Structural reforms *and economic growth* in Latin America: *a sensitivity analysis*

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Since the mid-1980s, most Latin American countries have undertaken far-reaching structural reform along the lines of the so-called Washington Consensus. This article tests the robustness of the empirical evidence provided by a variety of studies in support of the reforms and their positive impact on Latin American growth. The results are striking. No reform has a robust positive correlation with growth, investment or productivity in the region, and there is evidence that some reforms, particularly labour market deregulation, may actually be harming growth. The results also show that the time effects for the period 1987-1995 were if anything positive, contradicting the prevailing wisdom that the poor economic performance seen in Latin America in the face of numerous far-reaching structural reforms has been due to an adverse international environment.

"Economists have inherited from physical sciences the myth that scientific inference is objective, and free of personal prejudice. This is utter nonsense. All knowledge is human belief; more accurately, human opinion."

LEAMER, 1983.

I
Introduction

Since the mid-1980s, in the aftermath of the debt crisis, most Latin American countries have rapidly liberalized and internationalized their economies, along the lines of the so-called Washington Consensus. Despite a whole range of far-reaching structural reforms, however, and notwithstanding a drop of 1.8% in per capita GDP during 1981-1985, per capita economic growth during 1986-1995 was only 1.2% a year, whereas during the 1960s and 1970s the region averaged rates of 2.5% and 2.4%, respectively.[1]

In spite of this, a number of empirical studies have set out to show that the structural reforms have had a positive impact on regional growth, arguing that poor economic performance has been due to a failure to implement even deeper reforms, a lack of policy complementarity,[2] and international factors.

Specifically, the Inter-American Development Bank (IDB, 1997), using policy indices representing five areas of reform and panel data models, estimated that the reforms had contributed 1.9% to the region's permanent growth and that further reform could still contribute between 1.2% and 1.6%. According to the IDB report, the reforms enhanced growth essentially by improving resource allocation, a factor which was estimated to have contributed 1.7% to permanent growth, while there were found to be positive if modest effects on investment. The report also found that, contrary to common belief, the reforms had taken effect rapidly, and accordingly it strongly recommended an acceleration of the reform process.

The policy indices used by IDB have also been employed in panel data growth regressions by Barrera and Lora (1997) and Fernández-Arias and Montiel (1997), who have reached conclusions similar to those of IDB.[3] In a worldwide cross-section study using three policy indices, however, Aziz and Wescott (1997) found that no single reform correlated robustly with growth. They argued, though, that this result was due to the unevenness of reforms among the different sectors, and they found that policy complementarity, represented by the difference between a central tendency and a dispersion measure for the policy indices, was robustly and positively correlated with growth. Lastly, Easterly, Loayza and Montiel (1997), using six policy indices and dynamic panel data models, concluded that the reforms and their impact on the renewal of growth in Latin America added up to an impressive achievement. They put the region's disappointing economic growth down in part to negative international factors.

This paper tests the robustness of the correlation between the structural reforms and Latin America's economic growth or its sources. It also tests the robustness of the correlation between policy complementarity and growth, and considers whether a negative international environment harmed regional growth. The study employs the same structural policy indices and panel structure as the Inter-American Development Bank (IDB, 1997). Thus, the panel is composed of 19 Latin American countries, with four periods representing three-year averages: 1984-1986, 1987-1989, 1990-1992 and 1993-1995. The countries included in the study are Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominic Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Paraguay, Peru, Trinidad and Tobago, Uruguay and Venezuela. The paper employs panel models, while the estimation procedure controls for fixed effects and endogeneity, and uses efficient two-step generalized method of moments (GMM) estimators. The test of robustness is the extreme bound analysis method (EBA) suggested by Leamer (1983) and

[1] World Bank data for 19 Latin American economies.

[2] Policy complementarity basically means that the positive effect of the reforms is conditioned by the heterogeneity of sectors. Therefore, even if a country has brought in very far-reaching economic reforms, their effect on growth will vanish if the level of reform among different areas is too uneven.

[3] In fact, the IDB 1997 Report (IDB, 1997, chapter II) basically reproduces the findings of Barrera and Lora (1997).

employed in growth regressions by Levine and Renelt (1992).

The paper is organized as follows. Section II describes the structural policy indices. Section III highlights the importance of controlling for the time effects and temporal trend problems of the panel under consideration, illustrates the advantages of using panel data models in growth regressions, and explains the estimation procedure. Section IV discusses the EBA methodology. Section V presents the data and models to be used to perform the EBA and the different classifications of the variables. Section VI reports the econometric results and, lastly, Section VII presents the conclusions.

II

Measuring structural reforms

One of the main obstacles to the quantitative evaluation of the structural reforms implemented in Latin America was always the lack of a well established methodology for measuring the reform process. In order to quantify the region's reform process in a comprehensive manner, Lora (1997) created the "structural policy index" (SPI). The SPI is the arithmetic mean of five sectoral indices representing: trade liberalization (TRADE), tax neutrality (TAX), financial liberalization (FIN), privatization (PRIV) and labour deregulation (LAB). In turn, each sectoral index is the arithmetic mean of one or more policy variables, whose values are normalized with respect to the best and worst observation for that variable in the entire set of countries and years (see appendix A). Accordingly, each index can range from 0 to 1, and the closer to 1, the more neutral the economic policy of the country. Thus, the SPI and its five components are proxies for the degree of free-market policy orientation. Lastly, it is important to observe that the indices are explicitly composed of policy variables and thus avoid one of the main shortcomings of a number of previous studies, which used expected reform outcomes as proxies for the reforms.[4]

Using the SPI, table 1 shows the speed and depth of the structural reforms carried out in Latin America during 1985-1995 and the reform paths and rankings of the different countries. In 10 years, the average SPI for the region increased from 0.345 to 0.621. To illustrate how quickly reform has taken place in some countries, it need only be mentioned that in 1985 and 1990 Chile was the best example of a free-market economy, but that in the space of just five years it dropped to ninth place. The process has been so general that the lowest SPI in 1995, Venezuela's, would have been the third highest in 1985.

The box-and-whisker diagrams (figure 1) show the behaviour of every area of reform. The most neutral policies –represented in the diagrams by higher medians and lower dispersion– are in Latin America's external trade and financial sector. However, all areas of reform show substantially higher medians than in 1985, albeit levels of privatization and labour deregulation in 1995 still differed greatly among countries.

[4] Several studies use the assumed outcomes of reforms as proxies for them, instead of using policy variables for this purpose. For instance, Easterly, Loayza and Montiel (1997) explicitly state that their reform proxies "should move in the qualitative direction associated with reform…and should explain growth" (Easterly, Loayza and Montiel, 1997, p. 293). Hence, the positive effect of the reforms on growth is virtually taken for granted.

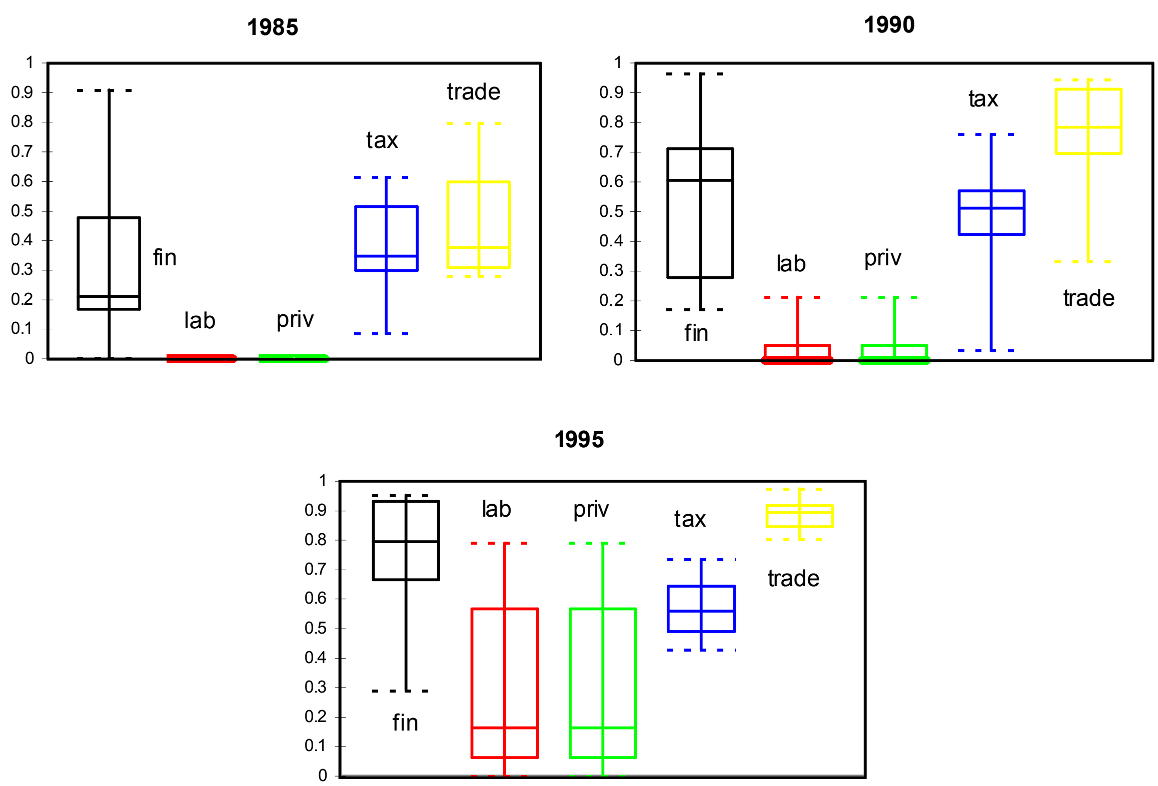
TABLE 1

Latin America and the Caribbean: Structural policy index (SPI)

	1985		1990		1995	
	SPI	Rank	SPI	Rank	SPI	Rank
Argentina	0.367	4	0.476	12	0.679	5
Bolivia	0.343	6	0.548	5	0.721	1
Brazil	0.348	5	0.512	8	0.584	13
Chile	0.489	1	0.596	1	0.628	9
Colombia	0.443	3	0.549	4	0.590	12
Costa Rica	0.309	10	0.500	10	0.512	18
Dominican Republic			0.361	17	0.638	8
Ecuador	0.325	9	0.357	18	0.580	14
El Salvador			0.532	7	0.671	6
Guatemala	0.309	10	0.438	14	0.596	11
Honduras			0.450	13	0.548	17
Jamaica			0.573	3	0.684	4
Mexico	0.328	8	0.498	11	0.563	16
Nicaragua	0.216	14	0.391	15	0.643	7
Paraguay	0.336	7	0.548	5	0.625	10
Peru	0.232	13	0.252	19	0.712	3
Trinidad and Tobago			0.589	2	0.715	2
Uruguay	0.486	2	0.511	9	0.573	15
Venezuela	0.304	12	0.364	16	0.457	19
Average	0.345		0.479		0.621	

FIGURE 1

Latin America and the Caribbean: Development of each reform area



III

Econometric issues

1. The temporal trend of growth, the interest rate and the structural policy index

Although per capita growth in the region was low in 1985-1995 compared with the 1960s and 1970s, it followed a rising trend subsequent to the debt crisis of the early 1980s (figure 2). This trend was analogous to the evolution of the SPI for Latin America as a whole, but it was also a mirror image of the declining trend in the international interest rate. The international interest rate is a crucial variable for Latin America's economic performance, since it has a large impact on the external debt service and capital inflows into the region. Figure 2 also shows the changes in all three variables in order to sweep out temporal trends. Given the short time dimension of our panel, a straightforward inspection would, in general, be a risky way of determining any relationship among the variables. However, it seems quite clear that changes in growth are still a mirror image of changes in the interest rate.

The situation described presents two simultaneous problems that must be considered. The first one is the influence of international factors, which make it difficult to tell if growth was enhanced because of better policies or, for instance, a lower international interest rate. The second problem is the risk of spurious correlation, given the temporal trend shown by growth and the structural reforms. In order to partially address these problems, the estimation procedure must control for the international economic environment and the temporal trend within growth and any explanatory variable.

2. Panel data and growth regressions

Several authors have asserted the importance of panel data for growth regressions.[5] The panel structure presents fundamental advantages over cross-section growth regressions, offering more degrees of freedom, instruments to control endogeneity, and mechanisms to control for individual and time effects.

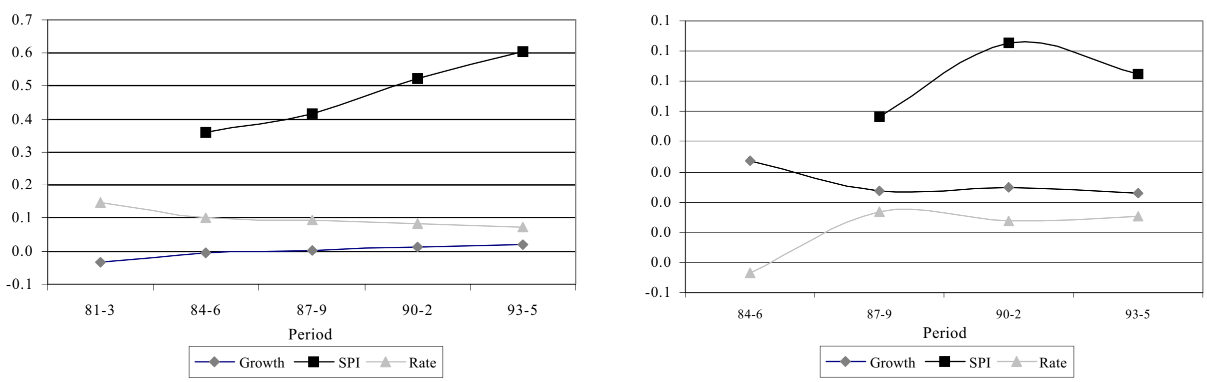
The gain in degrees of freedom is crucial when we are interested in a region or subset of countries with similar characteristics. The usual cross-section methodology employs regional dummies to allow for different intercepts among regions. However, with this procedure one should accept that the marginal effect of any explanatory variable is the same in an OECD, African or Latin American country. Thus, the gain in degrees of freedom provided by panel data facilitates study of just a subset of countries, rendering the implicit assumption of parameter homogeneity more plausible.

Another fundamental advantage of panel data is the time series structure, which provides valid instruments by using lagged values for the explanatory variables. Because almost any explanatory variable in growth regressions could be considered endogenous, the availability of valid instruments is paramount if consistent estimates are to be obtained.

[5] See Islam (1995) and Caselli, Esquivel and Lefort (1996).

FIGURE 2

Growth, structural policy index (SPI) and interest rate



Lastly, and most fundamentally, panel data models are the *only* way to control for individual and time effects. When fixed effects are not controlled for, a problem of omitted variables is present and the estimated coefficients will be biased, unless we use the implausible assumption of orthogonality between the effects and the explanatory variables. It is particularly important to consider time effects when dealing with underdeveloped countries since, as the preceding section illustrated, their economies depend greatly on the international economic environment. Meanwhile, controlling for individual effects is also of the greatest importance, because we can hardly conceive of country-specific variables explaining growth and not being correlated with the unobserved economic and social capacities of that country. In addition, when lags of the dependent variable are used as an explanatory variable, as they are in most cross-section studies, the implausible assumption of orthogonality is *necessarily* violated, as Caselli, Esquivel and Lefort (1996, p. 367) correctly point out.

3. Estimation procedure

The panel data models to be estimated (see appendix B) have the general form:[6]

$$y_{it} = x_{it}'\beta + \eta_t + \alpha_i + v_{it}$$
$$i = 1,2,\ldots,N. \; t = 1,2,\ldots,T. \qquad [1]$$

where x_{it} is a K x 1 vector of explanatory variables that can contain the dependent variable lagged one period, endogenous but weakly exogenous regressors ($E[x^1_{it} v_{is}] = 0$ for $t < s$), and strictly exogenous regressors ($E[x^2_{it} v_{is}] = 0$ for all t,s); β is a K x 1 vector of constants; η_t and α_i are the unobserved time and individual specific effects, respectively; and v_{it} is a serially uncorrelated random disturbance.

The specifications are fixed-effect models in the sense that η_t and α_i are fixed constants and not random disturbance that can be incorporated into the error term. The fixed-effect specification is the appropriate one since we are focusing on a specific set of countries over specific periods, and thus the effects have not been randomly drawn from a large population.

Following Anderson and Hsiao (1981), we control the individual effects by setting [1] in first-difference form.[7] Note that this transformation also removes any temporal trend within the variables.[8] To control the time effects, these will actually be estimated using time-dummy variables. Lastly, observe that due to perfect multicolinearity the fixed-effect specification prevents identification of the coefficients of any time or individual invariant variable. Consequently, the actual models to be estimated have the general form:

$$\Delta y_{it} = \Delta x_{it}'\beta + d_t'\phi + \Delta v_{it}$$
$$i = 1,2,\ldots,N. \; t = 2,\ldots,T. \qquad [2]$$

where d_t is a (T-2) x 1 vector of dummies representing the periods 3,4,...., and ϕ is a (T-2) x 1 vector of constants. On the assumption that v_{it} is serially uncorrelated, any value of y_{it} or x^1_{it} lagged two or more periods is a valid instrument for the first-difference equation, and thus with $T \geq 3$ we can do a consistent estimation of [2].[9]

To gain efficiency, we use a variant of the two-step GMM estimator proposed by Arellano and Bond (1991). Exploiting a set of orthogonality conditions implied by our assumptions on the error term and regressors, we use the instrumental matrix $W = (Z, d)$, where d is the matrix of time dummies, $Z = (z_1', \ldots, z_N')'$, and $z_i = diag\,(y_{i1}; \ldots, y_{it-2}; x^1_{i1}', \ldots, x^1_{it-2}'; \Delta x^2_{i3}', \ldots, \Delta x^2_{it}')$. The estimation is done in two steps. First, an instrumental variable estimation of [2] is performed employing the matrix W.[10] Second, the residuals of this

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[6] Even if in actual estimation we work with unbalanced panels, for notational simplicity in this section we assume balanced panels.

[7] Note that if x_{it} contains any lag of y_{it}, the within estimator is inconsistent because $(y_{it-s} - \bar{y}_i)$ and $(v_{it} - \bar{v}_i)$ are correlated since the latter average contains v_{it-s}.

[8] The model in first differences can exacerbate the inconsistency generated by measurement errors when the explanatory variable has a temporal trend, which is the case with the policy indices. Notwithstanding, it is important to note that the bias always has the opposite sign to the coefficient's ("attenuation bias"), so measurement errors can generate lack of statistical significance, but not coefficients with the wrong sign. However, in general the use of mainly policy variables –not macroeconomic aggregates– in the construction of the indices minimizes the risk of measurement errors.

[9] Note that if we have y_{it-1} on the right-hand side of [1], we *always* have endogeneity of regressors in [2], since $E[\Delta y_{it-1} \Delta v_{it}] \neq 0$ due to the fact that y_{it-1} and v_{it-1} are correlated.

[10] In this first step, Arellano and Bond (1991) perform an instrumental variable-GLS estimation where the weighted matrix H_i is a (T-1) square matrix with twos in the main diagonal, minus ones in the main sub-diagonals and zeroes otherwise, representing the provisional assumption that v_{it} is homoscedastic. Since any positive definite matrix produces a consistent estimation, instead of H_i we are using the identity matrix.

first estimation are used to estimate an unrestricted covariance matrix, and an instrumental variable-generalized least squares (GLS) estimation of [2] is performed using again the matrix *W*. Lastly, we conduct a Sargan test of over-identifying restrictions to test the validity of the instruments and, in order to check multicolinearity problems, we compute the condition number of the matrix of explanatory variables in [2].

IV

Extreme bound analysis (EBA)

To test the robustness of the correlation between the structural reforms and growth, we use a variant of the extreme bound analysis (EBA) suggested by Leamer (1983) and used in growth regressions by Levine and Renelt (1992). EBA is a formal specification search that seeks to estimate the size of model uncertainty by systematically changing the conditioning set of information.

The explanatory variables are classified as the focus variable, the free variables (*I*) and doubtful variables (*D*). The focus variable is the variable in whose coefficient (β_F) we are interested. The *I* and focus variables are always in the information set, whereas the *D* variables can be combined in any arbitrary linear fashion.[11]

For a given level of confidence, the upper (lower) extreme bound for β_F is the estimate corresponding to the highest upper (lowest bottom) bound out of all the confidence intervals of the different estimates of β_F. The linkage between the focus variable and the dependent variable is considered robust if β_F remains significant and with the same sign at the extreme bounds. Otherwise, the linkage is defined as fragile.

This extreme bound analysis is particularly pertinent when dealing with *ad hoc* models that are not supported by a well founded theory and consequently have higher uncertainty in relation to the true model. However, there have been serious criticisms of EBA, specifically in relation to the decision rule for defining a variable as fragile, the risk of introducing multicolinearity, and the risk of omitting relevant variables. Sala-i-Martin (1997) argues that when EBA is used no variable will be robust, since it is enough to find an exception where β_F becomes insignificant to regard the focus variable as fragile. The problem with this argument is that the converse is also true: estimating different specifications in *ad hoc* regressions usually yields a model where β_F is significant and of the desired sign. Therefore, the debate is more precisely about how many successes and how many failures in significance or sign should be deemed to determine that a variable is robust or fragile. Sala-i-Martin answers this question by constructing an empirical probability distribution for β_F. Given the practical problems associated with such analysis,[12] the "how much is enough" question does not have an objective answer. For instance, when dealing with structural reforms that change entire countries, how many exceptions should we allow before we conclude that the evidence is strong or weak? Still, to partially address this criticism, we try to be as descriptive as possible in reporting the EBA results. Consequently, our EBA will report the extreme bounds, the value and statistical significance of the focus coefficient in the best specification selected according to the Akaike (AIC) information criterion, and the proportion of positive (negative) and significant (insignificant) coefficients found for each focus variable.

Another important criticism is that the EBA can introduce irrelevant variables correlated with the rest of the explanatory variables, thereby inflating the standard errors of the estimated coefficients. However, as long as the causal channels are not clear, a multicolinearity problem may simply mean that the data evidence is weak (Leamer, 1983, p. 34). Notwithstanding, as a rule of thumb to control this problem we will eliminate any *D* variable with a correlation coefficient greater than 0.5 with respect to the focus variables, and we will never include in the models *D* variables with a correlation coefficient greater than 0.5 with respect to one another. Lastly, as stated in the preceding section, in all regressions we will check for multicolinearity using the condition number of the

[11] However, usually only exclusion restrictions are applied to *D*.

[12] To construct the empirical probability distribution for β_F, Sala-i-Martin ran two million regressions.

matrix of regressors. Any model with a condition number larger than 20 will not be considered for the EBA.

A further and more fundamental criticism is that the EBA can omit relevant variables, making the estimates of β_F and Var (β_F) biased. However, this criticism is just a reminder of the weakness of inferences drawn from any *ad hoc* model, and as long as the EBA uses plausible models, the methodology illustrates rather than causes this problem. Nonetheless, since the best way to minimize the risk of relevant variables being omitted is to rely on a well established theory, the starting point for our analysis will be the augmented Solow model as proposed by Mankiw, Romer and Weil (1992), and the *I* variables for the growth regressions will be an empirical application of this model.

V

Data, models and classification of variables

1. The starting point: the augmented Solow model

We start our analysis by estimating the model

$$\Delta lnGDP_{it} = \mu + (\rho - 1)\, lnGDP_{i,t\text{-}1} + \beta_1\, lnINV_{i,t} + \beta_2\, lnPROT_{i,t} + \beta_3\, lnPOP_{i,t} + \eta_t + \alpha_i + v_{it} \quad [4]$$

The model represents an empirical approximation to the augmented Solow model proposed by Mankiw, Romer and Weil (1992), where GDP is income per capita; PROT is the rate of growth in the average daily protein intake, used as a proxy for human capital growth;[13] INV represents the investment coefficient and is used as a proxy for physical capital growth, and POP is population growth. Taking first differences to control for individual fixed effects, using time dummies to control for time effects, and managing terms with the dependent variable, the model can be estimated as

$$\Delta lnGDP_{it} = \rho \Delta lnGDP_{i,t\text{-}1} + \beta_1\, \Delta lnINV_{i,t} + \beta_2\, \Delta lnPROT_{i,t} + \beta_3\, \Delta lnPOP_{i,t} + \Sigma_j\, \phi^j d_t^j + \Delta v_{it} \quad [5]$$

where d^j are the time dummies and $j = 3,\dots,T$.

In the Solow framework, the only sources of growth are factor accumulation and the unobserved growth of total factor productivity (g). For this reason, our analysis uses three different dependent variables as proxies for growth and its sources: ΔlnGDP representing growth, lnINV representing factor accumulation,[14] and RES, the residuals of our estimated Solow model, as a proxy for the unobserved g.

2. Data and classification of variables

Appendix C lists the variables employed in this study, describing each one with its respective source. The main source of the data is IDB.

The paper analyses six focus variables in our EBA: the five reform indices, namely trade liberalization (TRADE), tax neutrality (TAX), financial liberalization (FIN), privatization (PRIV) and labour deregulation (LAB); the arithmetic mean of the indices (SPI); its standard deviation (SIGMA); and policy complementarity, represented as SPI-SIGMA (POLCOM).

The Solow framework also dictates the variables that must theoretically always be included in growth regressions. Therefore, when the dependent variable is ΔlnGDP, the *I* variables are lnGDP_1, lnPROT, lnINV and lnPOP. For the regressions where the dependent variable is lnINV, the *I* variables are lnGDP_1, lnPROT and lnPOP, and when the dependent variable is RES, we do not use any *I* variables.

Eight doubtful variables were selected out of the wide range of variables used in the literature: annual terms of trade growth (TOT), annual inflation (INF), government surplus (GOV), external public debt (DEBT),

[13] To represent human capital accumulation, we chose a nutritional variable (PROT) over the school attainment indicators used by most empirical studies of growth. The reason is twofold. First, quality factors are not taken into account when school attainment indicators are used, even though they are crucial if meaningful school indicators are to be obtained in developing countries. Second, when indicators such as average years of schooling or enrolment rates are used, it is never clear if they represent the level or growth of human capital.

[14] We exclude human capital growth and population growth since there are no clear channels through which structural reforms can improve them.

standard deviation of reform indices (SIGMA), financial flows from international organizations (FLOWS), current account surplus (CA) and domestic credit growth (DOCRE). Most of these variables are commonly used in the literature as indicators of short-term policies (GOV and DOCRE), the external situation (CA and DEBT), the situation of international goods markets (TOT) and macroeconomic stability (INF). FLOWS was also included because capital inflows from international financial organizations have a decisive impact on the economic performance of developing countries. Lastly, SIGMA was also selected to control for heterogeneity in the reform process.

3. The models

Every model will include the respective *I* variables, the focus variable and up to two doubtful variables. Therefore, including the time dummies, we have up to 10 regressors in the ΔlnGDP regressions, up to 9 in the lnINV regressions, and up to three in the RES regressions.[15] Table 2 shows the correlation matrix for the variables used in the analysis.

[15] When the dependent variable is RES, the regressions do not include time dummies.

As mentioned in Section 4, any doubtful variable with a correlation coefficient greater than 0.5 with respect to the focus variables has been eliminated. In addition, DEBT and CA, DEBT and GOVSUR, INF and GOVSUR, DOCRE and INF and DOCRE and GOVSUR never enter the same regression, since their respective correlation coefficients are greater than 0.5.

4. Endogenous and exogenous variables

We assume that all the variables, with the exception of TOT and the focus variables, are endogenous with respect to growth.[16] Since INV and RES are sources of growth, we consider the endogeneity assumptions valid for the regressions with any of our three dependent variables. Note that growth in the terms of trade (TOT) is clearly exogenous. However, we consider financial flows (FLOWS) endogenous, since the assistance of international financial organizations usually comes in periods of poor economic performance. Lastly, all the focus variables are considered exogenous, on the assumption that they depend exclusively on policy decisions.

[16] Note that, as was demonstrated in Section 3, GDP_1 is endogenous in the model in first differences, as they were included for the RES calculation.

TABLE 2

Correlation matrix

	ΔlnGDP	lnINV	RES	lnGDP_1	lnPROT	lnPOP	CA	DEBT	FLOWS	INF	TOT	GOVSUR	DOCRE	FIN	LAB	PRIV	TAX	TRADE	SPI	SIGMA	POLCOM
ΔlnGDP	1.00																				
lnINV	0.34	1.00																			
RES	0.32	-0.04	1.00																		
lnGDP_1	0.11	-0.08	0.11	1.00																	
lnPROT	0.20	0.08	0.08	0.01	1.00																
lnPOP	-0.09	0.21	-0.02	-0.49	0.03	1.00															
CA	0.09	-0.23	0.11	0.65	0.12	-0.33	1.00														
DEBT	-0.41	0.01	-0.16	-0.47	-0.16	0.16	-0.57	1.00													
FLOWS	-0.27	-0.20	-0.33	-0.32	-0.12	0.27	-0.18	0.41	1.00												
INF	-0.46	-0.09	-0.02	0.04	-0.10	0.00	-0.22	0.40	-0.04	1.00											
TOT	0.07	0.20	-0.16	-0.17	-0.02	0.03	-0.26	0.13	0.06	-0.06	1.00										
GOVSUR	0.45	0.24	-0.03	0.17	0.20	-0.13	0.34	-0.48	-0.17	-0.69	0.22	1.00									
DOCRE	-0.41	-0.12	-0.09	0.07	-0.07	0.02	-0.20	0.38	0.05	0.94	-0.11	-0.72	1.00								
FIN	0.37	-0.07	-0.17	0.11	-0.01	-0.31	-0.02	-0.11	0.12	-0.20	0.11	0.10	-0.10	1.00							
LAB	0.18	0.36	-0.07	0.03	-0.02	-0.38	0.04	-0.10	-0.36	-0.18	0.20	0.23	-0.19	0.12	1.00						
PRIV	0.24	0.18	-0.06	0.18	-0.02	-0.17	-0.06	0.07	0.09	-0.14	0.11	0.13	-0.11	0.25	0.03	1.00					
TAX	0.33	0.04	-0.03	-0.33	0.16	0.12	-0.13	-0.03	-0.01	-0.13	0.06	0.25	-0.08	0.14	-0.02	0.03	1.00				
TRADE	0.39	0.11	-0.05	-0.12	0.06	-0.07	-0.19	0.06	-0.06	-0.18	0.10	0.13	-0.15	0.42	0.04	0.37	0.47	1.00			
SPI	0.51	0.18	-0.14	-0.01	0.04	-0.30	-0.11	-0.05	-0.05	-0.28	0.19	0.26	-0.21	0.75	0.37	0.55	0.47	0.78	1.00		
SIGMA	0.06	-0.05	-0.09	-0.31	-0.04	-0.19	-0.11	0.08	-0.06	-0.09	0.06	0.05	-0.10	0.21	0.37	-0.34	0.43	0.49	0.38	1.00	
POLCOM	0.52	0.21	-0.11	0.14	0.07	-0.23	-0.07	-0.09	-0.02	-0.26	0.17	0.26	-0.18	0.70	0.21	0.76	0.29	0.60	0.89	-0.08	1.00

VI

Econometric Results

1. The Solow model

Table 3 shows our estimated Solow model. We report the estimates of the first and second steps, but only refer to these latter results.

All the explanatory variables have the theoretically predicted sign, and all but lnPROT are significant at the 95% confidence level. Note the strong significance of the coefficient of investment, which was the only variable robustly correlated with growth in the Levine and Renelt (1992) study, and also the strong significance of the negative coefficient of GDP per capita lagged by one period, verifying the existence of conditional convergence. The routine *F*-test of joint significance strongly rebuts the null hypothesis. In addition, the critical value for the Sargan test using the 95% confidence level is $\chi^2_{20} = 31.41$, and therefore we cannot reject the null hypothesis of validity of instruments. Lastly, the condition number of the matrix of explanatory variables does not show multicolinearity problems.

2. Correlation matrix

The correlation matrix of table 2 has illustrated some results. All indices in that matrix show the expected correlation with growth and investment, with the exception of SIGMA (wrong sign with respect to growth) and FIN (wrong sign with respect to investment). Note also the high correlation between growth and SPI before controlling for temporal trends.

A surprising result in this step is the negative correlation of all the indices and policy complementarity with respect to RES, our proxy for the unobserved growth of total factor productivity. The only focus variable whose correlation coefficient with respect to RES shows the expected sign is SIGMA. These results are all the more startling considering that the most natural way that free-market policies can enhance growth is by improving resource allocation.

3. EBA results

Table 4 reports the extreme bounds of β_F for every focus variable, and the value of β_F in the respective best specification according to the AIC criterion. Appendix D describes in more detail the corresponding models and the econometric results.

The EBA shows that no focus variable is robustly correlated in the theoretically expected manner with growth or its sources. This lack of robustness includes the average of the policy indices (SPI) and policy complementarity (POLCOM = SPI - SIGMA). Note that the regressions with POLCOM represent the restricted version of the models using SPI and SIGMA, imposing $\beta_{SPI} = -\beta_{SIGMA}$. However, the unrestricted models also yield fragility. In fact, the lowest bound for SPI in the growth regressions includes SIGMA as a doubtful variable (see appendix D).

The only robust relationship is LAB with the residuals of the Solow model, but the correlation is *negative*, indicating that labour deregulation is actually *harming* productivity growth. Even if fragile, the best performing focus variable is SIGMA, whose coefficient always has the expected sign in the residuals regressions, indicating that policy dispersion reduces growth by decreasing total factor productivity.

Table 4 also shows that FIN, LAB, TRADE and SPI in the case of growth regressions, FIN, TAX and SPI in the case of investment regressions and FIN, PRIV, TRADE and SPI in the case of the residuals regressions enter the best specification with *negative* sign. Therefore, in a systematic and objective search for the best specification, we should conclude that these reforms are decreasing growth, investment, and productivity growth, respectively.

Table 5 reports the distribution of β_F according to sign and significance. The table shows that fragility is not caused by just a few exceptions. Rather, FIN, LAB and SPI in the growth regressions, and FIN and SPI in the residuals regressions, show mostly negative correlation with the dependent variables. With respect to investment, the focus variables are generally insignificant.

4. Bad luck or bad policy?

Since we are controlling for time effects, the EBA's results raise serious doubts about the effectiveness of the policy reforms, irrespective of whether the international factors were positive or negative. However, Easterly, Loayza and Montiel (1997) echo the consensus viewpoint when they argue that the reason Latin America's economic performance was poor in

TABLE 3

Estimation of Solow model
Dependent variable: ΔlnGDP

	First step			Second step		
	β	s.e.	t	β	s.e.	t
ΔlnGDP_1	-0.811	0.161	-5.034	-0.811	0.101	-8.070
ΔlnPROT	0.157	0.170	0.922	0.134	0.084	1.607
ΔlnINV	0.276	0.093	2.962	0.305	0.029	10.608
ΔlnPOP	-0.020	0.062	-0.313	-0.040	0.017	-2.345
Dummy variable 87-89	0.014	0.019	0.744	0.002	0.008	0.183
Dummy variable 90-92	0.004	0.026	0.159	0.011	0.013	0.837
Dummy variable 93-95	0.023	0.025	0.944	0.025	0.009	2.696
No. of observations	57			57		
R^2	0.420			0.403		
F(6, 50)	3.12			62.10		
Sargan (χ^2_{20})	...			17.12		
Condition no.	2.199			2.199		

TABLE 4

Extreme bound analysis[a]

	Growth			Investment			Residuals[b]		
	High	Best	Low	High	Best	Low	High	Best	Low
FIN: financial liberalization	0.0306	-0.0500	-0.2086	0.2771	-0.0284	-0.1947	-0.0351	-0.0782[c]	-0.0763
	0.0913	*0.0452*	*0.1068*	*0.1995*	*0.0406*	*0.1784*	*0.0451*	*0.0193*	*0.0396*
LAB: labour deregulation	-0.0708	-0.4487	-1.0691	2.6815	0.7962	-0.5184	-0.3752[c]	-0.4932[c]	-0.5306[c]
	0.6592	*0.3642*	*0.6490*	*1.5789*	*0.6296*	*1.2935*	*0.0403*	*0.0266*	*0.0475*
PRIV: privatization	0.1986	0.0559	-0.2646	-0.3065	0.0309	-0.4752	0.0400[c]	-0.1658[c]	-0.1626[c]
	0.2014	*0.0522*	*0.1398*	*0.4362*	*0.0641*	*0.4748*	*0.0191*	*0.0060*	*0.0154*
TAX: tax neutrality	0.1215	0.0927	0.0110	0.2099	-0.0901	-0.3488[c]	0.0889[c]	0.0813[c]	-0.0547[c]
	0.0779	*0.0493*	*0.1230*	*0.2329*	*0.0953*	*0.1394*	*0.0170*	*0.0162*	*0.0158*
TRADE: trade liberalization	0.1441	-0.0325	-0.1023	0.1791	0.1093	-0.2531	0.0641[c]	-0.0347[c]	0.0078[c]
	0.1566	*0.0440*	*0.1418*	*0.3338*	*0.0941*	*0.1950*	*0.0290*	*0.0079*	*0.0160*
SPI: average of policy indices	0.2421	-0.2262	-0.5974	1.0711[c]	-0.3351	-0.7132	-0.1271	-0.3256[c]	-0.2260[c]
	0.2658	*0.1942*	*0.4161*	*0.3578*	*0.3398*	*0.5054*	*0.0997*	*0.0552*	*0.1095*
SIGMA: standard error of policy indices	0.1576	-0.5455	-0.7131	0.4938	-0.1212	-0.9358[c]	-0.2389	-0.4693[c]	-0.5180[c]
	0.4115	*0.2425*	*0.3666*	*0.5869*	*0.3725*	*0.4037*	*0.1524*	*0.0340*	*0.0836*
POLCOM: policy complementarity	0.1713	0.0914	-0.0581	0.9284[c]	0.1359	-0.4311	0.0326	-0.0723	-0.0877
(SPI-SIGMA)	*0.3123*	*0.2267*	*0.2606*	*0.4628*	*0.0852*	*0.4504*	*0.0849*	*0.0373*	*0.0770*

[a] Standard errors in italics.
High β_F : Focus coefficient of the regression with the highest bound (β_F + two s.e.).
Best β_F : Focus coefficient of the regression with the best Akaike information criterion (AIC) value.
Low β_F : Focus coefficient of the regression with the lowest bound (β_F - two s.e.).
With the exception of SIGMA, the expected sign of the coefficients is positive.
[b] Residuals of the estimated Solow model.
[c] Coefficient significant at 5% of significance.

spite of the reforms was that the international economic environment was unfavourable.

Yet the time dummies contained in the estimated Solow model reported in table 3 are all positive, indicating that the international situation in the period under consideration was, if anything, favourable to Latin America. This result is consistent with the behaviour of the international interest rate, as was highlighted in Section III.[17]

[17] As was also mentioned in Section III, the fixed-effect specification prevents identification of the coefficients of any time or individual invariant variable. Hence, technically we cannot dismiss the

TABLE 5

Sign and significance of the focus coefficients[a]
(*Percentages*)

	Growth				Investment				Residuals[b]			
	β_F positive		β_F negative		β_F positive		β_F negative		β_F positive		β_F negative	
	S[c]	NS[d]	NS	S	S	NS	NS	S	S	NS	NS	S
FIN: Financial liberalization	0	14	75	9	28	59	9	3	0	0	38	63
LAB: Labour deregulation	0	0	44	5	28	63	9	0	0	0	0	100
PRIV: Privatization	13	66	16	6	0	59	4	0	13	38	2	28
TAX: Tax neutrality	3	66	31	0	0	31	4	25	22	6	31	41
TRADE: Trade liberalization	0	53	47	0	3	59	38	0	19	6	33	38
SPI: Average sect. structural policy indices	0	19	72	9	9	56	34	0	0	0	16	84
SIGMA: Standard deviation of structural policy indices	0	13	75	13	4	50	33	13	0	0	4	96
POLCOM: SPI-SIGMA	0	54	46	0	8	54	38	0	4	33	46	17

[a] Focus coefficients are significant or not significant at 5% of significance level. Number of models: FIN, LAB, PRIV, TAX, TRADE and SPI: 32 models. SIGMA and POLCOM: 24 models.
[b] Residuals of the Solow model.
[c] S = Significant.
[d] NS = Not significant.

VII

Conclusions

This paper has implicitly argued that controlling for fixed effects, endogeneity, spurious correlation and model uncertainty, and establishing objective procedures in model selection to avoid researcher bias, should be standard procedures in growth regressions, particularly when the findings have powerful policy implications.

possibility that this favourable situation may actually be the result of higher regional SPI by period. Given the EBA results, however, it is improbable that whereas country-specific changes in the SPI are not robustly correlated with growth, changes in the regional average are.

Considering all these premises, the study shows that the evidence for the positive effects of structural reforms on Latin American growth is far from conclusive. In fact, our analysis raises serious doubts about the effectiveness of the policy reforms, since no reform is robustly correlated with growth or its sources with the expected sign; frequently, the reforms enter the respective best specifications for growth and its sources with a negative sign; and it is not difficult to find specifications where the reform indices have significant negative coefficients.

What is more, the only robust relationship found in our analysis is a *negative* correlation between labour deregulation (LAB) and the residuals of the Solow model (RES), indicating that labour deregulation is *harming* productivity. Financial deregulation (FIN) and the average of the policy indices (SPI) also show only negative coefficients in the RES regressions, indicating that, if anything, they are also harming productivity. Since the free-market reforms of the Washington Consensus should enhance growth, particularly by improving resource allocation, these findings strongly suggest that the Washington Consensus policies are simply not working in Latin America.

The lack of robustness in the positive correlation between reforms and growth does not improve when policy dispersion (SIGMA) is controlled for, even using a policy complementarity index (POLCOM = SPI - SIGMA) or simple unrestricted regressions. However, the SIGMA coefficient generally shows the expected sign when entering the RES regressions, indicating that reform heterogeneity is bad for productivity.

Lastly, even if the foregoing conclusions are not affected by the direction of the time effects during the period, these effects were positive if anything, indicating that the poor economic performance of Latin America was not due to an adverse international environment. This conclusion is consistent with the behaviour during the period of the international interest rate, a crucial variable for regional growth.

This paper has used the same reform indices as were employed to produce most of the evidence being questioned, and although there is room to improve these indices, they represent a major advance in the measurement of Latin American structural reforms, since they explicitly incorporate policy variables and not the assumed outcomes of the reforms.

In future, the availability of longer time series and perhaps better indices may cast more light on the true impact of market reforms on Latin American growth. If the conclusions of the present study are confirmed, however, urgent research will be needed to understand how policies aimed at improving resource allocation can in fact harm productivity. In this endeavour, case studies might be more illuminating than econometric regressions.

Meanwhile, can anyone suggest accelerating the reforms?

APPENDIX A

Measuring the structural reforms

The components of the policy indices are:

Financial liberalization:
a) Freedom to set deposit interest rates
b) Freedom to set lending interest rates
c) Real level of bank deposit reserves
d) Quality of banking and financial oversight

Labour deregulation:
a) Flexibility of hiring
b) Cost of dismissal after one year of work
c) Cost of dismissal after ten years of work
d) Overtime pay
e) Social security contributions

Privatization:
Privatization proceeds accrued since 1988

Tax neutrality:
a) Top marginal income tax rate for corporations
b) Top marginal income tax rate for individuals
c) Basic value-added tax rate
d) Productivity of value-added tax[18]

Trade liberalization:
a) Average tariffs
b) Tariff spread

Quantifying every observation of the respective policy variable in such a way that higher values represent greater neutrality, the value of every index R for country j in year t is given by the function

$$R_t^j = \frac{1}{n}\sum_{i=1}^{n}\frac{x_{it}^j - x_i^{min}}{x_i^{max} - x_i^{min}}$$

where n is the number of policy variables included in index R, x_{it}^j is the observation of variable i for country j in year t, and x_i^{min} (x_i^{max}) is the minimum (maximum) value observed for variable i across all countries and years.

APPENDIX B

Econometric issues

a) *Consistent estimation of β*

Assuming balanced panels for notational simplicity, the models to be estimated have the general form:

$$y_{it} = x_{it}'\beta + \eta_t + \alpha_i + v_{it}$$
$$i = 1,2,\ldots,N. \quad t = 2,\ldots,T. \qquad [B.1]$$

where x_{it} is a K x 1 vector of explanatory variables that can contain the dependent variable lagged one period, endogenous regressors ($E[x^1_{it}\, v_{is}] \neq 0$ for t = s) and strictly exogenous regressors ($E[x^2_{it}\, v_{is}] = 0$ for all t,s); β is a K x 1 vector of constants; η_t and α_i are the unobserved time and individual specific effects, respectively; v_{it} is the error term; and in general $E[\alpha_i \mid x_{it}] \neq 0$.

[18] Defined as the ratio between the basic rate and actual collection as a percentage of GDP.

Taking first differences to sweep out the individual effects, and introducing dummies to estimate the time effects, we have:

$$\Delta y_{it} = \Delta x_{it}'\,\beta + d_t'\,\phi + \Delta v_{it} \qquad i = 1,2,\ldots,N. \quad t = 2,\ldots,T. \qquad [B.2]$$

where d_t is a (T-2) x 1 vector of dummies representing the periods 3,4,…, and ϕ is a (T-2) x 1 vector of constants. If we have y_{it-1} on the right-hand side of [B.1], OLS estimation of β in [B.2] is inconsistent. In this case, we have endogeneity of regressors since $E[\Delta y_{it-1}\,\Delta v_{it}] \neq 0$ due to the fact that y_{it-1} and v_{it-1} are correlated. A similar problem arises if we consider some x_{it} variables as endogenous. However, if we assume v_{it} is serially uncorrelated, and the endogenous regressors are weakly exogenous in the sense that $E[x^1_{it}\, v_{is}] = 0$ for $t < s$, any value of y_{it} or x^1_{it} lagged two or more periods are valid instruments for [B.2], since $E[y_{it-2}\Delta v_{it}] = 0$ and $E[x^1_{it-2}\Delta v_{it}] = 0$. Therefore, under the former identifying assumptions and having $T \geq 3$, there are instruments for the consistent estimation of β.

b) *Two-step GMM estimator*

The two-step GMM estimator proposed by Arellano and Bond (1991) uses the instrumental matrix $W^{AB} = (Z^{AB}, d)$, where d is the matrix of time dummies, $Z^{AB} = (z^{AB\,\prime}_1,\ldots, z^{AB\,\prime}_N)'$, and z^{AB}_i = diag $(y_{i1},\ldots, y_{it-2},;\, x^1_{i1}{}',\ldots, x^1_{it-2}{}';\, x^2_{i1}{}',\ldots, x^2_{iT}{}')$. This instrumental matrix exploits optimally the orthogonality with respect to Δv_{it} of values of y_{it} and x^1_{it} lagged two or more periods and all values of x^2_{it}. In actual estimation we use a subset of the former orthogonality conditions, choosing the instrumental matrix $W = (Z, d)$, where $Z = (z_1{}',\ldots, z_N{}')'$, and z_i = diag $(y_{i1};\ldots, y_{it-2},;\, x^1_{i1}{}', \ldots, x^1_{it-2}{}';\, \Delta x^2_{i3}{}', \ldots, \Delta x^2_{it}{}')$.

The estimation is done in two steps. Firstly, an instrumental variable estimation of [B.2] is performed using matrix W. This estimation is consistent but inefficient if Δv_{it} is not homoscedastic. Using the residuals of this first estimation, an unrestricted covariance matrix for Δv_{it} is estimated and an estimation is carried out for [B.2], once again using the matrix W and the covariance matrix previously estimated.

Defining, $\Delta\tilde{X} = [\Delta X, d\,]$ the two-step GMM estimator has the form:

$$\hat{\beta} = \left[\left(\Delta\tilde{X}'W\right)A_N\left(W'\Delta\tilde{X}\right)\right]^{-1}\left[\left(\Delta\tilde{X}'W\right)A_N\left(W'\Delta Y\right)\right] \qquad [B.3]$$

where $A_N = \left[\sum_i W_i'(\Delta\hat{v}_i)\,(\Delta\hat{v}_i)'W_i\right]^{-1}$ and where $\Delta\hat{v}_i$ is the vector of residuals of the first step estimation, ignoring A_N in [B.3].

c) *Sargan test of over-identifying restrictions*

Since we have more instruments than parameters to be estimated, the models are over-identified. Using these over-identifying restrictions, we can test the validity of instruments using the statistic

$$s = \Delta\breve{v}'\, W\left[\sum_i W'\,(\Delta\breve{v}_i)\,(\Delta\breve{v}_i)'W_i\right]^{-1} W'\Delta\breve{v} \qquad [B.4]$$

where Δv is the vector of residuals of the second step. Under the null hypothesis of validity of instruments, the s statistic is asymptotically distributed as χ^2_r, where r is the number of over-identifying restrictions, i.e., the difference between the columns of W and the number of estimated coefficients. A rejection of the null hypothesis suggests, for instance, that one of our assumptions –residuals not autocorrelated in [B.1] and/or endogenous but weakly exogenous regressors– is not true.

APPENDIX C

Variables and sources

a) *Policy indices*

FIN	:	financial liberalization index. *Source*: IDB.
LAB	:	labour deregulation index. *Source*: IDB.
PRIV	:	privatization index. *Source*: IDB.
TAX	:	tax neutrality index. *Source*: IDB.
TRADE	:	trade liberalization index. *Source*: IDB.
SPI	:	structural policy index, defined as the arithmetic mean of the five policy indices. *Source*: IDB.
SIGMA	:	dispersion of the indices, defined as the standard deviation of the five policy indices.
POLCOM	:	policy complementarity, defined as SPI-SIGMA.

b) *Other variables*

CA	:	non-factorial current-account surplus in constant dollars as a percentage of GDP. *Source*: IDB.
DEBT	:	external public and publicly guaranteed external debt in constant dollars as a percentage of GDP. *Source*: IDB.
DOCRE	:	log of (1 + growth of domestic credit at end of period). *Source*: IDB.
FLOWS	:	net financial flows in current dollars from international financial organizations as percentage of GDP. *Sources*: World Bank and International Monetary Fund (IMF).
GDP	:	GDP per capita in constant dollars. *Source*: IDB.
GOVSUR	:	current-account surplus (current revenues minus current expenditure) of the government, in current local currency, as a percentage of GDP. *Source*: IDB.
INF	:	log of (1 + average annual inflation). *Source*: IMF.
INV	:	gross investment in constant local currency as percentage of GDP. *Source*: IDB.
POP	:	annual growth rate of total population. *Source*: IDB.
PROT	:	(1 + annual growth rate of the average daily intake of proteins). *Source*: IDB.
RES	:	residuals of the estimated Solow model.
TOT	:	log of (1 + growth rate of terms of trade). *Source*: World Bank.

APPENDIX D

Extreme bound analysis[a]

Dependent variable : ΔlnGDP
I variables : lnGDP_1, lnPROT, lnINV and lnPOP

Focus variable		B	s.e.[b]	t	R^2	AIC[c]	*D* variables	Obs[d]	Sargan	No. of cond.
FIN:	high:	0.0306	0.0913	0.3348	0.4571	-5.4092	DEBT, FLOWS	57	χ^2_{35} = 28.61	3.95
Financial	best:	-0.0500	0.0452	-1.1053	0.5188	-5.5297	DEBT, DOCRE	57	χ^2_{35} = 9.35	4.64
liberalization	low:	-0.2086	0.1068	-1.9538	0.3245	-5.1906	TOT, DOCRE	57	χ^2_{35} = 24.18	3.44
LAB:	high:	-0.0708	0.6592	-0.1074	0.3708	-5.2616	FLOWS, DOCRE	57	χ^2_{35} = 32.2	3.76
Labour	best:	-0.4487	0.3642	-1.2320	0.5487	-5.5940	DEBT, DOCRE	57	χ^2_{35} = 10.58	3.95
deregulation	low:	-1.0691	0.6490	-1.6473	0.4347	-5.3687	DEBT, FLOWS	57	χ^2_{35} = 28.53	3.45
PRIV:	high:	0.1986	0.2014	0.9861	0.3351	-5.2069	DEBT, SIGMA	52	χ^2_{35} = 7.17	5.87
Privatization	best:	0.0559	0.0522	1.0724	0.4901	-5.4719	DEBT, FLOWS	57	χ^2_{35} = 7.85	4.07
	low:	-0.2646	0.1398	-1.8921	0.4.69	-5.3212	SIGMA, GOVSUR	52	χ^2_{35} = 20.28	4.46
TAX:	high:	0.1215	0.0779	1.5609	0.3689	-5.2585	FLOWS, DOCRE	57	χ^2_{35} = 2.83	4.02
Tax	best:	0.0927	0.0493	1.8806	0.5013	-5.4940	DEBT, TOT	57	χ^2_{35} = 4.14	7.02
neutrality	low:	0.0110	0.1230	0.0891	0.4187	-5.3413	SIGMA, GOVSUR	52	χ^2_{35} = 8.04	4.88
TRADE:	high:	0.1441	0.1566	0.9200	0.3798	-5.2765	DEBT, INF	52	χ^2_{35} = 20.14	5.39
Trade	best:	-0.0325	0.0440	-0.7389	0.4525	-5.4396	DOCRE	52	χ^2_{30} = 18.33	4.61
liberalization	low:	-0.1023	0.1418	-0.7214	0.4622	-5.4190	DEBT, DOCRE	52	χ^2_{35} = 24.79	5.48
SPI:	high:	0.2421	0.2658	0.9110	0.2300	-5.0986	INF	52	χ^2_{30} = 34.41	6.41
Average sect.	best:	-0.2262	0.1942	-1.1645	0.4687	-5.4313	FLOWS, DOCRE	52	χ^2_{35} = 17.54	7.19
structural policy indices	low:	-0.5974	0.4161	-1.4357	0.3326	-5.2031	SIGMA, GOVSUR	52	χ^2_{35} = 14.38	6.66
SIGMA:	high:	0.1025	0.4386	0.2318	0.4344	-5.3686	DEBT, TOT	52	χ^2_{35} = 27.10	3.65
Standard deviation	best:	-0.5455	0.2425	-2.2493	0.4441	-5.4244	DOCRE	52	χ^2_{30} = 24.37	3.70
of structural policy indices	low:	-0.7131	0.3666	-1.9448	0.3052	-5.1629	TOT	52	…	2.32
POLCOM:	high:	0.1713	0.3123	0.5484	0.3518	-5.2709	GOVSUR	52	χ^2_{30} = 32.28	4.47
SPI-SIGMA	best:	0.0914	0.2267	0.4029	0.4615	-5.4180	DEBT, DOCRE	52	χ^2_{35} = 25.15	6.55
	low:	-0.0581	0.2606	-0.2231	0.3386	-5.2121	TOT, GOVSUR	52	χ^2_{35} = 26.28	6.19

[a] High β_F : focus coefficient of the regression with the highest bound (β_F + two s.e.).
Best β_F : focus coefficient of the regression with the lowest AIC.
Low β_F : focus coefficient of the regression with the lowest bound (β_F - two s.e.).
[b] s.e.: standard error.
[c] AIC: Akaike information criterion.
[d] Number of observations.

APPENDIX D *(Continued)*

Dependent variable : lnINV
I variables : lnGDP_1, lnPROT and lnPOP

Focus variable		B	s.e.[b]	t	R^2	AIC[c]	*D* variables	Obs[d]	Sargan	No. of cond.
FIN:	high:	0.2771	0.1995	1.3886	0.1092	-3.4901	TOT, DOCRE	57	χ^2_{30} = 13.80	3.03
Financial	best:	-0.0284	0.0406	-0.7000	0.6151	-4.3293	CA, DOCRE	57	χ^2_{30} = 14.69	2.82
liberalization	low:	-0.1947	0.1784	-1.0914	0.2426	-3.6523	FLOWS, INF	57	χ^2_{30} = 18.42	3.33
LAB:	high:	2.6815	1.5789	1.6983	-0.1168	-3.2640	FLOWS, DOCRE	57	χ^2_{30} = 16.38	2.50
Labour	best:	0.7962	0.6296	1.2646	0.6385	-4.3921	CA, DOCRE	57	χ^2_{30} = 9.81	2.24
deregulation	low:	-0.5184	1.2935	-0.4008	-0.1063	-3.4774	SIGMA, GOVSUR	52	χ^2_{30} = 14.72	2.41
PRIV:	high:	-0.3065	0.4362	-0.7027	0.0289	-3.6078	SIGMA, GOVSU	52	χ^2_{30} = 13.12	4.05
Privatization	best:	0.0309	0.0641	0.4818	0.6577	-4.4466	CA, DOCRE	57	χ^2_{30} = 25.31	3.18
	low:	-0.4752	0.4748	-1.0007	0.0142	-3.5927	DEBT, SIGMA	52	χ^2_{30} = 13.97	5.09
TAX:	high:	0.2099	0.2329	0.9012	0.2673	-3.6855	DEBT, FLOWS	57	χ^2_{30} = 23.24	6.01
Tax	best:	-0.0901	0.0953	-0.9455	0.6671	-4.4743	CA, DOCRE	57	χ^2_{30} = 28.66	2.43
neutrality	low:	-0.3488	0.1394	-2.5014	-0.0101	-3.5684	SIGMA, GOVSUR	52	χ^2_{30} = 3.97	4.75
TRADE:	high:	0.1791	0.3338	0.5367	0.1154	-3.7011	DEBT, SIGMA	52	χ^2_{30} = 13.29	7.94
Trade	best:	0.1093	0.0941	1.1616	0.5181	-4.3084	CA, DOCRE	52	χ^2_{30} = 26.58	3.65
liberalization	low:	-0.2531	0.1950	-1.2980	0.0279	-3.6068	FLOWS, SIGMA	52	χ^2_{30} = 10.21	6.71
SPI:	high:	1.0711	0.3578	2.9937	0.0295	-3.6468	DEBT	52	χ^2_{25} = 17.31	4.12
Average sect.	best:	-0.3351	0.3398	-0.9859	0.5155	-4.3031	CA, DOCRE	52	χ^2_{30} = 11.74	5.27
structural policy indices	low:	-0.7132	0.5054	-1.4112	0.4070	-4.1010	CA, GOVSUR	52	χ^2_{30} = 12.30	5.19
SIGMA:	high:	0.4938	0.5869	0.8412	0.1126	-3.6980	FLOWS, INF	52	χ^2_{30} = 21.26	4.64
Standard deviation	best:	-0.1212	0.3725	-0.3255	0.5566	-4.3918	CA, DOCRE	52	χ^2_{30} = 20.71	3.51
of structural policy indices	low:	-0.9358	0.4037	-2.3178	0.4888	-4.2495	CA, TOT	52	χ^2_{30} = 15.63	5.33
POLCOM:	high:	0.9284	0.4628	2.0010	0.3259	-3.9728	CA, GOVSUR	52	χ^2_{30} = 13.71	4.40
SPI-SIGMA	best:	0.1359	0.0852	1.5956	0.4994	-4.2700	CA, FLOWS	52	χ^2_{30} = 14.61	5.31
	low:	-0.4311	0.4504	-0.9572	-0.0456	-3.5339	DEBT, DOCRE	52	χ^2_{30} = 23.11	5.98

APPENDIX D *(Conclusion)*

Dependent variable : RES
I variables : none

Focus variable		B	s.e.[b]	t	R^2	AIC[c]	*D* variables	Obs[d]	Sargan	No. of cond.
FIN:	high:	0.0351	0.0451	-0.7778	0.1268	-5.6955	DEBT	57	χ^2_{10} = 11.44	1.74
Financial	best:	-0.0783	0.0193	-4.0594	0.1835	-5.7275	DEBT, DOCRE	57	χ^2_{15} = 17.92	2.89
liberalization	low:	-0.0763	0.0396	-1.9274	0.0743	-5.6371	DOCRE	57	χ^2_{10} = 10.50	1.74
LAB:	high:	-0.3752	0.0403	-9.3072	0.1657	-5.6360	TOT, SIGMA	52	...	1.62
Labour	best:	-0.4932	0.0266	-18.5364	0.2014	-5.7498	DEBT, DOCRE	57	χ^2_{15} = 17.45	2.47
deregulation	low:	-0.5306	0.0475	-11.1821	0.1718	-5.6433	DEBT, SIGMA	52	χ^2_{15} = 17.94	2.82
PRIV:	high:	0.0400	0.0191	2.1005	-0.1432	-5.4261	DOCRE	57	χ^2_{10} = 10.53	2.65
Privatization	best:	-0.1658	0.0060	-27.8000	0.1853	-5.6598	TOT, IGMA	52	...	2.83
	low:	-0.1627	0.0154	-10.5302	0.0558	-5.5123	CA, SIGMA	52	χ^2_{15} = 18.43	1.53
TAX:	high:	0.0889	0.0170	5.2280	0.1305	-5.6647	DEBT, TOT	57	χ^2_{15} = 15.12	5.30
Tax	best:	0.0813	0.0162	5.0182	0.1085	-5.6748	DEBT	57	χ^2_{10} = 7.95	5.13
neutrality	low:	-0.0548	0.0158	-3.4544	0.0211	-5.5462	FLOWS, TOT	57	χ^2_{15} = 17.86	1.53
TRADE:	high:	0.0641	0.0290	2.2103	0.0731	-5.5691	SIGMA	52	...	4.60
Trade	best:	-0.0347	0.0079	-4.4177	0.1224	-5.5854	DEBT, TOT	52	χ^2_{15} = 16.60	2.38
liberalization	low:	-0.0785	0.0160	-4.9100	0.0198	-5.4748	CA, FLOWS	52	χ^2_{15} = 18.05	2.37
SPI:	high:	-0.1271	0.0997	-1.2748	0.0487	-5.5048	FLOWS, GOVSUR	52	χ^2_{15} = 18.08	4.21
Average sect.	best:	-0.3256	0.0552	-5.9012	0.2162	-5.6984	TOT, DOCRE	52	χ^2_{15} = 18.46	3.92
structural policy indices	low:	-0.2260	0.1095	-2.0648	0.1357	-5.6391	DOCRE	52	χ^2_{10} = 16.70	3.21
SIGMA:	high:	-0.2389	0.1524	-1.5673	0.1137	-5.6140	DEBT	52	χ^2_{10} = 14.41	2.59
Standard deviation	best:	-0.4693	0.0340	-13.8225	-0.0575	-5.3989	CA, INF	52	χ^2_{15} = 18.45	2.24
of structural policy indices	low:	-0.5180	0.0836	-6.1945	-0.0504	-5.4442	FLOWS	52	χ^2_{10} = 11.34	1.40
POLCOM:	high:	0.0326	0.0849	0.3846	0.0038	-5.4971	GOVSUR	52	χ^2_{10} = 14.17	3.21
SPI-SIGMA	best:	-0.0723	0.0373	-1.9370	0.1269	-5.5905	DEBT, DOCRE	52	χ^2_{15} = 18.65	4.89
	low:	-0.0877	0.0770	-1.1384	0.0019	-5.5298	none	52	...	...

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