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Human Development and the World Bank Adjustment Programmes in sub-Saharan Africa*

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The ultimate goals of structural adjustment programmes (SAPs) were to improve standards of living through intermediate targets such as ensuring higher growth in the economy and maintaining its stability. The conditions attached to these programmes were aimed at reducing inflationary pressures and improving the efficiency of production in the economy and its management. These included promotion of free markets, tight fiscal and monetary policies, wage control, trade liberalisation, devaluation and privatisation amongst others.

Some scholars suggest that these programmes were initially designed by the World Bank to complement the poverty alleviation programmes (Summer and Pritchett 1993 and Please 1996). Others conclude that the World Bank through these programmes attempted to move away, to some extent though not fully, from project lending to policy lending in order to reduce the economic distortions present in developing countries which were hampering the profitability of development projects. (Kanbur 1991).

There is little controversy in the literature on the aims of structural adjustment programmes, however, there is no consensus on their achievements particularly in terms of their effects on poverty and standards of living. Some studies argued that conditionality has had adverse effects on standards of living in poorer countries (Cornia et al. 1987, Stewart 1995 and UNRISD 1995). Others suggested that high emphasis on structural adjustment conditions may lead to the misallocation of scarce resources and possibly waste of public funds (Killick, 1996). There is some evidence

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that these programmes also affected the aid provided by donor countries. According to Ehrenpreis (2003) “Over the 1980s, Swedish aid in many countries was redirected in order to ameliorate the negative effects of structural adjustment policies (SAPs) and ensure that important social development programmes could be maintained.” (Page 49). Some scholars have gone further and regarded these programmes as highly inappropriate particularly for African countries and have suggested alternative approaches for attaining growth and stability in these countries (see for example Cornia and Helleiner 1994 and Engberg-Pedersen 1996).

var den Hoeven (2003) argues that in most *inefficient inegalitarian* societies the main policy aims are the resumption of positive economic growth and a reduction in inequalities allowing for the poor to benefit from growth where precisely in these countries SAPs fail to come out with the intended results. Almost all the sub-Saharan African countries, which undertook SAPs, have had poor economic growth combined with a high level of income inequality and would fall into this category.

Assessing the effects of SAPs is not a straightforward task. However, scholars have attempted to evaluate the effects of structural adjustment programmes on poverty and standards of living. The effects on poverty have been mainly studied through country case studies (see for example OECD 1992 and Stewart 1995). Cross-country studies have mainly concentrated on evaluating the effects of conditionality in general and on standards of living by taking a temporal and/or comparative approach. The basic idea is to compare the level of a set of socioeconomic indicators in programme countries during the pre-adjustment period with the same for the adjustment or post adjustment periods and/or compare the difference between the adjustment and pre-adjustment periods in programme countries with those of the non-programme countries, of broadly similar level, for drawing counter-factual conclusions (see for example World Bank 1992, Stewart 1995, Kakwani 1995 and Noorbakhsh 1999).

Basically there is a broad consensus that aiming for higher economic growth in programme countries is good though there are some concerns on the ability of some countries in translating a higher rate of growth to higher standards of living (Dreze and Sen 1989, Noorbakhsh 1999). A recent report on chronic poverty, with reference to urban poverty in Ethiopia, states that improved macroeconomic management in the

mid-1990s did not result in a reduction in poverty, on the contrary the urban household welfare declined during this period (page 70, CPRS 2004). Other studies go further by pointing out the inconsistency between components of SAPs and the longer term development policies of the programme countries. For example the public sector management component advocates cuts in public expenditure and often this takes place in terms of cuts in education, health and other pro poor social expenditures (Stewart 1994). It is therefore suggested that as the main aim of aid and development loans is improvements in standards of living in the recipient countries, the conditions attached to aid and loans should take these objectives into account and indeed the effectiveness of the related programmes should be evaluated in terms of improvements in standards of living (Singer 1995).

The World Bank, however, maintained that conditionality has had little adverse effect on standards of living in programme countries (see for example World Bank 1992). Despite wide spread criticism of SAPs the World Bank has defended its position on a number of grounds of which the most logical one is that a number of countries, particularly in Africa, despite the conditionality imposed on their loans, did not comply with these conditions and in some cases they introduced other counter active measures or indeed reversed the reforms at a later stage. This means that a logical way of assessing the effect of conditionality is to differentiate between those countries which complied with conditionality, and those which did this partially or did not comply.

In fact most of the earlier studies of SAPs assessed and compared the situation in the so-called programme countries, regardless of compliance with conditions, with those of the non-programme countries, again regardless of reforms in the latter countries which took place on their own accord and independent of the World Bank loans. In brief the earlier studies concentrated on the assessment of pay off to conditional loans rather than pay off to actual policy reforms. Mosley, Subasat and Weeks (1995) suggest that it would be inappropriate to judge the effects of implementation in terms of recommended reforms even if these reforms are implemented. They note that a number of receivers of adjustment loans accepted the World Bank's conditionality only to receive the loan, to be followed by either reversing the conditions or taking counteractive measures to neutralise them.

In brief two types of errors may be associated with the early studies of the effects of SAPs. First that conditions attached to SAPs were assessed regardless of being implemented or not. Second that the control group of countries, which were supposed to be non-reformers, may have adopted similar reforms on their own accord. In this article we attempt to correct for such errors and evaluate the effects of compliance with conditonality on a set of socioeconomic indicators and the composite index of human development.

Data and methodology

The World Bank in a report (1997) provided an assessment of the extent of compliance of sub-Saharan African countries with conditionality of their loans. Countries were assessed with respect to the full range of policy reforms in their programmes taking into account all policy actions taken during the programme including actions of reversal or counteractive nature. The result of this study was an index of compliance which was based on the implementation of three groups of measures included in conditional loans.

The first group, Macroeconomic Stabilisation, included measures such as fiscal deficit reduction, control of public expenditure level, increase in fiscal revenues, and exchange rate adjustment. The second group, Public Sector Management, concerned measures such as civil service reforms, public expenditure reforms, public enterprise restructuring and privatisation. The third group, Private Sector Development, included measures such as financial sector reforms, trade policy reforms, pricing policies and incentive and improvements in regulatory environment. Countries were subsequently rated according to their level of compliance with each of these measures from 1 (the highest) to 4 (the lowest); the country's overall index for compliance was then the average of the scores for these three dimensions. The final result is the classification of countries into groups of *good, weak* and *poor* compliers according to their compliance score. The classification of countries is presented in appendix 1.

Noorbakhsh and Paloni (2001) and Mosley et al. (2003) discuss the problems associated with this index, however, they conclude that despite its shortcomings this is the best index of compliance available for sub-Saharan African programme countries

and use this index for investigating whether compliance has had any effect on growth. In this paper we adopt a similar approach to that of Noorbakhsh and Paloni (2001), though with a broader view, for assessing the effects of compliance with SAPs on a number of socioeconomic indicators of standards of living in sub-Saharan African countries.

For our analysis we have selected a number of indicators. They consist of economic indicators reflecting broad economic aspects, which are expected to be affected by compliance and also social indicators, which as the literature argues, should be the appropriate measures for testing the ultimate success or failure of structural adjustment programmes.

These are real GDP per capita (GDPPC), gross domestic investment as a percentage of GDP (GDIGDP), annual growth rate of agricultural value added (GAGRVA), expenditure on education as a percentage of GDP (EUEXP), primary school enrolment rate (PENROL), secondary school enrolment rate (SENROL), infant mortality rate (IMR) and human development index (HDI). The first three indicators measure the per capita income and its growth and growth in investment. Growth in agricultural value added has been selected as it is often argued that growth in agriculture has impact on poverty reduction for the poor who mostly live in rural areas and are active in this sector. Expenditure on education, enrolment ratios and infant mortality rate are to reflect the related social aspect and finally the composite measure of HDI has been selected to reflect the state of human development as defined by this index. Ideally we would have selected an indicator of poverty but this was not possible due to the non-availability of data in the periods required for our analysis.

The period of analysis selected for this study is of special interest. While most of the earlier analyses used a particular date as the beginning of the adjustment period, which was fixed for all countries (usually 1985 or 1986), we have taken the actual dates of the adjustment programmes which varies for different countries. Pre-adjustment period is defined as the five year period prior to the actual date of adjustment and the adjustment period is five years after the start of the programme.[1]

[1] This approach was adopted by Noorbakhsh and Paloni (2001) for studying the effect of compliance on growth

In order to evaluate the medium term effects of compliance with SAPs we also have a second five year period after the immediate adjustment period. All indicators are averages for the five year pre-adjustment and for the respective adjustment periods. The actual pre-adjustment and the short term and medium term adjustment periods (Adj1 and Adj2 respectively) for all countries in the sample are in appendix 2.

Compliance with conditionality and standards of living in the short run

Following the approach adopted by Noorbakhsh and Paloni (2001) we start with employing two types of analyses: temporal and comparative temporal. In the temporal analysis for each indicator we look at the difference in the pre-adjustment and adjustment periods and test the mean of differences for these periods statistically in order to see if the improvement is significantly different from zero. This analysis is done for different groups of compliers. Two types of tests are employed: the standard parametric t-test and Wilcoxon Matched-Pairs Signed-Ranks test which is a non-parametric test allowing us to relax the assumption of normal distribution in the samples.[2]

In the comparative temporal analysis we compare the difference between the adjustment and pre-adjustment periods in good and weak compliers with that of the poor compliers. We test the mean of difference where the group of poor compliers are the control group. Again two tests are employed for this purpose the standard parametric t-test and the Mann-Whitney U test which is a non-parametric test allowing for the relaxation of normality assumption in the samples, which in this case are independent.

Table 1 shows the temporal differences and their significance for our selected indicators and groups of compliers. That is the difference between the first adjustment period (Adj1) and the pre-adjustment period for groups of good, weak, good and weak, and poor compliers.

[2] Wilcoxon test is an appropriate non-parametric test as samples are related.

Table 1. Average differences in performance during the adjustment and pre-adjustment periods.

Compliers/ Variable	Good		Weak		Good & Weak		Poor	
	t-test	Wilcoxon	t-test	Wilcoxon	t-test	Wilcoxon	t-test	Wilcoxon
ΔGDPPC	-8.343 (-0.89)	0.968	-29.318 (-1.80)*	1.682	-18.83 (-2.00)*	1.867	-80.823 (-2.07)	1.992**
ΔGDIGDP	2.155 (0.63)	0.561	-1.816 (-0.91)	0.357	0.169 (0.09)	0.075	-1.310 (-0.74)	0.722
ΔGAGRVA	0.822 (0.47)	0.561	2.020 (1.21)	1.172	1.421 (1.20)	0.859	-1.700 (-3.49)***	2.746***
ΔEUEXP	2.086 (1.25)	1.572	-1.294 (-0.90)	0.169	0.396 (0.35)	1.153	-0.820 (-0.43)	0.000
ΔPENROL	-2.528 (-0.87)	0.533	-3.525 (-0.87)	0.459	-3.053 (-1.23)	0.161	1.922 (0.45)	0.296
ΔSENROL	-0.467 (-0.58)	0.296	-1.063 (-0.69)	0.070	-0.747 (-0.91)	0.000	0.138 (0.07)	0.735
ΔIMR	-6.990 (-4.27)***	2.402***	-12.034 (-8.58)***	2.936***	-9.632 (-8.12)***	3.808***	-6.018 (-2.56)**	2.296**
ΔHDI	0.021 (5.30)***	2.521***	0.002 (0.31)	0.663	0.011 (2.29)**	2.200**	0.009 (1.46)	1.274

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

For all groups of compliers ΔGDPPC shows a drop. However, the only differences in means significant are those of Good and Weak group of compliers (t-test at the 10% level) and that of Poor compliers (Wilcoxon test at the 5% level).[3] The results for ΔGDIGDP are mixed and not significant. However, the drop in GAGRVA for the Poor group is highly significant according to both tests. Temporal mean differences for EUEXP, PENROL and SENROL are mixed and not significant for any group by any of the tests. The results for ΔIMR indicate that all groups, regardless of their level of compliance have experienced a drop in infant mortality rate and these differences in means are all significant. ΔHDI shows a significant temporal difference for Good, and Good and Weak groups.

Table 2 shows the comparative temporal differences and their significance for our selected indicators. The control group is the group of Poor compliers. Consequently the results show the comparative difference in performance (as measured by the mean of temporal differences for each group) between other groups and the group of Poor compliers. Again the parametric t-test and the non-parametric Mann-Whitney tests are employed for the reasons mentioned above.[4]

[3] Noorbakhsh and Paloni (2001) analyse the effect of compliance on the rate of growth of real GDP extensively using the same data set. We have not included this indicator in our list in order to avoid duplication and the reader is referred to this article for details.

[4] Mann-Whitney test is a more appropriate non-parametric test in the case of comparative analysis as samples are independent.

Table 2. Average difference in performance in good and weak compliers as compared with poor compliers.

Compliers/ Variable	Good		Weak		Good & Weak	
	t-test	MW	t-test	MW	t-test	MW
ΔGDPPC	72.480 (1.59)	1.30	51.505 (1.09)	0.56	61.992 (1.86)*	1.11
ΔGDIGDP	3.465 (0.98)	0.89	-0.506 (-0.19)	0.29	1.480 (0.60)	0.70
ΔGAGRVA	2.519 (1.50)	1.32	3.717 (2.32)**	2.37***	3.118 (1.97)*	2.18**
ΔEUEXP	2.906 (1.09)	1.52	-0.474 (-0.19)	0.12	1.216 (0.58)	0.98
ΔPENROL	-4.450 (-0.86)	0.09	-5.447 (-0.92)	0.16	-4.975 (-1.07)	0.05
ΔSENROL	-0.605 (-0.32)	1.01	-1.201 (-0.50)	0.81	-0.885 (-0.51)	1.05
ΔIMR	-0.972 (-0.31)	0.50	-6.016 (-2.05)**	1.98**	-3.614 (-1.51)	0.93
ΔHDI	0.013 (1.60)	1.25	-0.007 (-0.76)	0.61	0.002 (0.22)	0.29

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Mean differences in ΔGDPPC between the groups in Table 2 and the Poor group are positive but not significantly different from zero according to both parametric and non-parametric tests. The only exception is that of the t-test for Good and Weak compliers which is significant only at the 10% level. The results for ΔGDIGDP are mixed and non-significant while there are significant differences for ΔGAGRVA indicating a higher rate of growth in agricultural value added in groups of Weak, and Good and Weak compliers as compared to that of the Poor compliers. Good compliance, however, is not associated with higher rate of growth in agricultural value added. The results for ΔEUEXP, ΔPENROL and ΔSENROL are not significant though the negative signs are notable. The differences in ΔIMR are negative and significant in the case of Weak group and the ΔHDI results are not significant.

Overall the results of temporal and comparative tests seem to suggest that in the short-run compliance with structural adjustment programmes may have had effects on some indicators of standards of living, namely, GDPPC, GAGRVA, IMR and HDI, although the evidence is far from conclusive.

Regression analysis

We extend our analysis by attempting to find out the effects of compliance on those indicators above, which are likely to be susceptive to compliance with SAPs. We start by regressing the temporal differences in variables which seem to be associated with compliance, namely GDPPC, GAGRVA, IMR and HDI, on the overall compliance scores. Table 3 depicts the results.

Table 3. Regression of the selected dependent variables on compliance scores.

	Dependent Variable			
Explanatory Variable	ΔGDPPC	ΔGAGRVA	ΔIMR	ΔHDI
Constant	59.465 (0.90)	4.851 (1.57)	8.169 (1.70)*	0.041 (2.83)***
Compliance	-40.062 (-1.64)	-1.745 (-1.51)	-0.022 (-0.01)	-0.013 (-2.28)***
N	31	30	33	26
R^2	0.09	0.08	0.00	0.18
F-statistics	2.68	2.29	0.00	5.19***

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

The regressions in table 3 do not support a link between change in GDP per capita and compliance. Nor do they support the proposition of a link between growth in agricultural value added and compliance. The same can be said for a link between the change in infant mortality rate and compliance. However, the coefficient of compliance variable in the regression for HDI is significant at the 1% level. The F-statistics for this regression is also highly significant. The sign of compliance in this regression is negative, indicating that the higher the degree of compliance the higher the improvement in HDI.[5] That is compliance is associated with higher level of improvement in HDI.

The above results suggest that compliance seems to be more associated with a change in HDI far more than with changes in other selected variables. For this reason the rest of this study focuses on the effects of compliance on a change in HDI.

As discussed in previous sections, the literature on the effects of structural adjustment programmes on standards of living and poverty often quotes specific conditions being responsible for adverse effects such as cuts in government expenditure and the

[5] The reader is reminded that the low (high) score for compliance indicates a high (low) degree of compliance.

vulnerability of expenditures in social sectors to such cuts. Other examples discussed in the literature often refer to the positive effects of financial and trade liberalisation on the economy, which are expected to attain higher standards of living. It therefore, would be interesting to see the association between the change in HDI and compliance with various components of SAPs.

As we indicated before conditions attached to loans have been classified into three groups of (i) Macroeconomic Stabilisation policies (MSP), (ii) Public Sector Management (PSM) and (iii) Private Sector Development (PSD). Table 4 shows the results of regressing the temporal change in HDI on the compliance scores for these groups of policies.

Table 4. Regression of temporal change in HDI on compliance with different components of SAPs

Variable/Model	1	2	3	4
Constant	0.043 (2.88)***	0.031 (2.66)***	0.048 (3.60)***	0.012 (0.92)
MSP	-0.002 (-0.29)	-0.007 (-1.87)*		
PSM	-0.016 (-1.94)**		-0.014 (-2.97)***	
PSD	0.006 (1.00)			-0.001 (-0.20)
N	26	28	27	27
R^2	0.33	0.12	0.26	0.00
F-statistics	3.55**	3.51*	8.81***	0.04

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Model 1 in Table 4 shows the results for regressing short run temporal change in HDI on all components of SAPs together. Compliance with MSP has the right sign but is not significant. While compliance with PSM has the right sign and is significant at the 5% level, compliance with PSD is neither significant nor has the expected sign.
It would be also interesting to see if compliance with the individual components groups of SAPs have affected short run change in HDI independently. Models 2 to 4 show the results for these regressions. These results indicate that compliance with MSP have improved human development in sub-Saharan programme countries albeit that the coefficient is significant only at the 10% level. More specifically compliance with measures such as fiscal deficit reduction, increase in fiscal revenues, public expenditure control and devaluation has been associated with an improvement in HDI.

Compliance with PSM measures such as civil service and public expenditure reforms, public enterprise restructuring and privatisation seem to be highly significant in terms of their effects on improving HDI. However, compliance with PSD measures (including financial sector reforms, trade policy reforms, pricing policies) have not been associated significantly with changes in HDI.

A number of possible criticisms may apply to our analyses so far. The temporal analysis has an implicit assumption that all changes that occurred in the adjustment period, as compared to the pre-adjustment period, are due to SAPs. This is clearly an unrealistic assumption, in particular when one takes into account the varying sample periods. The comparative analysis may also be criticised as it implies that only compliance would differentiate between the country groups. Clearly there may be other factors responsible for the perceived differences. The regression analysis is also limited to the compliance variables without taking into account other possible variables. It may well be the case that in the presence of other relevant explanatory variables the significance of compliance variable would simply vanish.

To overcome these possible criticisms we have included a set of control variables in our regression for changes in HDI. A number of factors could affect the change in HDI. These could be the initial conditions, economic, social and also external factors. One suspects that the role of external factors, given our varying sample period could prove to be important.

We have chosen four control variables to reflect these factors. The level of HDI in the pre adjustment period (HDIPA) was selected to reflect the initial conditions. GDP per capita in the adjustment period (GDPPCAD1) and growth rate of gross domestic investment in the adjustment period (GGDIAD1) were included to reflect the economic factors influencing HDI. Tertiary enrolment in the pre adjustment period (TERPA) was selected to reflect the flow of highly educated human capital with potential future feedback to the society as well as to the future education. The external conditions, in the varying sample period years, were to be reflected by the growth rate of real world GDP in the adjustment period (WGGDPAD1).[6]

[6] Number 1 in the name of a variable indicates adjustment period 1 as described in the text. The relevant dates can found in Appendix 2.

Table 5 shows the results for regressing temporal change in HDI on compliance with conditionality in the presence of control variables. We are interested to see if the significance of compliance in the presence of control variables would be diminished or remain as before.

Table 5. Regression of temporal change in HDI on compliance with SAPs and associated components and control variables

Variable/Model	1	2	3	4	5
Constant	0.032 (1.31)	0.041 (1.38)	0.015 (0.67)	0.030 (1.36)	0.027 (0.87)
HDIPA	-0.097 (-2.38)**	-0.082 (1.59)	-0.089 (-2.07)**	-0.065 (-1.64)	-0.126 (-2.42)**
GDPPCAD1	0.0001 (3.61)***	0.00004 (2.62)**	0.0001 (3.32)***	-0.0001 (2.85)***	0.0001 (3.68)***
GGDIAD1	0.001 (1.40)	0.001 (1.46)	0.001 (1.21)	0.001 (1.54)	0.001 (0.98)
TERPA	-0.003 (-1.60)	-0.004 (-1.37)	-0.003 (-1.66)	-0.004 (-2.16)**	-0.004 (-1.50)
WGGDPAD1	0.011 (2.07)**	0.009 (1.67)	0.012 (2.20)**	0.009 (1.87)*	0.012 (2.14)**
Compliance	-0.012 (-2.43)**				
MSP		0.002 (0.29)	-0.006 (-1.93)*		
PSM		-0.012 (-1.73)*		-0.012 (-2.78)***	
PSD		-0.005 (-0.61)			-0.009 (-1.40)
N	21	21	21	21	21
R^2	0.71	0.74	0.68	0.74	0.64
F-statistics	5.74***	4.34***	4.84***	6.48***	4.13***

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

The results in Table 5 support our previous results. All our models exhibit good fits as judged from R^2 and F-statistics. In model 1, where we use the overall compliance scores, the initial economic and external factors are significantly related to changes in HDI. The negative sign of HDIPA in the context of convergence literature, suggesting that the lower the initial level the higher the rate of growth, is justifiable.[7] GDP per capita and the world growth rate in the adjustment periods are also significant. Over all the empirical results seem to support the theoretical considerations for selecting the control variables.

[7] For a summary of the literature of convergence and its application see for example Noorbakhsh (2003).

As it can be seen from model 1 in the presence of control variables the effect of compliance still remains significant with the correct sign implying that compliance with conditionality has been associated with a higher change in HDI. Model 2 examines the effects of complying with various components of SAPs collectively. The results are ambiguous and less supportive. This may be because compliance with various components of SAPs has produced different outcomes. For example public sector management measures may affect HDI positively while private sector development measures may have the opposite effect. It would be, therefore, interesting to see if compliance with different categories of SAP conditions have affected short run change in HDI individually.

Model 3 examines the effect of MSP in the presence of our control variables. The same control variables are significant and the effect of complying with macroeconomic stabilisation policy is still significant, though at the 10% level. In this respect there is no change to our previous results in Table 4 for compliance with MSP. The effect of complying with public sector management policy conditions on ΔHDI, as shown in model 4, remains as highly significant as before even in the presence of the selected control variables. Finally the result for model 5, related to the effect of compliance with private sector management policy conditions on ΔHDI, remains insignificant.

Medium term effects of compliance

So far we have considered the short-run effects of compliance. The World Bank often argues that it takes time for adjustment policies to work their way through the economy. While the short run effects of fiscal deficit reduction is expected to have adverse effects on composite measures such as HDI, the World Bank argues that in the medium run such effects turn to be positive through the better finances of the public sector. Similarly it takes some time for the public sector reforms and trade and financial liberalisations to generate positive effects and affect productivity in the economy.

In order to investigate this we looked beyond the first 5 years of adjustment period and extended our analysis into the second 5 year period after adjustment. Table 6 shows the preliminary results.

Table 6. Compliance and medium term change in HDI

Compliers/ Variable	Good	Weak	Good & Weak	Poor
Average HDI for:				
Pre adjustment period	0.393	0.394	0.394	0.408
first adjustment period (Adj1)	0.415	0.396	0.404	0.417
second adjustment period (Adj2)	0.429	0.399	0.413	0.425
Temporal tests:				
t-test	0.036 (11.10)***	0.005 (0.34)	0.019 (2.13)**	0.017 (1.67)
Wilcoxon	2.53***	0.87	2.20**	1.68*
Comparative temporal tests:				
t-test	0.019 (1.65)	-0.012 (-0.67)	0.002 (0.14)	Control group
Mann-Whitney	1.16	0.11	0.70	

The top part of Table 6 shows the average HDI values for relevant groups and different periods. From an almost equal HDI in the preadjustment period various groups have made progress but to a different extent. During the first adjustment period the group of good compliers have done better than others followed by the group of poor compliers. What is of particular interest to us is that the group of good compliers have continued to increase their HDI in the second adjustment period. It is notable that in the second adjustment period good compliers have continued to do better than other groups, however, the poor compliers have done better than weak compliers.

The fact that poor compliers have done better than weak compliers raises the question of: are good compliance and no compliance equally effective? For compliance to be effective, one would have expected the weak compliers to have done better than poor compliers.

In addition we are interested to know if any of the mean differences are significant. The lower parts of Table 6 are related to the temporal changes in HDI in the medium

term and show the temporal and comparative temporal differences in HDI means between the second adjustment period (Adj2) and pre-adjustment period. Once again we have used t-test and Wilcoxon test for the temporal and t-test and Mann-Whitney test for comparative temporal differences in means for all our groups. In the comparative temporal comparison once again the poor group of compliers is the control group.

As can be seen from Table 6, both parametric and non-parametric tests indicate that the temporal differences in means for the group of good compliers is highly significant. The magnitude of the difference with respect to the mean of HDI for this group is also high. As for the group of weak compliers, the difference is low and not significant. The same for the group of good and weak is also relatively high and significant. However, the fact that the temporal difference for the poor group of compliers is also relatively high and significant, albeit at the 10% level, suggests that the pattern may be the same for the good and poor groups; hence it seems that compliance does not clearly differentiate amongst these groups in terms of their HDI performance. The results of both parametric and non-parametric tests for comparative temporal differences in means at the bottom of Table 6 do not throw more light on this ambiguity, as none of these for our groups is significant.

To investigate this further and to attend to the possible criticisms of temporal and comparative analyses as outlined before, we regress the medium term temporal change in HDI on the overall compliance scores and also on the scores for various components of compliance. The results are shown in Table 7.

Table 7. Regression of medium term temporal change in HDI on overall compliance and its components

Variable/Model	1	2	3	4	5
Constant	0.065 (2.42)**	0.070 (2.49)**	0.045 (2.08)**	0.075 (3.01)***	0.019 (0.82)
Compliance	-0.019 (-1.90)**				
MSP		0.000 (0.00)	-0.009 (-1.30)		
PSM		-0.027 (-1.79)*		-0.022 (-2.41)**	
PSD		0.008 (0.72)			-0.001 (-0.11)
N	26	26	28	27	27
R^2	0.13	0.25	0.06	0.19	0.00
F-statistics	3.59*	2.42*	1.69	5.79**	0.01

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

Model 1 indicates that the overall compliance has a significant effect on the medium term temporal change in HDI. Model 2 shows no association between compliance with macroeconomic stabilisation policies (MSP) and a change in HDI in the medium term. However, compliance with public sector management policy measures (PSM) seems to have a positive effect on change in HDI, though significant at only the 10% level. The effect of private sector development (PSD) measures on change in HDI is insignificant.

Once again it would be interesting to see if compliance with the individual component groups of SAPs have affected medium run change in HDI independently. Models 3 to 5 in Table 7 show the results for these regressions. Model 3 shows no significant association between compliance with MSP measures and the change in HDI. Model 4 shows a significant association between compliance with PSM measures and the change in HDI while compliance with PSD measures seems to have no significant effect on the change in HDI.

As we argued before, the results in Table 7 are subject to the criticisms that change in HDI in the medium term is exclusively attributed to compliance with conditionality. To overcome this problem, as before, we introduce a set of control variables which explain the changes in HDI. These are the same variables as we employed before, except that they are now relevant to the second period of adjustment where appropriate.[8] Table 8 shows the results for these regressions.

[8] Number 2 in the name of a variable refers to adjustment period 2 as explained in the text.

Table 8. Regression of medium-term temporal change in HDI on overall compliance and its components with control variables.

Variable/Model	1	2	3	4	5
Constant	0.124 (2.66)***	0.128 (2.26)**	0.112 (2.58)**	0.125 (2.90)***	0.123 (2.30)**
HDIPA	-0.386 (-3.68)***	-0.331 (-2.54)**	-0.396 (-3.74)***	-0.335 (-2.93)***	-0.419 (-4.17)***
GDPPCAD2	0.00006 (2.58)**	0.00005 (1.75)*	0.00006 (2.62)***	0.00005 (1.95)*	0.00006 (3.32)***
GGDIAD2	0.002 (2.26)**	0.002 (1.80)*	0.002 (2.42)**	-0.002 (2.03)*	0.002 (2.36)**
TERAD1	0.005 (1.09)	0.003 (0.48)	0.006 (1.15)	0.004 (0.73)	0.001 (1.14)
WGGDPAD2	0.009 (0.73)	0.008 (0.55)	0.011 (0.86)	0.009 (0.72)	0.009 (0.67)
Compliance	-0.008 (-0.86)				
MSP		0.005 (0.42)	-0.004 (-0.58)		
PSM		-0.017 (-1.16)		-0.013 (-1.30)	
PSD		-0.001 (-0.07)			-0.004 (-0.50)
N	22	22	22	22	22
R^2	0.64	0.66	0.63	0.66	0.62
F-statistics	4.35***	3.17**	4.17***	4.67***	4.14***

*** Significant at the 1% level. ** Significant at the 5% level. * Significant at the 10% level.

The results in Table 8 indicate that the effect of overall compliance on changes in HDI in the medium term, in the presence of control variables, vanishes (model 1). The same is the case for compliance with various components of conditionality, collectively (model 2) and separately (models 3 to 5). The selected control variables are by and large sensible as indicated by the results.[9] The least we could say is that there seems to be little to suggest that the effect of compliance with conditionality on HDI is persistent over time.

Concluding Discussion

Some socioeconomic aspects seem to have changed differently in countries which complied with SAPs. In the first instance it seems that a high degree of compliance with conditionality was associated with positive changes in some socioeconomic aspects as reflected by our selected indicators in the short run. Out of the four indicators, which seemingly were mostly affected by compliance, the change in HDI appears to stand the vigorous and stringent test of association. Categories of policy conditions were associated with the change in HDI in the short run differently. The

change in HDI was affected significantly by the public sector management policy measures (PSM), less significantly by the macroeconomic stabilisation policy measures (MSP) and not affected by the private sector development policy measures (PSD). This was if we assumed that the changes in HDI were due to these measures only. However, when a set of relevant control variables were introduced, the effect of the above categories of policy measures remained more or less the same with a drop in the significance of MSP measures. In the light of these results it is reasonable to conclude that in the short run, compliance with the PSM and to some extent the MSP policy measures did lead to a positive improvement in HDI, while compliance with PSD policy measures had no effect.

The mediums run effects are somewhat more ambiguous. If changes in HDI are to be attributed to compliance, only the effect of compliance seems to remain significant. However, out of the categories of policy measures, only compliance with the PSM measures seems to be significant. However, when control variables are introduced into the model, the significance of compliance with PSM measures disappears in the medium run. These results are in line with the outcome of a number of studies, including those by Paloni and Noorbakhsh (1998) on the export supply response to SAPs.

In brief the short run effects are more pronounced than the medium run effects. Bearing in mind that in the case of sub-Saharan African countries conditionality was packaged with substantial soft loans, the remaining question is whether the short run significant effects are purely the effect of spending the loan money and are unsustainable. Indeed, Mosley et al. (2003) conclude that the size of the loan has had a significantly positive effect on the recipient country to comply with conditionality. This is a question worthy of further research.

[9] We tried the same regression excluding TERAD1 and WGGDPAD2 and there were no improvements in the results.

Appendix 1. Country typology by the level of compliance

Good compliers

Benin, Gambia, Ghana, Malawi, Mali, Mauritania, Mauritius, Mozambique, Sierra Leone, Tanzania.

Weak compliers

Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Madagascar, Niger, Senegal, Togo, Uganda, Zambia, Zimbabwe.

Poor compliers

Burundi, Cameroon, Central African Republic, Chad, Congo, Gabon, Kenya, Nigeria, Rwanda, Sao Tome, Somalia, Sudan, Zaire.

The average scores for the three components of Macroeconomic Stabilization, Public Sector Management and Private Sector Development constitutes the overall compliance score. The overall compliance scores for the *good* compliers range from 1.1 to 2.2 with an average of 1.7. The same for *weak* compliers range from 2.5 to 2.9 with an average of 2.7. The ratings for the poor compliers range from 3 to 4 with an average of 3.4.

The data for the selected indicators were not available for all the above countries, therefore some countries are excluded from the relevant analysis for this reason.

Appendic 2. Actual pre adjustment, short term and medium term adjustment periods.

	Pre-Adj.	Adj. 1	Adj. 2		Pre-Adj.	Adj. 1	Adj. 2
Benin	1984-88	1989-93	1993-97	Mauritius	1976-80	1981-85	1986-90
Burkina Faso	1986-90	1991-95	1996-2000	Mozambique	1983-87	1988-92	1993-97
Burundi	1981-85	1986-90	1991-95	Niger	1981-85	1986-90	1991-95
Cameroon	1984-88	1989-93	1994-98	Nigeria	1982-86	1987-91	1992-96
CAR	1982-86	1987-91	1992-96	Rwanda	1986-90	1991-95	1996-2000
Chad	1984-88	1989-93	1994-98	Sao Tome	1982-86	1987-91	1992-96
Congo	1983-87	1988-92	1993-97	Senegal	1981-85	1986-90	1991-95
Cote d'Ivoire	1977-81	1982-86	1987-91	Sierra Leone	1987-91	1992-96	1997-2001
Gabon	1983-87	1988-92	1993-97	Somalia	1981-85	1986-90	1991-95
Gambia	1982-86	1987-91	1992-96	Sudan	1975-79	1980-84	1985-89
Ghana	1978-82	1983-87	1988-92	Tanzania	1982-86	1987-91	1992-96
Guinea-	1980-84	1985-89	1990-94	Togo	1978-82	1983-87	1988-92
Kenya	1975-79	1980-84	1985-89	Uganda	1983-87	1988-92	1993-97
Madagascar	1980-84	1985-89	1990-94	Zaire	1981-85	1986-90	1991-95
Malawi	1976-80	1981-85	1986-90	Zambia	1986-90	1991-95	1996-2000
Mali	1983-87	1988-92	1993-97	Zimbabwe	1987-91	1992-96	1997-2001
Mauritania	1981-85	1986-90	1991-95				

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