

6 Political Variables in Growth Regressions*

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1 INTRODUCTION

In a study for the World Bank, Stone, Levy and Paredes (1992) tried to discover the main obstacles to private business development in Brazil and Chile. The research was based on interviews with forty-two clothing firms of different sizes in each country. The entrepreneurs were confronted with a list of twenty possible problems about doing business, and they were asked to assign the relative importance to each of these areas. The list included most major problems, ranging from inflation and high taxes to political uncertainty and lack of access to credit. As different as the results for the two countries were, there was one area of clear agreement: in both countries the entrepreneurs considered political and policy uncertainty a very serious problem for doing business. In Brazil, it was cited as the most important and in Chile as the second most important of the twenty obstacles to private-sector development.

A similar case is Nicaragua after 1991. In spite of the serious stabilization and deregulation effort of the Chamorro government in 1991, private investment did not improve and remained low for years after the programme. In Borner, Brunetti and Weder (1995a) we reported on a survey of private firms in Nicaragua that aimed at unearthing the reasons for this reluctance to invest. The result was clear. The main obstacle, in the eyes of the potential investor, was the fear of unpredictable changes in important aspects of the institutional framework. Of the fifty firms surveyed, 72 per cent reported that they lived in constant fear of wide-ranging policy changes. Under such uncertainty firms preferred not to commit their resources to partially irreversible investment projects.¹

These findings are symptomatic of the results presented by a number of researchers who study the determinants of private investment and growth in less developed countries (LDCs). Political factors turn out to be important determinants of growth-enhancing private-sector activity.² Mainly because of the anecdotal nature of the evidence, these political aspects have not received much attention from mainstream research into the determinants of economic development. However, recent research into economic growth has introduced political variables into cross-country growth regression. In this chapter we have used a standardized framework to summarize what we can learn from regression analysis about the relationship between politics and economic growth.

The remainder of the chapter is organized as follows. In Section 2 we discuss the major political variables used in the empirical analysis. Section 3 explains the econometric approach to the comparative tests. Section 4 summarizes the comparative tests for objective political variables, and Section 5 for the subjective political variables. Section 6 concludes with the major policy findings from the analysis and a discussion of issues for future research.

2 CROSS-COUNTRY POLITICAL DATA

The measurement of politics in cross-country growth analysis has been developed in five interrelated steps. The first, and by far the most frequently studied question has been the relationship between the degree of democracy and economic growth. Authors such as Adelman and Morris (1967) or Dick (1974) stimulated a large number of empirical papers that tried to link measures of democracy with cross-country differences in growth rates. Earlier authors constructed their own measures of democracy; whereas most recent contributions use the aggregated indicators of political rights and civil liberties assembled by Gastil (1989). Since at least the 1970s research on the democracy-growth link has completely dominated the discussion on political sources of growth. Stimulated mainly by the influential paper by Barro (1991) a second and third category of political variables, measures of government instability and political violence, have recently become standard explanatory variables in cross-country growth regressions. Barro worked with two measures that are representative of both categories, the number of revolutions and political coups as a measure of government instability, and the number of assassinations per period as a measure of political violence.

In an attempt to capture more directly the uncertainties of policies created by an unstable institutional framework, some authors have suggested a fourth category of cross-country political variables – measures of policy volatility. The main idea of these indicators is to take advantage of existing macroeconomic data sets on taxes, monetary variables or trade distortions, and to calculate the standard deviation of these policy measures as a more direct proxy for an uncertain institutional framework. This approach was pioneered by Kormendi and Meguire (1985); a drawback is that high volatility does not necessarily indicate policy uncertainty. Volatility is an objectively measurable property of politics, but uncertainty is a subjective concept. For private investment decisions, the subjective perception of the political framework is what really matters. This is why a fifth category of political measures has recently been developed, which relies on the subjective evaluation of the political framework. These subjective measures rely either on surveys of experts on countries (Knack and Keefer, 1995; Mauro, 1995; or direct surveys of interested firms (Borner, Brunetti and Weder, 1995b).

3 THE EMPIRICAL FRAMEWORK

In the following sections we provide a survey of comparative tests of a large number of these political variables in the categories of cross-country growth regressions discussed above. Most of the variables have already been integrated into econometric analysis of the sources of growth. A major problem with this literature is, however, that the specifications of the estimated growth regressions vary wildly between studies.³ The existing empirical literature therefore prevents one from reaching conclusions as to the relative merits of different political variables as explanatory factors of cross-country differentials in growth rates. The comparative tests therefore use exactly the same specifications and methods for all the political variables tested. In addition, we use a formal sensitivity test to evaluate the fragility of the results with respect to variations in the specification.

The average rate of per capita growth (Growth) is regressed on each political variable (Pol) in a base and an extended specification. The base regression, in addition to the specific political variable, contains the two variables that are accepted unanimously as crucial determinants of growth in the recent literature.⁴ They are the starting GDP per capita (Gdp) and the starting rate of secondary school enrolment (Sec).

In contrast to most other explanatory variables considered in the empirical growth-literature, these two are unambiguously exogenous. This specification is therefore less prone to problems of reverse causation. The extended regression adds three variables to this specification: the average rate of inflation (Infl); the average rate of government consumption as a percentage of GDP (Gov); and the average extent of international trade proxied by the sum of exports and imports as a percentage of GDP (Trd). These three variables are used to control for differences in the macroeconomic framework; in the extent of state control and related inefficiencies; and in the openness of the economy. All three characteristics are commonly accepted determinants of economic growth.⁵

For each of the political variables, the following two cross-section specifications are estimated. First the *base specification*:

$$\text{Growth} = a_0 + a_1\text{Gdp} + a_2\text{Sec} + a_3\text{Pol} + u \quad (1)$$

To evaluate the sensitivity of the coefficient of the political variable a second, *extended specification* of the following form will be estimated:

$$\begin{aligned} \text{Growth} = a_0 + a_1\text{Gdp} + a_2\text{Sec} + a_3\text{Infl} + a_4\text{Gov} + \\ a_5\text{Trd} + a_6\text{Pol} + u \end{aligned} \quad (2)$$

Wherever possible the same data set will be used throughout the following analysis. However, not all variables are available for the same periods, so that three data sets will be applied covering the time periods 1960–89, 1974–89 and 1980–90. If a political variable is available for more than one time period the tests will always be performed on the longer period. The majority of the economic data are taken from the World Bank National Accounts and from the Summers and Heston (1991) data set.⁶

In addition to estimating the political variables for these two specifications we performed a formal sensitivity analysis following the extreme bound analysis (EBA) introduced by Leamer (1983) and proposed for cross-country growth analysis by Levine and Renelt (1992). This method involves varying the set of right-hand variables and checking whether the political variable remains significant, with the expected sign in all specifications. In particular, we use the base specification and vary five additional right-hand variables: the three additional variables used in the extended specification, plus the average black-market premium on foreign exchange and the average growth rate of domestic

credit. A political variable that remains significant with the expected sign in all these specifications is qualified as robust, whereas in all other cases the variable is fragile. For fragile variables we indicate in brackets the number of additional right-hand variables that makes the political variable insignificant.⁷

In the discussion of the empirical tests in the next two sections we provide survey tables that summarize the regression results for all the political variables in the respective category. The tables give the sign and significance of the variables in the two specifications as well as the EBA result.

4 OBJECTIVE POLITICAL VARIABLES IN GROWTH REGRESSIONS

The objective political variables are estimated in three categories: measures of democracy; measures of political instability; and measures of policy volatility.

4.1 Democracy

Empirical research on the democracy – growth link regularly uses encompassing data sets provided by political scientists. The most important example is that of the indicators of political rights and civil liberties by Gastil (1989) shown in Table 6.1. Both Gastil measures prove to be positively related to growth and insignificant for both specifications. After the Gastil measures, the two democracy indicators by Bollen (1980) are the second most frequently used measures of democracy. His measures for the years 1960 and 1965 were constructed as an average of two sub-indicators of political liberties and political rights. The entry rules are similar to Gastil's. Both indicators were tested in growth regressions for the period 1960–89, and found to be negatively related to growth but, again, they are clearly insignificant for all specifications. The last row reports on a very broad and crude measure of democracy, the average number of elections in the period 1960–82 calculated from Taylor and Jodice (1983). In contrast to the other two sources, this measure does not correct for the degree of competitiveness and fairness of elections. It is interesting to note that this crude measure is positively related to growth in the period 1960–89 and that it is even significant for the extended specification. However, the sensitivity test reveals the relationship to be very fragile.

Table 6.1 Democracy-measures in growth-regressions

	<i>Base</i>	<i>Extended</i>	<i>Sensitivity</i>
Political rights	positive ⁰	positive ⁰	fragile (0)
Civil liberties	positive ⁰	positive ⁰	fragile (0)
Democracy 1960	negative ⁰	negative ⁰	fragile (0)
Democracy 1965	negative ⁰	negative ⁰	fragile (0)
Elections	positive ⁰	positive**	fragile (0)

Notes

1. Sample size: Political rights (110 in base/107 in 'extended' specification); civil liberties (111/108), Democracy 60 (87/84), Democracy 65 (94/92), Elections (106/101)
2. Summary of estimating the respective political variables in two specifications of growth regressions and of a formal sensitivity test (EBA). The *base* specification in addition to the variable of interest contains the GDP in base year and the secondary school enrolment in base year as right-hand variables. The *extended* specification adds the following three right-hand variables to the base specification: average rate of inflation; average rate of government consumption as % of GDP; and average rate of exports + imports as % of GDP. In both cases the table indicates the sign of the relationship and whether it is significant at the 1%-level (**), at the 5%-level (*) or insignificant (⁰). The sensitivity column reports whether the variable of interest is fragile or robust in the EBA, and in the former case indicates the number of additional right-hand variables added to the base specification that make the variable insignificant.

Sources: Political variables: Gastil (1989), Bollen (1980), Taylor and Jodice (1983).

To summarize, measures of democracy do not seem to be related systematically to cross-country differences in growth. In almost all cases the measures are insignificant and even the signs of the coefficients are unclear.

4.2 Political Instability

The two categories of political instability indicators are (i) measures of government instability; and (ii) measures of political violence. We test separately for each of these categories – see Table 6.2.

The frequently used measure of the number of revolutions and coups in the period 1960–85 provided by Barro and Wolf (1989) is significant in the base regression and insignificant in the extended one. The formal sensitivity test reveals it to be fragile (2): that is, it takes a

Table 6.2 Political instability measures in growth regressions:
1. government instability

	<i>Base</i>	<i>Extended</i>	<i>Sensitivity</i>
Revolutions and coups	negative**	negative ⁰	fragile (2)
Government crisis	negative ⁰	positive ⁰	fragile (0)
Government transfers	positive ⁰	positive**	fragile (0)
Significance of government transfers	negative ⁰	positive ⁰	fragile (0)
Probability government transfers	negative ⁰	negative ⁰	fragile (0)

Notes

1. Sample size: Revcoup (107/102), Gov. Cris. (71/68), Gov. Trnsf. (106/101), Sign. Gov. Transf. (75/72), Prob. Gov. Transf. (75/72).
2. Summary of estimating the respective political variables in two specifications of growth regressions and of a formal sensitivity test (extreme bound analysis). The *base* specification in addition to the variable of interest contains the GDP in base year and the secondary school enrolment in base year as right-hand variables. The *extended* specification adds the following three right-hand variables to the base specification: average rate of inflation, average rate of government consumption per GDP and average rate of exports + imports per GDP. In both cases the table indicates the sign of the relationship and whether it is significant on the 1%-level (**), on the 5%-level (*) or insignificant (⁰). The sensitivity column reports whether the variable of interest is fragile or robust in the extreme bound analysis and in the former case indicates the number of additional right-hand variables added to the base specification that make the variable insignificant.

Sources: Political variables: Barro and Wolf (1989); Taylor and Jodice (1983); Edwards and Tabellini (1991).

combination of two additional right-hand variables added to the base specification to make the coefficient insignificant. The remainder of the table shows that all other measures of political instability are clearly less convincing as explanatory variables in growth regressions. The number of government crises for the period 1960–85 calculated from Taylor and Jodice (1983) is unrelated to the growth rate for the period 1960–89 and it even changes its sign in different specifications. The average number of government transfers for the same period and from the same source is, interestingly,⁸ positively related to economic growth, and for the extended specification the coefficient is even significant. However, again, the variable proves to be highly fragile to changes in specification. The last two measures tested are measures of significant government transfers and the probability of government transfers, estimated with a probit-regression by Edwards and Tabellini (1991)

Table 6.3 Political instability-measures in growth-regressions:
2. Political violence

	<i>Base</i>	<i>Extended</i>	<i>Sensitivity</i>
Assassinations	negative ⁰	positive ⁰	fragile (0)
Demonstrations	negative ⁰	positive**	fragile (0)
Political Strikes	negative ⁰	positive ⁰	fragile (0)
Riots	negative ⁰	positive ⁰	fragile (0)
Armed attacks	negative ⁰	negative ⁰	fragile (0)
Political Executions	negative**	negative ⁰	fragile (1)
War casualties	negative**	negative**	fragile (1)
Indicator of political violence	negative ⁰	negative**	fragile (0)

Notes

1. Sample size: Assassinations (107/102); demonstrations (106/101); political strikes (107/102); riots (107/102); attacks (106/101); executions (106/101); political violence (108/105).
2. Summary of estimating the respective political variables in two specifications of growth regressions and of a formal sensitivity test (extreme bound analysis). The *base* specification in addition to the variable of interest contains the GDP in base year and the secondary school enrolment in base year as right-hand variables. The *extended* specification adds the following three right-hand variables to the base specification: average rate of inflation, average rate of government consumption as % of GDP and average rate of exports + imports as % of GDP. In both cases the table indicates the sign of the relationship and whether it is significant on the 1%-level (**), on the 5%-level (*) or insignificant (⁰). The sensitivity column reports whether the variable of interest is fragile or robust for the EBA and in the former case indicates the number of additional right-hand variables added to the base specification that make the variable insignificant.

Sources: Political variables: Barro and Wolf (1989); Taylor and Jodice (1983); Easterly and Rebelo (1993); Alesina and Perotti (1993).

for the period 1971–82. Both indicators are insignificant in all specifications of growth regressions for the period 1974–89 and the first even changes sign between the base and the extended specification.

The second category of political instability measures are indicators of political violence. The results of growth regressions with these measures are summarized in Table 6.3 above.

The number of assassinations per million of population provided by Barro and Wolf (1989) for the period 1960–85 proves to be unrelated to economic growth and even the sign is ambiguous, as it changes from (the expected) negative in the base to positive in the extended specification. The remainder of the table contains, in rising degree of

violence, the results for a number of other measures of political violence. The first three indicators exhibit very similar patterns. These are a measure of the number of political demonstrations in the period 1960–82, calculated from Taylor and Jodice (1983), as well as two measures from the Barro and Wolf (1989) data set measuring the number of political strikes and the number of riots. In all three cases the variables are unrelated to economic growth for the period 1960–89, and the sign changes from the expected negative in the base to positive in the extended specification. As might be expected, such comparatively minor events of political violence are not related to aggregate growth rates.

The remaining four measures concentrate on more far-reaching events of political violence and all exhibit at least the expected negative sign in the growth regressions. The number of armed attacks calculated from Taylor and Jodice (1983) is insignificantly related to growth in 1960–89 in both cases, and the measure of the number of political executions from the same source is significantly negative in the base but insignificant in the extended specification. The latter variable proves to be fragile (1) in the EBA tests, meaning that the inclusion of one additional variable to the base specification suffices to make the variable insignificant. A similar pattern can be observed for the average number of war casualties, calculated for the period 1970–88, and provided by Easterly and Rebelo (1993). The variable is fragile (1) and it is significant in the base as well as the extended specification in the growth regression for the period 1974–89. Finally, the last variable tested is an index of political violence provided for the period 1960–82 by Alesina and Perotti (1993). For calculating this measure, the principal components method was applied to the number of respectively assassinations, deaths from political violence and coups, and a dummy for dictatorship. This variable exhibits the expected sign, but is insignificant in growth regressions for 1960–89.

To summarize, measures of political violence seem to be more promising as potential explanatory variables for economic growth than are measures of democracy. Some of the measures are significant and of the expected sign in growth regressions. However, the results are far from clear-cut as a number of indicators are insignificant and of the wrong sign in some specifications, and none of the significant variables is robust in the EBA sense.

Table 6.4 Measures of policy volatility in growth-regressions

	<i>Base</i>	<i>Extended</i>	<i>Sensitivity</i>
Standard deviation of inflation rate	negative ⁰	negative ⁰	fragile (0)
Standard deviation of domestic taxes	negative**	negative**	fragile (1)
Standard deviation of growth of domestic credit	negative ⁰	negative ⁰	fragile (0)
Standard deviation of black market premium	negative**	negative ⁰	fragile (3)
Variability of real exchange rate	negative**	negative**	robust

Notes

1. Sample size: Standard deviation inflation (107/102), Standard deviation domestic tax (74/72), Standard deviation of domestic credit (109/90), Standard deviation of black market (97/93), Variability of exchange rate (110/107).
2. Summary of estimating the respective political variables in two specifications of growth regressions and of a formal sensitivity test (extreme bound analysis). The *base* specification in addition to the variable of interest contains the GDP in base year and the secondary school enrolment in base year as right-hand variables. The *extended* specification adds the following three right-hand variables to the base specification: average rate of inflation, average rate of government consumption as % of GDP and average rate of exports + imports as % of GDP. In both cases the table indicates the sign of the relationship and whether it is significant on the 1%-level (**), on the 5%-level (*) or insignificant (⁰). The sensitivity column reports whether the variable of interest is fragile or robust for the EBA and in the former case indicates the number of additional right-hand variables added to the base specification that make the variable insignificant.

Sources: Political variables: IMF government finance statistics; Easterly and Rebelo (1993); Dollar (1992).

4.3 Policy Volatility

Measures of policy volatility are usually calculated as the standard deviation of a data series on macroeconomic policies. Table 6.4 reveals that the expected negative sign shows up for all indicators of policy volatility tested. The first measure of policy volatility tested, the standard deviation of the inflation rate, is insignificant in both specifications, but the coefficient has the expected sign. The next variable tested is the standard deviation of domestic taxes as a percentage of consumption plus investment calculated from the IMF's Government Finance Statistics by Easterly and Rebelo (1993). The variable is for the period 1970–88 and it is tested in growth regressions for the period

1974–89. The indicator has the expected negative sign and is significant on the 1 per cent level in both specifications. The EBA reveals the measure to be sensitive to variations in right-hand variables; it takes only one additional variable to make the coefficient insignificant. The standard deviation of the black-market premium on foreign exchange for the period 1960–87 is significantly negatively related to average growth from 1960 to 1989 in the base regression, but loses significance in the extended regression. The measure is comparatively insensitive to variations in right-hand variables. It takes three additional variables added to the base specification to lead to insignificance of the variable. The last volatility measure tested is an indicator of the variability of the real exchange rate calculated by a specific method by Dollar (1992) for the period 1976–85. This variable is not only significant and of the expected sign in both specifications, it is even robust in the EBA test, meaning that the coefficient of this variable keeps significance in all combinations of additional right-hand variables tested.

To summarize, the measures of policy volatility are the most convincing political measures tested in growth regressions so far. The variables have the expected sign in both specifications and some are significant in most specifications.⁹

5 SUBJECTIVE POLITICAL VARIABLES IN GROWTH REGRESSIONS

As suggested earlier, subjective measures of politics are constructed in two ways. The first relies on experts' opinions and the second on firm-level surveys.

5.1 Experts' Opinions

We tested political indicators based on the opinions of experts on various countries, taken from three different sources: *Business International*, *Manager Magazin*, and the International Institute for Management Development.¹⁰ The data from *Business International* have been used in this kind of analysis by Mauro (1995). From a list of fifty-six country risk factors he identifies eleven as relevant for evaluating the political environment for doing business.¹¹ The first variable tested in Table 6.5 is an average of all eleven sub-indicators calculated for the year 1980 in growth regressions for the period 1980–90. In both cases

Table 6.5 Political measures from country experts' opinions in growth-regressions

	<i>Base</i>	<i>Extended</i>	<i>Sensitivity</i>
Institutional indicator (<i>BI</i>)	positive ⁰	positive ⁰	fragile (0)
Political stability (<i>BI</i>)	positive ⁰	negative ⁰	fragile (0)
Bureaucratic efficiency (<i>BI</i>)	positive ⁰	positive ⁰	fragile (0)
Political stability (<i>MM</i>)	positive ⁰	positive ⁰	fragile (0)
Fair judiciary (<i>IMD</i>)	positive ⁰	positive ⁰	fragile (0)
Security (<i>IMD</i>)	positive**	positive ⁰	fragile (3)
Lack of corruption (<i>IMD</i>)	positive*	positive ⁰	fragile (1)

Notes

1. Sample size: Institutional indicator (59/59), political stability BI (59/59), bureaucratic efficiency (59/59), political stability MM (47/47), fair judiciary (31/31), security (31/31), corruption (31/31).
2. Summary of estimating the respective political variables in two specifications of growth regressions and of a formal sensitivity test (EBA). The *base* specification in addition to the variable of interest contains the GDP in base year and the secondary school enrolment in base year as right-hand variables. The *extended* specification adds the following three right-hand variables to the base specification: average rate of inflation, average rate of government consumption as % of GDP and average rate of exports plus imports as % of GDP. In both cases the table indicates the sign of the relationship and whether it is significant on the 1%-level (**), on the 5%-level (*) or insignificant (⁰). The sensitivity column reports whether the variable of interest is fragile or robust for the EBA and in the former case indicates the number of additional right-hand variables added to the base specification that make the variable insignificant.
3. BI = Business International; MM = *Manager Magazin*; IMD = International Institute for Management Development.

Source: Business International; *Manager Magazin*; International Institute for Management Development.

the coefficient of the aggregate institutional variable has the expected sign, but is insignificant on conventional confidence levels. The next two variables are sub-indicators from the Business International data set, proposed by Mauro (1995). The political stability indicator is calculated as an average of six, and the bureaucratic efficiency indicator as an average of three of the eleven sub-indicators that made up the overall measure of institutions tested.¹² As is the case with the overall measure, both sub-indicators are insignificant in all specifications of growth regressions for 1980–90. The second political stability indicator is from a survey conducted in 1980 by the German business journal

Manager Magazin. The indicator is a weighted average from eight individual questions concerning aspects of political instability.¹³ The indicator has the expected positive sign but is insignificant in growth regressions for 1980–90. The last three indicators are from the International Institute for Management Development, which provides them as a basis for the World Competitiveness Report. These indicators are particularly interesting because they are based on surveys of more than 3000 business executives in thirty-three countries and checked for consistency by business experts. It is therefore a combination between business experts' opinions and survey indicators. Nevertheless, the results have to be taken with a heavy 'dose of salt', as the indicators are only available for the year 1991 and are then tested for the period 1980–90. The first indicator, on the fairness of the judiciary, is insignificant, whereas the measures of security of people and property and the measure of corruption are significant at least in the base specification. Both variables, however, are sensitive to variations in the right-hand variables.

To summarize, political measures based on the opinions of business experts tend to have the expected sign in the growth regressions, but they are only occasionally significant and never insensitive in an EBA sense.

5.2 Survey Data

The survey data gathered by Borner, Brunetti and Weder (1995b) concentrate on two aspects of politics in the twenty-eight LDCs studied. The first was to measure the extent of uncertainty in the institutional framework, and the second to examine the quality of law enforcement. It should be noted that this survey was based on a very small sample. Table 6.6 summarizes the most important results for both categories.

The first indicator concerns legislative uncertainty, and inquired into whether the firm feared unexpected changes in law-making. The six possible multiple-choice answers ranged from a completely reliable to a totally chaotic institutional framework. A trend question integrated into the questionnaire allowed an average value to be calculated for the indicator for the period 1980–90. In both cases, the measure of legislative uncertainty displayed the expected negative sign and was significant. The formal EBA analysis qualified this variable as robust, meaning that for all combinations of right-hand variables the coefficient remained significant, with the expected negative sign. The variables derived from the survey had the expected negative sign in all the growth regressions for the period 1980–90.

Table 6.6 Political measures from a survey of private firms in growth-regressions

	<i>Base</i>	<i>Extended</i>	<i>Sensitivity</i>
Legislative uncertainty	negative**	negative*	robust
Lack of information on legislation	negative*	negative ⁰	fragile (1)
Lack of consultation on legislation	negative**	negative*	robust
Lack of credibility in politics	negative**	negative*	robust
Lack of transparency in enforcement	negative*	negative*	fragile (1)
Corruption	negative ⁰	negative ⁰	fragile (0)

Notes

1. Sample size: Legal uncertainty (28/26), information (27/25), consultation (27/25), credibility (28/26), enforcement (28/26), corruption (27/25).
2. Summary of estimating the respective political variables in two specifications of growth regressions and of a formal sensitivity test (EBA). The *base* specification in addition to the variable of interest contains the GDP in base year and the secondary school enrolment in base year as right-hand variables. The *extended* specification adds the following three right-hand variables to the base specification: average rate of inflation, average rate of government consumption as % of GDP and average rate of exports plus imports as % of GDP. In both cases the table indicates the sign of the relationship and whether it is significant on the 1%-level (**), on the 5%-level (*) or insignificant (⁰). The sensitivity column shows whether the variable of interest is fragile or robust for the EBA, and in the former case indicates the number of additional right-hand variables added to the base specification that make the variable insignificant.

Sources: Political variables: Borner, Brunetti and Weder (1995b).

The next three variables attempted to capture the extent of institutional uncertainty. The second indicator asked whether firms were informed before important legislative changes; the third: whether these firms were consulted; and the fourth: were government policy announcements credible? The results were quite strong, as two of these indicators were robustly related to cross-country differences in growth. The last two variables concentrated on the efficiency of the enforcement process: (i) whether laws were enforced in a transparent manner; and (ii) whether corruption was present in law enforcement.¹⁴ Transparency of enforcement was significantly negative in the base regression, but proved to be sensitive to the inclusion of one additional right-hand variable. The corruption indicator is insignificant in both specifications.

To summarize, indicators of the uncertainty of the institutional framework, as measured in this survey, proved to be the most robust of all political variables tested.

6 CONCLUSIONS

The main result of our econometric analysis¹⁵ was that uncertainty on the reliability and predictability of the institutional framework proved costly in terms of economic growth. This has been confirmed using various objective and subjective variables. Among the objective political variables included, measures of the volatility of policies clearly were most strongly related to economic growth. As to the subjective political variables, different measures of the predictability of the rule-making processes were robustly related to differences in economic growth. Our analysis suggests that other political characteristics were less reliable determinants of economic growth. This applied to the level of democracy, as well as to the degree of government stability, the degree of violence in the political process and the level of corruption.

These results allow the tentative identification of some properties of political systems that clearly tend to be costly in terms of economic growth. In particular, three closely related political phenomena raise questions about the prospects for private-sector-driven economic development. These are, first, a high level of legislative instability and non-credible policies; second, the low transparency of the law-making process and third – to a lesser extent – the related phenomenon of a high degree of policy volatility. Countries characterized by such political systems are prone to low growth rates, because of a general reluctance on the part of private firms to commit resources to unpredictable institutional environments.

From our analysis, these three features emerge as the clearest political obstacles to economic growth. Clearly, governments that are concerned to maintain a favourable institutional framework for private-sector-driven economic development should be worried if one or more of these problems characterize the political system of their country.

The main conclusions for the design of growth-enhancing political systems are clear. The political system should first of all be characterized by a transparent and orderly law-making process. Changes in laws, regulations and policies should be predictable, transparent and public; and they should proceed in small, slow steps. In particular, affected parties should be informed well in advance, and be allowed to express their concerns. Additionally, political conflicts should be solved in non-violent ways, private property should be consistently protected, and radical, disorderly government change should be avoided.

For future research, this empirical analysis has shown that collecting more cross-national political data based on surveys of the firm is

certainly worthwhile. In particular, research should be aimed at asking more detailed questions in order to ascertain the specifics of the institutional framework that are perceived to be important for private investment and growth. A closer understanding of the damaging political obstacles to economic development would allow policy-makers to be more specific about growth-enhancing political reform proposals.

Notes

* This paper provides a focused summary of *Politics and Economic Growth: What Can We Learn from Cross-Country Data* (OECD, 1997a). The research was carried out during a stay as a visiting scholar at the Department of Economics, Harvard University. I thank Alberto Alesina, for inviting me, as well as the OECD Development Centre and the Swiss National Foundation for financial support.

1. For a theoretical analysis of the adverse effects of uncertainty on investment decisions under risk neutrality, see Dixit and Pindyck (1994). Their research on the waiting portion associated with most investment decisions has delivered additional arguments as to why uncertainty is particularly harmful to investment.
2. Other recent studies that report on such cases include Klitgaard (1990) or De Soto (1989) among others.
3. For a survey that focuses on these differences, see Brunetti (1997b).
4. See the surveys in Barro and Sala-i-Martin (1995).
5. These variables were chosen on the basis of availability and prominence in usual cross-country growth analysis. Each one of these measures is arguably not ideal as a proxy for the phenomenon it intends to measure. To measure openness as the simple sum of exports and imports as a rate of GDP neglects the problem that differences in geographic size and/or distance to potential trade partners of countries certainly are important distortions of this indicator.
6. For more details on the data sets used, see the extended description in Brunetti (1997a).
7. It must be noted that this sensitivity test is extremely demanding and that it has been criticized for this. Sala-i-Martin (1994) argues that this test might be too strong, especially if the right-hand variables that are varied in this process are highly correlated. It is therefore appropriate to interpret the results of the EBA bounds not as a simple 'yes-no' criterion on the robustness of the relationship under consideration. The method should rather be used to get a systematic evaluation of which specific variables tend to weaken the relationship between the political variable and economic growth. If, however, a variable is robust this would indicate that even the large variations in the specification estimated cannot significantly weaken the relationship under consideration.
8. This result is interesting because first-thought reasoning would tend to

argue that a government transfer is necessarily accompanied by a certain amount of uncertainty. But it could be conjectured that this variable in fact at least partly measures the extent to which the 'rule of law' is adhered to in government transfers. This could be interpreted as a general sign of a tendency to a higher predictability in the political system.

9. This is confirmed in the much broader analysis of a large number of policy volatility measures provided in Brunetti (1996c).
10. Keefer and Knack, in Chapter 7 of this volume, works with business indicators from alternative sources: *Business Environmental Risk Intelligence* (BERI) and the *International Country Risk Guide* (ICRG).
11. These eleven indicators ask for the following: (a) likelihood of political change; (b) violence of political process; (c) probability of opposition takeover; (d) stability of labour; (e) relationship with neighbouring countries; (f) terrorism; (g) distribution of wealth; (h) size and influence of middle class; (i) efficiency of legal system; (j) bureaucracy and 'red tape' and (k) corruption.
12. 'Political stability' is calculated as the average of sub-indicators (a) to (f) displayed in Note 11 and 'Bureaucratic efficiency' as an average of sub-indicators (i) or (k).
13. The sub-indicators are the following: perception of political stability; danger of political conflicts; degree of state control; state as partner for business; law and order; efficiency of bureaucracy; working climate; and social peace.
14. Both enforcement indicators are unweighted averages of more than one question as they ask separately for bureaucracy and judiciary. For details see Brunetti (1997a).
15. This chapter has only summarized the most important empirical tests carried out in Brunetti (1997a). I additionally checked whether the results are sensitive to heteroscedasticity, multicollinearity and outliers. Whenever enough time series data were available I have estimated two-stage least square regressions using earlier values as instruments. However, this procedure was only possible for a comparatively small number of the relevant variables, so that simultaneity bias in many cases cannot be ruled out. The same applies to the issue of causality, because in some cases I only managed to regress the growth rate on earlier values of the political variables. Strictly speaking, the analysis in this chapter 'only' reveals relationships, and in many cases not causality.

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