ethnic fractionalization	Ethnic fractionalization index	Alesina et al. (2003)
Civil liberties	Civil liberties index	Freedom House (2008)

RECent Working Papers Series

The 10 most RECent releases are:

No. 43 THE FRAGILE DEFINITION OF STATE FRAGILITY (2010)
G. Bertocchi and D. Guerzoni

No. 42 PREFERENCES AND NORMAL GOODS: AN EASY-TO-CHECK NECESSARY AND SUFFICIENT CONDITION (2010)
E. Bilancini and L Boncinelli

No. 41 EFFICIENT AND ROBUST ESTIMATION FOR FINANCIAL RETURNS: AN APPROACH BASED ON *Q*-ENTROPY (2010)
D Ferrari and S. Paterlini

No. 40 MACROECONOMIC SHOCKS AND THE BUSINESS CYCLE: EVIDENCE FROM A STRUCTURAL FACTOR MODEL (2010)
M. Forni and L.Gambetti

No. 39 RENT SEEKERS IN RENTIER STATES: WHEN GREED BRINGS PEACE (2010)
K. Bjorvatny and A. Naghavi

No. 38 PARALLEL IMPORTS AND INNOVATION IN AN EMERGING ECONOMY (2010)
A. Mantovani and A. Naghavi

No. 37 THE RECENT PERFORMANCE OF THE TRADITIONAL MEASURE OF CORE INFLATION IN G7 COUNTRIES (2009)
L. Lo Bue and A. Ribba

No. 36 EDUCATION AND WAGE DIFFERENTIALS BY GENDER IN ITALY (2009)
T. Addabbo and D. Favaro

No. 35 SINGLE-VALUEDNESS OF THE DEMAND CORRESPONDENCE AND STRICT CONVEXITY OF PREFERENCES: AN EQUIVALENCE RESULT (2009)
E. Bilancini and L. Boncinelli

No. 34 SIGNALLING, SOCIAL STATUS AND LABOR INCOME TAXES (2009)
E.Bilancini and L. Boncinelli

The full list of available working papers, together with their electronic versions, can be found on the RECent website: http://www.recent.unimore.it/workingpapers.asp