

**The Economic Growth of Serious and Less Serious Reformers:  
A Look at Structural Adjustment Programmes in Sub-Saharan Africa**

**Farhad Noorbakhsh and Alberto Paloni**

*Centre for Development Studies  
Department of Economics  
University of Glasgow*

f.noorbakhsh@socsci.gla.ac.uk  
a.paloni@socsci.gla.ac.uk

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**Abstract**

This paper investigates whether compliance with policy conditions set out in structural adjustment programmes in Sub-Saharan Africa has been associated with higher economic growth. Interestingly, the sample period for this cross-country analysis varies in accordance with each country's actual adjustment period. The empirical evidence indicates that compliance is an important determinant of economic performance and that the benefits of complying are to some extent persistent over time. However, a stricter degree of compliance does not appear to result in a significantly superior performance than weaker compliance. The paper also investigates the contribution of different policy reforms to growth and the role of the policy stance in altering that contribution.

## **1. Introduction**

Structural adjustment has dominated policy-making in Sub-Saharan Africa since the early 1980s. Thirty-seven countries have been involved with adjustment lending; twenty-two countries are - as at the beginning of the 1997 fiscal year - still engaged in structural adjustment programmes. Overall structural adjustment lending has exceeded 15 billion dollars (World Bank, 1997). By any measure, this is a significant flow of funds into the region.

However, whether structural adjustment programmes have been beneficial for the economies of the countries involved is a controversial matter. Some authors contend that the adjustment policies supported by the World Bank are inappropriate and advocate the adoption of a more eclectic and pragmatic approach (see for instance the collection of papers in Cornia and Helleiner, 1994; Engberg-Pedersen, 1996; Stewart, Lall and Wangwe, 1992).

In its high-profile report on Africa, the World Bank (1994) retorted that the perception that policy reforms in Sub-Saharan Africa have not been particularly effective in improving economic performance is erroneous since it confounds the effects of the failure to implement policy reforms with the effects of reforms that are actually implemented. This report also provided empirical evidence suggesting that countries that had actually implemented macroeconomic policy reforms improved in fact their economic performance while countries that had made only limited adjustment efforts performed poorly.

Despite the severe criticisms addressed to this report, especially towards its methodology (Mosley, Subasat and Weeks, 1995), a number of other influential articles, and indeed the casual observation of events around the globe, seem to confirm the importance of appropriate macroeconomic policies for growth (for example, see

Corden, 1990; Easterly, Loayza and Montiel, 1997; Fischer, 1991, 1993; International Monetary Fund, 1995).

Regardless of the strength of its conclusions and its empirical evidence, the World Bank (1994) report was not an assessment of the effectiveness of adjustment lending operations for two main reasons. First, in addition to macroeconomic stabilization measures, adjustment programmes entail institutional and policy reforms of a structural nature (World Bank, 1988; 1990; 1992; 1995) whose effectiveness in accelerating the rate of economic growth was not fully assessed in the 1994 report.

Second, the final effect of adjustment programmes on growth depends not only on whether certain recommended policies were implemented, but also on whether the implementation of such policies was accompanied by the introduction of other measures with the objective of neutralizing the reforms, and whether the recommended reforms were subsequently reversed. In other words, the 1994 report examined the benefits arising from the implementation of certain policies rather than the success of adjustment programmes.

In a recent report on its adjustment lending operations in Sub-Saharan Africa, the World Bank (1997) provided a typology of countries according to their compliance with adjustment lending conditionality, that is according to their implementation of policies that the World Bank expects to be followed as a condition for making credit available.

Two characteristics of this typology stand out. One, compliance is evaluated with respect to the full range of policy reforms involved in structural adjustment programmes. Two, the assessment of compliance is with respect to agreed reforms at the country level and considers all policy actions taken by programme countries over time. This is to capture the neutralization/reversal of reforms that were implemented to

comply with the conditions set out in individual loans.

This typology goes a long way towards allowing an assessment of the quality of conditionality and the role of structural adjustment policies in promoting economic growth.<sup>1</sup> The World Bank report (1997) falls short of such an assessment since the country typology is not accompanied by a statistical analysis of the effects of compliance on growth. The index of compliance with conditionality that underlies the country typology is thus at the core of this paper.

The index in its original form, together with its modifications made in this paper, is used here to start an investigation of three important questions. The main one is whether stricter compliance has been associated with faster rates of economic growth. The second question concerns the contribution of different policy reforms to accelerating or reducing the rate of growth and the role of the policy stance in altering that contribution. The third question is whether compliance effects can be identified over the medium to the long run.

This is the plan of the paper. The evaluation of adjustment programmes on the basis of compliance with policy conditionality is discussed in Section 2, together with a description of the World Bank index of compliance. All the other main methodological aspects of this study are illustrated in Section 3. The effect of compliance on economic performance is discussed in Sections 4 and 5. Section 6 investigates the persistence of compliance effects. Concluding remarks are presented in the final section.

## **2. A typology of programme countries based on compliance with reforms**

Identifying the effect of structural adjustment programmes is a daunting task

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<sup>1</sup> If the agreed reforms were implemented but the expected results were not achieved, the explanation has to be sought in the quality of conditionality as well as in other exogenous factors.

(Summers and Pritchett, 1993). Such exercise faces two major difficulties. The first is that of estimating the counter-factual, i.e. what would have happened in programme countries in the absence of a programme. In the absence of a very reliable method to do this, researchers in practice compare the evolution of certain selected variables between programme and pre-programme years in programme countries<sup>2</sup> and/or in programme countries relative to a control group normally composed of non-programme countries.<sup>3</sup> (See Goldstein and Montiel, 1986; Khan, 1990; World Bank, 1990 for methodological discussions and applications). The same method is adopted in this paper.

The second difficulty for the assessment of programme effects consists in defining the group of programme countries itself. Initially the World Bank (1988) classified countries as programme countries if they were recipient of adjustment loans. According to this classification, programme countries were identified as reformers and the other countries as non-reformers.

It is plausible, however, that programme effects would also depend on whether countries sought the assistance of World Bank adjustment lending at an early or late stage and more or less intensively. Thus, the World Bank (1990) introduced the distinction between Early Intensive Adjustment Lending (EIAL) countries and Other Adjustment Lending (OAL) countries, the former being the countries that, having borrowed from the World Bank more extensively and for longer periods than the other programme countries, were expected to have achieved a more significant adjustment in their economies and better growth performance.<sup>4</sup> (For analyses using this approach see

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<sup>2</sup> This temporal analysis has often been named “before-after”.

<sup>3</sup> This comparative analysis has often been termed “with-without”.

<sup>4</sup> The number and type of loans would determine whether a particular country would be classified as EIAL or OAL. More precisely, EIAL countries were those that received two or more structural

Corbo and Rojas, 1992; Noorbakhsh and Paloni, 1998b; World Bank, 1990; 1992).

The weaknesses of this approach are, on the one hand, that economic reforms were undertaken not only by programme countries but also by countries which did not receive adjustment loans. Thus, Thomas and Nash (1991), for example, argued that what might differentiate countries' performance is whether they were reformers or non-reformers, not programme or non-programme. On the other hand, the simple fact of being a programme (EIAL) country does not necessarily turn the country into a (more determined) reformer, since programme countries implemented the recommended policies to different extents: some countries in receipt of adjustment loans abandoned reforms early or were on-again/off-again reformers. It would thus not be accurate to bundle all programme or EIAL countries in the same category of reformers (Summers and Pritchett, 1993).

This observation suggests that the assessment of programme effects should take into account programme countries' degree of compliance with the policy conditions set out in adjustment programmes. (A similar approach was adopted, for example, by Mosley, Harrigan and Toye, 1991. The World Bank (1988; 1990; 1992) also analysed programme countries' compliance with conditionality<sup>5</sup>).

Following the same logic of concentrating on the policies actually implemented, the World Bank (1994), as well as its update by Bouton, Jones and Kiguel (1994), provided a classification of Sub-Saharan African programme countries according to the extent of their macroeconomic reforms. The objective of those studies was to show that those countries that made the largest adjustments in their macroeconomic policy

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adjustment loans (SALs) or three or more adjustment loans (SALs or sectoral adjustment loans (SECALs)) starting in 1985 or before.

<sup>5</sup> Interestingly, the Bank reported a relatively high degree of compliance. For instance, according to the 1992 report, 73% of all loan conditions in Sub-Saharan African adjustment programmes were fully implemented and 87% at least substantially implemented.

stance had better economic performance than the countries that implemented less resolute macroeconomic reforms.

The fact that countries do not always implement the reforms agreed upon or that they implement reforms that are not elements of programmes supported by adjustment loans had therefore caused a change in emphasis as the purpose of the analysis became that of examining the payoff to policy reform and not to adjustment lending.

The analysis of compliance or policy implementation is not without problems. Thus, Mosley, Subasat and Weeks (1995), for example, made the point that many of the receivers of adjustment lending flouted World Bank's conditionality by either implementing the recommended policies and then reversing them or implementing the formal conditionality but undoing its effects through countervailing measures. Therefore - they concluded - it is not sufficient to judge implementation purely in terms of recommended measures, even if those measures were actually carried out.

The World Bank (1997) presented a new classification for Sub-Saharan African programme countries based on their degree of compliance where, precisely to take into account eventual policy reversals and countervailing measures, compliance is evaluated with respect to conditions and reforms agreed under all adjustment operations in a given country, rather than with the conditions set out in individual loans.<sup>6</sup>

Underlying this country classification is an index of overall compliance. To calculate it, the multiple reform measures sought by the adjustment programmes have first been classified into three groups, namely Macroeconomic Stabilization, Public

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<sup>6</sup> The other important difference with respect to the classification in World Bank (1994) and Bouton, Jones and Kiguel (1994) is that, as mentioned earlier, World Bank (1997) considers the entire range of policies included in adjustment programmes rather than macroeconomic policies alone, as in those previous studies.

## Sector Management and Private Sector Development.

Macroeconomic Stabilization includes all conditions regarding fiscal deficit reduction, fiscal revenues, public expenditure levels, exchange rate, etc. Public Sector Management includes measures for civil service reform, public expenditure reform and public enterprise restructuring and privatization. The measures under Private Sector Development concern financial sector reform, trade policy reform, pricing policies and incentives, and regulatory environment.

In a second step, compliance with measures in each of these three groups has been rated from 1 (highest) to 4 (lowest). The country index for overall compliance has finally been constructed by averaging the ratings for the individual groups. On the basis of this index, countries have been classified as *good*, *weak* or *poor* compliers. (The country typology is presented in Appendix A)

Unfortunately, this compliance index is liable to criticisms.<sup>7</sup> First, the assessment of the degree of compliance is inevitably subjective. Second, the number of categories (four) for the scores in each group of policies is arbitrary: the problem with this is that, in certain cases, changing the number of categories for the scores may change the ranking of countries when the individual scores are averaged. Third, the index being ordinal, it provides information on whether compliance in a country is better than in another but is less informative on whether the difference between two countries' scores is small or large, at least within certain ranges. Finally, the aggregation of ratings in the three policy groups by means of simple averaging is also subject to criticism since economic theory is silent about the relative weights that should be attached to the various elements.

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<sup>7</sup> At least some of these criticisms are common to those raised towards the index of macroeconomic adjustment presented in World Bank (1994). See Mosley, Subasat and Weeks (1995).



These criticisms strike at the core of the country typology and question the use of the index to test the hypothesis that compliance matters for growth. Nevertheless, no alternative method seems capable of avoiding these and other criticisms and, although imperfect, this index of compliance provides some indication of the extent to which programme countries have implemented recommended policy measures since the beginning of their adjustment period.

### **3. A cross sectional analysis with varying sample periods**

This paper employs the type of multicountry temporal and comparative analyses mentioned at the beginning of the previous section. The temporal analysis investigates whether the average rate of growth of GDP during the first five years of the adjustment programme was significantly different from the average growth rate during the five-year period preceding the programme.<sup>8</sup> These temporal comparisons are carried out for the three groups of good, weak and poor compliers as identified by the World Bank (1997).

The comparative analysis investigates whether there are statistically significant differences across the three groups of countries with respect to the change in GDP growth before and during the adjustment programme. In the framework used in this paper, the poor compliers constitute the control group, whose economic performance is compared to that of good and weak compliers.

The treatment made in this paper of the sample periods for these cross sections

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<sup>8</sup> The choice of a five-year period is quite arbitrary but no consent has emerged in the literature about an optimal length: for example, Corbo and Rojas (1992) use a four-year periodization, while Bouton, Jones and Kiguel (1994) a six-year one. In any case, the length of the period should be chosen so as to capture both the prolonged deterioration in economic performance that is normally associated with a country's decision to seek World Bank assistance and the amount of time required for structural reforms to show their effects on the economy.

is uncommon. Normally a certain date is identified as the beginning of the adjustment period and is kept fixed for all countries. More precisely, since structural adjustment lending intensified in the second half of the 1980s, the year 1985 (sometimes 1986) is taken as the threshold: the years up to 1985 (or 1986) are the pre-adjustment period while the subsequent years constitute the adjustment period for all countries (see, for example, Corbo and Rojas, 1992; World Bank, 1994).

This procedure is clearly unsatisfactory since countries undertook structural adjustment programmes at different times, with some countries completing their operations before other countries had even begun theirs. This paper adopts the more appealing procedure of letting the sample period for each country vary in accordance with its actual adjustment period.<sup>9</sup> (Actual adjustment periods for each country are listed in Appendix B).

The statistical significance of differences in performance between periods or country groups is tested by means of both parametric and non-parametric tests. The parametric test used here is the standard  $t$  test. Non-parametric tests are also carried out since they allow one to relax the  $t$  test's assumptions that the samples under study are normally distributed and have equal variances. The non-parametric test employed in the temporal analysis is the Wilcoxon Matched-Pairs Signed-Ranks test.<sup>10</sup> In the comparative analysis the Mann-Whitney  $U$  test is adopted.

The adoption of varying sample periods has an important implication. In spite

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<sup>9</sup> The procedure of varying sample periods has already been adopted in temporal and comparative analyses - and of course analyses based on panel data - but not, to our knowledge, in cross-country regressions such as those in Section 5.

<sup>10</sup> To our knowledge, the Wilcoxon test has been used for temporal analyses of World Bank-supported programmes only in Noorbakhsh and Paloni (1998a). Other researchers have inappropriately used the Mann-Whitney  $U$  test that, unlike the Wilcoxon test, requires independent samples. In temporal analyses data are from two related samples, since economic time series are normally correlated. Both tests are described in Siegel (1956).

of the fact that certain external factors, such as world recessions, tightening in world financial conditions, etc., affect Sub-Saharan countries simultaneously, their influence is not constant across time and - if the sample period is allowed to vary - needs to be explicitly taken into account even in a cross-country context.

Furthermore, it could be argued that a proper comparative analysis ought to allow for non-programme differences across countries that may have a bearing on their subsequent economic performance. Thus, the comparison of average growth rates in the groups of good, weak and poor compliers that is conducted in the next section without regard for the role of these additional factors is followed by a more in-depth analysis where their influence is assessed in the context of regression analysis.

#### **4. Compliance with conditionality and growth**

The top part of Table 1 presents rates of growth of real GDP for the countries in the sample according to their degree of compliance with programme conditionality. In the five-year period preceding the programme, average growth in poor compliers was 3.0 percent per year; this was higher than in the other groups. During the first five years of the programme, average growth in the group of poor compliers fell to 1.3 percent. On the contrary, average growth during the programme increased in both good and weak compliers relative to the pre-programme period. The rates of growth achieved in the groups of weak and good compliers during the programme period were more than twice the rate in the group of poor compliers.

The bottom part of Table 2 reports the results of parametric and non-parametric tests for the significance of temporal and comparative differences in economic performance. Looking at the temporal differences, the improvement between the pre-adjustment and the adjustment period is not significant in the groups of good

Table 1. Compliance and economic performance

(a) Average rates of growth

	Pre-Adjustment	Adjustment
Good compliers	1.7	2.8
Weak compliers <sup>1</sup>	1.6	2.8
Poor compliers <sup>2</sup>	3.0	1.3

<sup>1</sup>Guinea has been excluded from the averages due to lack of data for the pre-adjustment period.

<sup>2</sup>Equatorial Guinea has been excluded from the averages due to lack of data for the pre-adjustment period.

(b) Tests for the significance of differences in performance

	<i>Temporal differences</i>	
	<i>t</i> -test	Wilcoxon
Good	1.102 (1.09)	0.968
Weak	1.185 (1.21)	0.968
Good + Weak	1.143 (1.67)	1.493
Poor	-1.672 (-1.43)	-1.572
	<i>Comparative differences<sup>1</sup></i>	
	<i>t</i> -test	Mann-Whitney
Good + Weak	2.815 (2.23)*	2.284*
Good	2.774 (1.83)†	1.861†
Weak	2.857 (1.88)†	1.984*

<sup>1</sup>The group of poor compliers is the control group.

*t*-values are in parentheses. Reported values of the two-tailed Wilcoxon and Mann-Whitney tests are those of standardized test statistics.

\*\* Significance at the 1 percent level.

\* Significance at the 5 percent level.

† Significance at the 10 percent level.

and weak compliers, either considered together or separately. The worsening between the pre-adjustment and the adjustment period in the group of poor compliers is also not significant.

With respect to the comparative differences, the economic performance of good and weak compliers, considered either separately or together, is significantly better than that of the poor compliers. The improvement in performance relative to the group of poor compliers is practically the same for good and weak compliers.

The empirical evidence reviewed so far shows that, for countries that require structural adjustment, compliance with programme conditionality is associated with better economic performance. However, while the differences in performance between compliers and non-compliers are statistically significant, changes in performance over time are not themselves significant in any group. Furthermore, good compliance does not appear to result in better economic performance than weak compliance. Thus, overall, compliance effects on growth appear at this stage to be ambiguous.

## **5. Estimating compliance effects on growth**

These types of temporal and comparative analyses are, however, subject to the criticism that their results may be biased. (See Goldstein and Montiel, 1986 for a rigorous analysis). Temporal analyses attribute the change in the variable of interest exclusively to the programme, implicitly assuming that the non-programme determinants of performance - for example, external influences - remain unchanged between the two periods.

Comparative analyses assume that only the degree of compliance differentiates the two groups being compared. In other words, the two groups are assumed to be similar, i.e. drawn from the same population.

To overcome these difficulties, the role of the external environment, initial economic conditions, social factors and other country-specific conditions in affecting short-term growth performance should be explicitly accounted for. With varying sample periods, the inclusion of at least some of these factors is even more important. The natural manner to do this is in the context of a regression-based approach.

The immediate problem is that modelling all these different factors would require a large number of variables: this would reduce the number of available degrees of freedom and may also introduce problems of collinearity. A sensible approach seems, therefore, that of minimizing the number of additional regressors by choosing broad variables that, by their likelihood of being correlated with the factors under consideration, may be taken as proxies for those factors. The observation that this paper focuses on the effect of adjustment programmes on growth, rather than on the role of all possible determinants of growth, may provide further support for this parsimonious approach.

The variable chosen to represent external conditions is the growth rate of world real GDP.<sup>11</sup> This variable is taken to represent a host of factors, such as world demand, terms of trade effects, foreign direct investment flows, aid flows, etc., which are all affected to some extent by the growth rate of world GDP.

The level of GDP per economically active population in the pre-adjustment period has been chosen to represent initial economic conditions, which have an obvious influence on the subsequent rate of growth of GDP.<sup>12</sup>

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<sup>11</sup> It should be noted that, with varying sample periods, the growth rate of world real GDP is indeed a variable. With fixed sample periods, it would be a constant.

<sup>12</sup> Studies in the context of the modified control group methodology and other studies (Bouton, Jones and Kiguel, 1994; Corbo and Rojas, 1992; Khan, 1990; World Bank, 1994) have used the lagged dependent variable to model initial economic conditions. However, this procedure is not particularly satisfactory. As already noted by Kirkpatrick and Clarke (1992); Mosley, Subasat and Weeks (1995); and Noorbakhsh and Paloni (1998a), the inclusion of such variable does not have any economic

The variable chosen to represent other country-specific conditions is the change in the gross domestic investment to GDP ratio between the adjustment and the pre-adjustment periods.<sup>13</sup> This variable intends to capture economic and social factors, such as changes in technology, political stability, improvements in infrastructure, programme ownership, access to international finance, education and health conditions, etc., which stimulate economic growth by affecting both the volume and the efficiency of investment.<sup>14</sup>

Table 2 reports the results of regressions that investigate whether the degree of compliance with programme conditions affects the rate of growth after controlling for the role of the external environment, initial economic conditions, social factors and other country-specific conditions. The main difference across regressions consists in the choice of variables representing compliance with adjustment lending conditionality. The regression in Column (1) includes, in addition to the three *control* variables, the index of overall compliance. It can be seen that all control variables are highly significant. Even if the volume effect of adjustment programmes on investment is partly captured by the control variables, the index of compliance is significant at the 5 percent confidence level. Compliance with programme conditions has a positive effect on countries' performance.<sup>15</sup>

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interpretation and only serves the purpose of artificially raising the R squared. This criticism does not apply to the *level* of initial GDP per capita.

<sup>13</sup> Further support for the inclusion of this variable may be provided by the finding by Levine and Renelt (1992) that the only positive and robust correlation between average cross-country growth rates and a range of economic variables was that with the average share of investment in GDP. Their robustness test has, however, been criticized for being too strong (Sala-i-Martin, 1997).

<sup>14</sup> The explicit inclusion of the change in the investment to GDP ratio among the explanatory variables in the growth regression inevitably captures at least some of the volume effect of adjustment programmes on investment. As a consequence, eventual programme variables would capture principally the efficiency effect and their statistical significance may be reduced.

<sup>15</sup> Since a higher degree of compliance with programme conditions receives a lower score in the compliance index, a positive relation between compliance and growth results in a *negative* sign of the estimated coefficient of the compliance index.

Table 2. Short-run compliance effects on economic growth

Dependent variable:  $\Delta GDPg$

	(1)	(2)	(3)	(4)	(5)
<i>GDPpPA</i>	1.19E-03 (4.14)**	1.18E-03 (4.31)**	1.28E-03 (4.59)**	1.23E-03 (4.77)**	1.28E-03 (6.49)**
<i>WGDPg</i>	3.337 (3.79)**	3.150 (3.79)**	3.144 (3.82)**	3.147 (4.08)**	7.248 (8.58)**
<i>DIGDP</i>	0.237 (3.56)**	0.291 (4.26)**	0.247 (3.76)**	0.265 (4.60)**	0.414 (5.32)**
<i>Compliance</i>	-1.467 (-2.22)*				
<i>MS</i>		1.648 (1.74)†			
<i>PSD</i>		-1.671 (-2.20)*			
<i>PSM</i>		-2.355 (-2.01)*			
<i>Good</i>			2.665 (2.43)**		
<i>Weak</i>			2.915 (2.66)**		
<i>GoodMS</i>				-3.172 (-1.67)	
<i>WeakMS</i>				1.542 (1.27)	
<i>GoodPSD</i>				1.903 (1.45)	
<i>WeakPSD</i>				2.107 (1.77)†	
<i>GoodPSM</i>				5.450 (3.27)**	
<i>WeakPSM</i>				1.957 (1.65)	
<i>XGDP</i>					7.65E-02 (3.28)**
<i>SURGDP</i>					-1.405 (-4.79)**
<i>SURGDP^2</i>					-6.8E-02 (-4.20)**
<i>INF</i>					-6.8E-02 (-1.53)
<i>INF^2</i>					6.21E-04 (1.52)
<i>Constant</i>	-6.317 (-2.20)*	-4.403 (-1.56)	-11.630 (-4.92)**	-13.325 (-5.61)**	-26.145 (-8.89)**

*t*-values are in parentheses. Data sources and definitions of variables are in Appendix C.

\*\* Significance at the 1 percent level.

\* Significance at the 5 percent level.

† Significance at the 10 percent level.



The regression in Column (2) replaces the index of overall compliance with scores for compliance in each of the three policy groups. There is little change in the level of significance or the size of the estimated coefficients of the control variables. Compliance with policy conditions relative to Public Sector Management and Private Sector Development has beneficial effects on growth at the 5 percent confidence level. On the other hand, there is an indication, at the 10 percent confidence level, that a higher degree of compliance with Macroeconomic Stabilization policies may slow down economic growth.

This result is consistent with the view (expressed for instance in Khan and Knight, 1985) that while structural reforms would eventually allow new sources of growth to take the economy onto a sustainable growth path, macroeconomic stabilization policies impose short-run transitional costs that are nonetheless necessary if structural reforms are to succeed.

Some caution is, however, required in interpreting the results reported in Column (2) since the three policy areas included in adjustment programmes are to some extent complementary and good compliance in one area may be more likely associated with good compliance in another area.

Overall, compliance with programme conditionality seems to raise economic growth. To investigate whether different degrees of compliance affect growth to different extent, in Column (3) compliance scores are replaced by dummy variables for the countries that, on the basis of the index of overall compliance, had been identified as good or weak compliers by the World Bank.

The estimated coefficients of both dummy variables are significant: good compliance with programme conditions has a positive effect on growth at the 5 percent confidence level; weak compliance has a positive effect at the 1 percent level. Although

the size of the coefficient of the dummy for weak compliance is larger than that of the dummy for good compliance, their difference is small and not significant. The results of this regression suggest that, although a certain degree of compliance with programme conditionality is reflected in a higher rate of growth than when compliance is poor, there seems to be little difference between good and weak compliers.

Similarly to the regression in Column (2), the regression in Column (4) replaces overall compliance with compliance in the individual policy groups and, similarly to the regression in Column (3), it distinguishes between good and weak compliers.<sup>16</sup> This regression, therefore, may provide some information on the relative contribution of policy areas to accelerating or reducing the rate of economic growth. It may also give an indication of how a ‘more determined’ policy stance contributes to an increase in the growth rate compared to a ‘less determined’ stance. Some caution is required when interpreting these results due to the increase in the number of explanatory variables and the fact that these may not be independent.

The results show once again the remarkable stability of the size of the estimated coefficients of the control variables and their significance levels. Their robustness seems to justify their selection. Good compliance with Public Sector Management policy conditions has a strong positive effect on growth that is significant at the 1 percent level. Weak compliers in this policy area raised their rate of growth relative to the poor compliers only at the 12 percent confidence level. Compliance with Private Sector Development policy conditions appears to improve economic performance,

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<sup>16</sup> Countries were divided into good, weak or poor compliers with respect to conditions in each of the policy groups on the basis of the relative compliance scores assigned by the World Bank. The criteria that were adopted for this classification were arguably similar to those followed by the World Bank when classifying countries into good, weak or poor compliers with respect to the overall programme conditionality on the basis of the overall compliance score. If the distribution of the scores allowed it, attention was paid to forming country groups such that (a) their size was broadly similar; and (b) the mean score for each group was not very sensitive to marginal changes in the composition of the group.

though this effect is statistically significant only for the weak compliers at the 10 percent level. Finally, good compliance with Macroeconomic Stabilization policy conditions slows down growth at the 11 percent confidence level. On the other hand, weak compliance has a positive but insignificant effect.

To summarize the results reported in Columns (1)-(4) of Table 2, the empirical evidence seems to suggest that compliance with the policy conditions formulated in structural adjustment programmes matters for growth: countries that comply perform better than poor compliers. This finding confirms the results reported in Table 1.<sup>17</sup>

On the other hand, two qualifications need to be added. One, not all policy conditions raise the rate of growth of programme countries. Macroeconomic Stabilization measures in particular seem to slow down growth, especially if the recommendations formulated in adjustment programmes are closely implemented. It would be premature, however, to conclude that Macroeconomic Stabilization is unequivocally bad for growth: although the evidence is not conclusive, poor compliers with conditions in this policy area seem to perform worse than weak compliers.

The second qualification is that, overall, the rewards for good compliance with policy conditions appear to be uncertain: despite a positive effect of measures concerning Public Sector Management, the economic performance of good compliers seems to be no better than that of weak compliers when the benefits of compliance are measured with respect to the group of poor compliers.

As mentioned in Section 2, however, serious criticisms may be raised against the formulation and computation of the index of compliance. In an attempt to

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<sup>17</sup> A warning is perhaps needed at this stage. If the status of complier or non-complier is the result of an endogenous decision determined by certain country characteristics, the coefficients of compliance variables may be biased and inconsistent (Heckman, 1979). However, an attempt has been made in this paper to partially control for this by trying to capture some country-specific characteristics.

overcome possible weaknesses, the regression in Column (5) removes all variables related to compliance, which have a qualitative character. In their place, other variables are introduced: these are cardinal indicators of policy stance and have been chosen as variables that structural adjustment programmes aim to influence strongly, while being regarded, at the same time, as important growth determinants in influential recent empirical growth literature.

Three variables have been selected, namely the export to GDP ratio, the government surplus to GDP ratio, and the inflation rate. Since the relationships between the government surplus and the growth rate and between inflation and the growth rate are both unlikely to be linear (Bruno and Easterly, 1998; Fischer, 1993; IMF, 1995), squared terms of the government surplus ratio and the inflation rate have also been added to the explanatory variables.

The results are in Column (5). The coefficients of the control variables have remained very significant. In accordance with many studies (see the survey by Edwards, 1993), trade orientation, measured here by the exports to GDP ratio, has important positive effects on growth.

The government surplus ratio is negatively correlated with growth. This effect is strongly significant. The relationship between government balances and growth is non-linear: high values of the surplus or deficit ratio have stronger distortionary effects on the economy than low values. This result should not be contrasted with that of much empirical research that shows that budget deficits retard growth (Easterly and Rebelo, 1993; Fischer, 1991; Ghura and Hadjimichael, 1996). These studies are about the determinants of long-run growth, while the results in this section concern short-run adjustment after a period of crisis. In these circumstances, strong budgetary corrections may initially result in a growth slow down. In fact, in the Sub-Saharan

context, they are likely to do so, since the cuts in the budget would largely fall on government investment in infrastructure and public enterprises. This result is consistent with the finding of previous regressions that compliance with Macroeconomic Stabilization measures has a negative effect on growth in the short run.

Inflation seems to have a negative non-linear relation with growth but this is not statistically significant. There may be different explanations for the lack of significance. According to one, this may be due to the relative experience of the CFA and non-CFA countries. CFA countries, despite having low inflation, did not manage to achieve a quick real depreciation with the result that their growth performance suffered. Non-CFA countries, on the other hand, achieved significant depreciations, with some countries significantly reducing inflation while others had less success. This suggests that there may not be a clear correlation between inflation reductions and economic growth.<sup>18</sup> Another explanation for the insignificant coefficient of inflation could be that inflation may not have effects other than those that operate through the volume of investment. However, Fischer (1991) and IMF (1995) provide evidence to the contrary.

This regression shows that variables such as trade orientation and budget deficits are important determinants of short-run economic performance in Sub-Saharan programme countries. The results in Column (5) seem to be consistent with the results of previous regressions: it could be argued that they provide further support for the findings that compliance with the overall programme conditionality may raise the economy's growth rate but compliance with Macroeconomic Stabilization policy conditions appears to retard it. To put it in a different way, the index of compliance,

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<sup>18</sup> This is consistent with Bruno and Easterly (1998), who showed that inflation is normally not very significant in low frequency cross-country growth regressions.

despite its shortcomings, seems to provide a coherent picture of compliance effects and can be usefully employed to assess whether compliance matters for growth.

## **6. Persistence of compliance effects**

Having seen that compliance is associated with better economic performance, the question that naturally arises is whether compliance effects are persistent over time, that is whether compliance is beneficial for a country's economic performance not only in a short-run horizon but also over the medium to the long run. To investigate this issue economic growth in the last four years with available data (that is during the 1992-95 period) is compared to that in the pre-adjustment period.

Before looking at the results a caveat is in order. Since countries started adjustment at different times, the 1992-95 period may for some countries have some overlap with the first adjustment period while for others a span of a few years may separate the first adjustment period from the most recent period. In any case, the comparison of the 1992-95 period with the pre-adjustment period may be picking up medium- and long-term effects of compliance at the same time.

As can be seen from the top part of Table 3, the growth rates recorded in the groups of weak and good compliers during the 1992-95 period were higher compared to the pre-adjustment period but those for the poor compliers were lower. The highest growth rate during the 1992-95 period, of about 3.0 percent per year, was that of the good compliers. It may be interesting to note that, while for these countries the rate of growth during the most recent period was marginally higher than that in the first period of adjustment, the weak compliers' growth rate of 1.9 percent during 1992-95 was lower than the rate of 2.8 percent recorded in the first adjustment period. In the group of poor compliers their rate of growth of only 0.2 percent during 1992-95 was also

Table 3. Compliance and long-term economic performance

(a) Average rates of growth

	Pre-Adjustment	1992-95
Good compliers	1.7	3.0
Weak compliers <sup>1</sup>	1.6	1.9
Poor compliers <sup>2</sup>	3.1	0.2

<sup>1</sup>Guinea has been excluded from the averages due to lack of data for the pre-adjustment period.

<sup>2</sup>Equatorial Guinea has been excluded from the averages due to lack of data for the pre-adjustment period. Somalia and Zaire have been excluded from the averages due to lack of data for the more recent period.

(b) Tests for the significance of differences in performance

	<i>Temporal differences</i>	
	<i>t</i> -test	Wilcoxon
Good	1.239 (0.96)	0.764
Weak	0.309 (0.28)	0.153
Good + Weak	0.774 (0.93)	0.821
Poor	-2.891 (-2.84)*	-2.134*
	<i>Comparative differences<sup>1</sup></i>	
	<i>t</i> -test	Mann-Whitney
Good + Weak	3.666 (2.71)**	2.312*
Good	4.131 (2.60)*	2.113*
Weak	3.200 (2.01)*	1.831†

<sup>1</sup>The group of poor compliers is the control group.

*t*-values are in parentheses. Reported values of the two-tailed Wilcoxon and Mann-Whitney tests are those of standardized test statistics.

\*\* Significance at the 1 percent level.

\* Significance at the 5 percent level.

† Significance at the 10 percent level.

lower than that in the first period of adjustment.

The bottom part of Table 3 analyses whether the differences in the growth rate of GDP between the 1992-95 period and the pre-adjustment period are statistically significant either across time or across countries. The improvement in economic performance between the two periods is not statistically significant for either the good or the weak compliers. On the other hand, the deterioration for the poor compliers is significant at the 5 percent confidence level.

The economic performance of good and weak compliers, considered either separately or together, is significantly better than that of the poor compliers. Although good compliers are doing better than weak compliers, the difference in performance is not statistically significant.

As in Section 5, an attempt is made to overcome possible shortcomings of temporal and comparative analyses by employing the method of regression to take into account other factors that, together with compliance with adjustment lending conditionality, may have affected the change in growth rates between the two periods of analysis. The results are presented in Table 4.

It should be noted that, unlike the case in Section 5 where the sample period was allowed to vary across countries, the growth rate of world GDP is not included among the regressors since, with the 1992-95 period being common to all countries, it is no longer a variable. All the different factors pertaining to the external environment that the growth rate of world GDP was intended to capture are now embodied in the



constant term.<sup>19</sup>

With respect to the other control variables, Table 4 shows that while the change in investment is strongly significant in all regressions and there appears to be little variation in the size of its estimated coefficient, the initial GDP per economically active population is significant in only one case - at the 10 percent confidence level. The latter result suggests that, as the interval between the periods considered lengthens, the initial conditions come to exert an almost negligible influence on economic performance.

In the regression of Column (1), the index of overall compliance is statistically significant, though at the 10 percent confidence level. The effect of compliance, however, could have also been captured by the investment variable.

In Column (2) the index of overall compliance is replaced by indices of compliance in each of the three policy areas. While compliance with the policy conditions concerning Macroeconomic Stabilization and Public Sector Management does not seem to retain the effects that were picked up by the regressions of Table 2 which were relevant to the short run - although the signs of the respective coefficients are all confirmed -, compliance with Private Sector Development policy conditions maintains its positive influence on the growth rate, though at the 10 percent confidence level.

The regression in Column (3) confirms that, after taking into account the role of initial social and economic characteristics as well as other country-specific

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<sup>19</sup> A possible alternative modelling strategy is to use a country-specific variable to reflect the influence of the external environment, for instance the terms of trade, as in other studies (Bouton, Jones and Kiguel, 1994; Corbo and Rojas, 1992; IMF, 1995). This approach was tried with different specifications for the terms of trade variable. This turned out to be always insignificant while there was relatively little change in the significance of the other coefficients. Appendix D reports regression results with the growth of barter terms of trade among the explanatory variables.

Table 4. Persistency of compliance effects on economic growth

Dependent variable: *DmrGDPg*

	(1)	(2)	(3)	(4)
<i>GDPpPA</i>	2.99E-04 (0.80)	2.77E-04 (0.74)	5.88E-04 (1.72)†	4.58E-04 (1.30)
<i>DmrIGDP</i>	0.162 (2.60)*	0.179 (2.76)**	0.202 (3.51)**	0.204 (3.45)**
<i>Compliance</i>	-1.900 (-1.78)†			
<i>MS</i>		0.718 (0.50)		
<i>PSD</i>		-2.576 (-1.83)†		
<i>PSM</i>		-1.351 (-0.79)		
<i>Good</i>			3.969 (2.65)**	
<i>Weak</i>			4.874 (3.30)**	
<i>GoodMS</i>				-0.825 (-0.32)
<i>WeakMS</i>				3.529 (2.01)†
<i>GoodPSD</i>				3.261 (1.79)†
<i>WeakPSD</i>				4.552 (2.72)**
<i>GoodPSM</i>				4.889 (2.07)*
<i>WeakPSM</i>				1.475 (0.94)
<i>Constant</i>	4.099 (1.52)	6.141 (1.93)†	-4.186 (-3.37)**	-7.574 (-4.39)**

*t*-values are in parentheses. Data sources and definitions of variables are in Appendix C.

\*\* Significance at the 1 percent level.

\* Significance at the 5 percent level.

† Significance at the 10 percent level.

conditions, compliance with policy conditionality is a relevant explanatory factor of economic performance. The coefficients of both variables reflecting good and weak compliance are significant at the 1 percent confidence level. The coefficient of weak compliance is larger than that of good compliance but the difference is not significant.

The regression in Column (4) introduces dummy variables for good or weak compliance in each of the three groups of policies. Good compliance with Macroeconomic Stabilization policy conditions does not have any statistically significant effect on growth. By contrast, weak compliance in this policy area has a positive effect at the 10 percent confidence level.

Compliance with conditions relating to Private Sector Development policies has a positive influence on growth. The coefficient of good compliance is significant at the 10 percent level and the coefficient of weak compliance at the 1 percent level.

Good compliance with Public Sector Management policy conditions has a positive effect on growth that is statistically significant at the 5 percent level. Weak compliance in this policy area does not seem to affect growth more than poor compliance.

Overall, the econometric results reported in this section suggest that compliance effects on growth remain significant over the medium- to the long-term horizon. Although the economic performance of weak and good compliers is not statistically significantly better in the most recent period relative to the adjustment period, the performance of poor compliers is significantly worse. Thus, it appears that, starting from a condition of disequilibrium requiring World Bank assistance, non-compliance with adjustment lending conditionality worsens an already precarious situation. Some compliance seems to be needed if a serious deterioration in economic performance is to be avoided.

However, like in the previous section, the econometric results also appear to indicate that, despite a better economic performance of the good compliers, the degree of compliance - whether good or weak - does not seem to make any significant difference when the reference group is that of poor compliers.

Finally, it appears that the policy area that exerts the strongest influence on growth over the medium to the long term is that concerning Private Sector Development. The empirical evidence does not seem to be conclusive with respect to the longer-term effects of either Macroeconomic Stabilization or Public Sector Management policies. The results seem to suggest that, although compliance with Public Sector Management policy conditions may not lead to higher rates of growth in the medium to the long term, there are significantly positive benefits with complying with conditions in this policy area when a distinction is made between good and poor compliance.

Compliance with Macroeconomic Stabilization policy conditions does not have long-run effects on growth either. Nevertheless, when a distinction is made between degrees of compliance, weak compliance has positive effects at the 10 percent confidence level while good compliance has a negative but insignificant influence.

## **7. Conclusions**

This paper evaluates the effects of structural adjustment programmes on economic growth in Sub-Saharan Africa by making use of information concerning programme countries' compliance with the policy conditions laid down in the programmes. It is suggested that this novel approach is theoretically superior to that of previous analyses of adjustment programmes.

Furthermore, unlike previous cross-country analyses, the evaluation conducted in this paper properly takes into account the fact that countries have adopted adjustment programmes at different times by varying the sample period for each country in accordance with its actual adjustment period.

The empirical analysis presented in the paper consistently indicates that compliance with conditionality matters for growth. The performance of poor compliers deteriorates over time and is significantly worse than the performance of countries that comply with the policy conditions. Moreover, the benefits of complying are to some extent persistent over time.

Although compliance is an important explanatory factor for the better economic performance of compliers relative to non-compliers, a stricter degree of compliance does not appear to result in a significantly superior performance than weaker compliance.

The empirical evidence in this paper suggests that different policy reforms - grouped according to World Bank (1997) - contribute differently to economic growth. In the short run, Macroeconomic Stabilization policies, if implemented according to the programme conditionality, slow down growth but their negative effects disappear in the long run. On the other hand, the benefit of weaker compliance - presumably in the form of a more stable macroeconomic environment - begins to exert a positive influence in the long run. This finding seems to support the notion that, at least in the Sub-Saharan African context, a less strictly orthodox macroeconomic policy stance may be in order.

Private Sector Development policies have positive growth effects both in the short and the long run. Initially good compliance may not generate strong results; weak compliance appears to produce beneficial effects sooner. Future research may want to

investigate the merits of a more gradual pace of reforms in this policy area.

Public Sector Management policies exert a positive influence in the short run. The effects are stronger the more decisively these reforms are implemented. In the long run, good compliance in this policy area, but not weak, increases growth relative to poor compliance.

It must be emphasized, however, that the evidence presented in this paper is not conclusive on the relative advantages of good and weak compliance. Settling this issue would require, among other things, a detailed analysis of the investment response, in terms of both volume and efficiency, in the two groups of countries. This important topic of research is left for the future.

Although compliance with conditionality matters for growth, non-programme factors, such as the conditions of the external environment, initial economic and social conditions and other country-specific characteristics, are also important determinant of growth. In the context of Sub-Saharan Africa, initial conditions decrease their influence over time.

Econometric results should always be interpreted with caution. Like all other studies examining the influence of policies on growth, the empirical analysis conducted in this paper faces the problem that, over any selected sample period, not all of the observed growth rates may be sustainable in the longer run. The difficulty in distinguishing between sustainable and unsustainable growth rates tremendously complicates the task of identifying the contribution of *true* growth determinants. The research agenda is long.

## APPENDIX A

### Country typology

#### *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.

Equatorial Guinea and Guinea have been rated by World Bank (1997) as poor and weak compliers respectively but have been excluded from the analysis in this paper due to lack of data on GDP growth during the five years preceding the adjustment.

## APPENDIX B

### Adjustment periods

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

## APPENDIX C

### Sources and definitions of variables

#### (1) Economic variables

$\Delta$ GDPg	Change in the rate of growth of real GDP between the adjustment and the pre-adjustment period
$\Delta$ mrGDPg	Change in the rate of growth of real GDP between the most recent period (i.e. 1992-95) and the pre-adjustment period
GDPpPA	real GDP per economically active population in the pre-adjustment period
WGDPg	Rate of growth of world real GDP in the adjustment period
$\Delta$ IGDP	Change in the gross domestic investment to GDP ratio between the adjustment and the pre-adjustment period
$\Delta$ mrIGDP	Change in the gross domestic investment to GDP ratio between the most recent period (i.e. 1992-95) and the pre-adjustment period
XGDP	Real exports to real GDP ratio in the adjustment period
SURGDP	Government surplus to GDP ratio in the adjustment period
SURGDP <sup>2</sup>	Square of SURGDP
INF	Consumer price inflation in the adjustment period
INF <sup>2</sup>	Square of INF
TOTg	Growth of barter terms of trade between the most recent period (i.e. 1992-95) and the pre-adjustment period

Data for these variables are extracted/computed from the World Bank's World Development Indicators: 1997 CD-Rom

#### (2) Compliance variables

Compliance	Score for overall compliance
MS	Score for compliance with Macroeconomic Stabilization policy conditions
PSD	Score for compliance with Private Sector Development policy conditions
PSM	Score for compliance with Public Sector Management policy conditions

The source of these data is World Bank (1997).

#### (3) Dummy variables for compliance

Good	1 for countries identified as good compliers by World Bank (1997); 0 otherwise
Weak	1 for countries identified as weak compliers by World Bank (1997); 0 otherwise
GoodMS	1 for countries with a good MS score; 0 otherwise
WeakMS	1 for countries with a weak MS score; 0 otherwise
GoodPSD	1 for countries with a good PSD score; 0 otherwise
WeakPSD	1 for countries with a weak PSD score; 0 otherwise
GoodPSM	1 for countries with a good PSM score; 0 otherwise
WeakPSM	1 for countries with a weak PSM score; 0 otherwise



## APPENDIX D

### Compliance persistency on growth modelling terms of trade effects

*Dependent variable: DmrGDPg*

	(1)	(2)	(3)	(4)
<i>GDPpPA</i>	2.57E-04 (0.66)	2.50E-04 (0.66)	6.02E-04 (1.66)	3.95E-04 (1.06)
<i>TOTg</i>	2.309 (0.72)	4.686 (1.34)	0.487 (0.17)	2.041 (0.68)
<i>DmrIGDP</i>	0.160 (2.49)*	0.190 (2.86)**	0.203 (3.36)**	0.195 (3.10)**
<i>Compliance</i>	-1.467 (-1.22)			
<i>MS</i>		1.899 (1.10)		
<i>PSD</i>		-3.035 (-1.98)†		
<i>PSM</i>		-2.115 (-1.12)		
<i>Good</i>			3.995 (2.29)*	
<i>Weak</i>			4.954 (2.99)**	
<i>GoodMS</i>				-2.343 (-0.71)
<i>WeakMS</i>				2.593 (1.18)
<i>GoodPSD</i>				4.018 (1.78)†
<i>WeakPSD</i>				4.996 (2.49)*
<i>GoodPSM</i>				5.635 (2.14)*
<i>WeakPSM</i>				1.702 (0.99)
<i>Constant</i>	3.560 (1.25)	6.559 (1.96)†	-4.197 (-2.54)*	-7.183 (-3.21)**

*t*-values are in parentheses. Data sources and definitions of variables are in Appendix C.

\*\* Significance at the 1 percent level.

\* Significance at the 5 percent level.

† Significance at the 10 percent level.

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