POLICY RESEARCH WORKING PAPER 1760

Credibility of Rules and Economic Growth

Evidence from a Worldwide Survey of the Private Sector

An indicator of the "credibility of rules" is constructed from broad cross-country survey data and it is shown that low credibility is associated with lower rates of growth and investment.

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Summary findings

Economic theory and case study evidence have long suggested that institutional factors, such as well-defined property and contract rights, may be crucial in explaining differences in economic performance across countries. Much of the recent discussion about "governance" has, for example, focused on the role of corruption and its consequences for investment and growth. By comparison, the empirical literature relating institutional factors with growth has been relatively scarce and has mainly concentrated on crude proxies such as political instability and macroeconomic volatility. The problem of most of these variables in that they inadequately capture the uncertainties that are relevant for entrepreneurs.

Brunetti, Kisunko, and Weder propose new measures of institutional uncertainty based on the subjective evaluations of entrepreneurs. They surveyed the private sector in a broad cross-section of countries. The survey was designed to capture institutional factors such as the predictability of rules, entrepreneurs' fears of policy surprises and reversals, their perception of safety and security of property, the reliability of the judiciary, and their problems with bureaucratic corruption. The authors construct and test a summary indicator of the "credibility of rules," as well as its components in standard cross-country growth and investment regressions.

The main findings:

- The overall indicator of credibility is significantly related with higher rates of investment and growth.
- The credibility indicator calculated for the subsample of small local companies is even more closely related to the growth performance.
- The subindicators "security of persons and property" and "predictability of rule-making" are most closely associated with growth.
- The indicators of "corruption," "perceived political instability," and "predictability of judiciary enforcement" are most closely associated with investment."
- Preliminary results for an extended sample — including transition economies — indicate that institutional factors may also help to explain differences in economic performance in these countries.

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Introduction

The general idea that an instable political framework lowers growth is hardly controversial. One would expect that a business environment characterized by "incredible" rules such as unclear property rights, constant policy surprises and policy reversals, uncertain contract enforcement and high corruption would translate into lower investment and growth. In such an uncertain environment entrepreneurs are reluctant to commit resources especially in projects that are characterized by large sunk cost.[2] This reaction of the private sector not only reduces aggregate investment but also distorts the allocation of resources and reduces economic growth.

How the relevant uncertainties can be adequately captured empirically is less clear. Early papers in the recent wave of empirical growth analysis included measures of political instability, proxied for instance by the number of coups and revolutions.[3] Such measures certainly have the advantage of being universally observable and therefore objective but they are also very crude measures of the relevant uncertainties that affect the private entrepreneurs. Subjective measures have been used to proxy for property rights insecurity and corruption by relying on country risk indicators from expert opinions.[4] These second kind of indicators are likely to reflect more closely the concerns of entrepreneurs than the overall measures of political instability. However they are based on the perceptions of country experts and not on those of the local businessmen themselves.

In this paper we propose an indicator of the "credibility of rules" based on a private sector survey conducted in 58 countries and covering almost 3,000 enterprises. [5] The survey was designed to capture local entrepreneurs' views of the predictability of changes in laws and policies, of the reliability of law enforcement, of the impact of discretionary and corrupt bureaucracies and of the danger of policy reversals due to changes in governments. We test this

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2 See e.g. Dixit and Pindyck (1994) and Aizenman and Marion (1993).

3 See in particular the influential paper by Barro (1991). Brunetti (1997) provides an updated survey.

4 See Mauro (1995) and Knack and Keefer (1995)

5 At the time of writing, data from 58 countries was processed and usable for the empirical analysis in this paper. Data from about 12 more countries was expected through the World Bank and the surveys conducted by the authors.

indicator and its various components in standard cross-country growth and investment regressions and find that low credibility of rules is associated with lower rates of investment and growth.

The paper is organized as follows. Section 1 discusses in which respect the existing measures of political uncertainty might be incomplete and why we designed a different measurement. Section 2 presents the survey approach, explains the construction of the overall indicator of credibility and the various subindicators and discusses possible problems with selection bias and measurement error. Section 3 discusses the empirical approach and the additional economic and political variables used in the regression analysis. Section 4 presents the results of growth and investment regressions for the credibility indicator and its components for the 41 countries where we have reliable data as well as an analysis of a sub set of small domestic firms and for an extended data set that includes transition economies.

1. Why a new approach for measuring policy uncertainty?

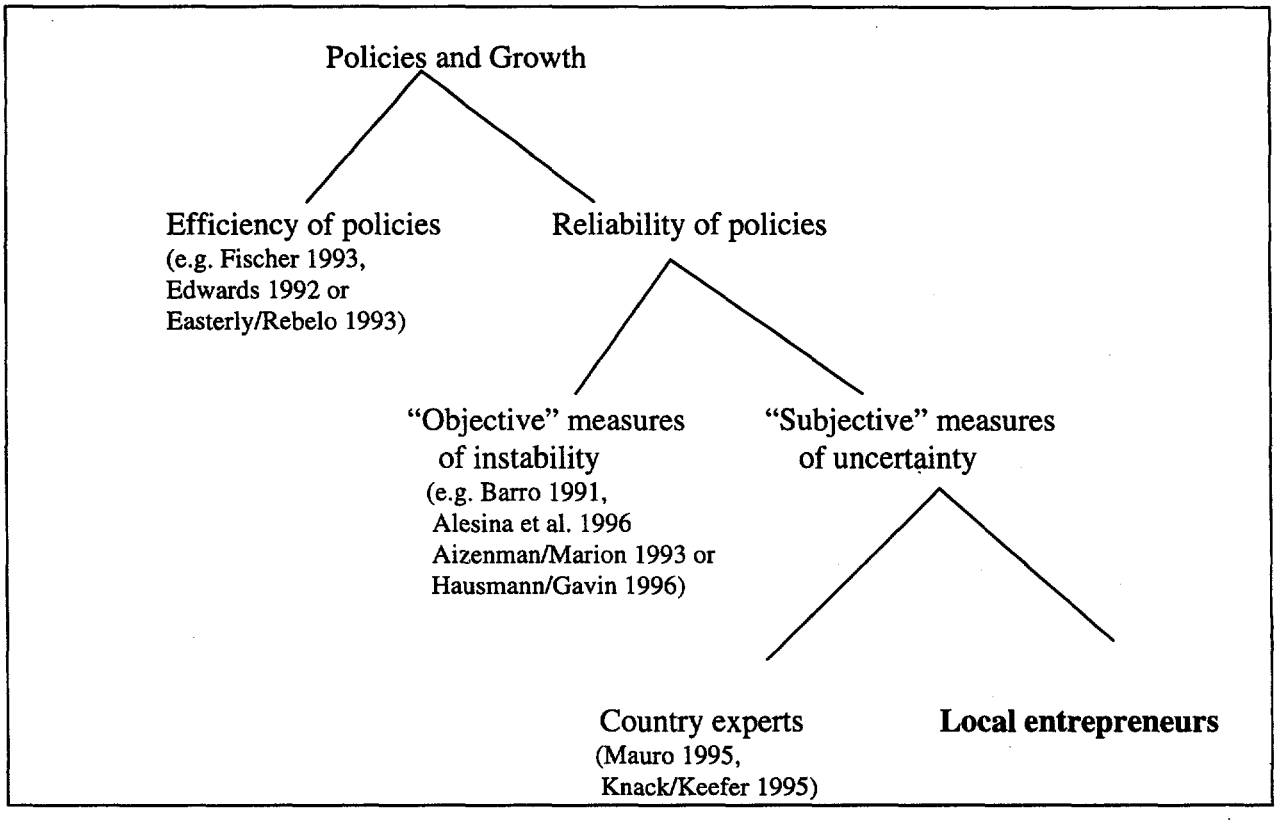
Figure 1 shows how the existing literature on policies and growth can be grouped and in which respect our approach can be distinguished from the other attempts to measure the degree of policy uncertainty.

At the most general level we can distinguish two channels through which policies may influence economic growth: the first focuses on the efficiency of policies and the second on the reliability of policies.

The *first branch* of the literature explains differences in growth with differences in macro-and microeconomic policies. In a large number of studies fiscal policy variables (e.g. Easterly and Rebelo 1993), monetary policy variables (e.g. Fischer 1993), or trade policy

variables (e.g. Edwards 1992) have been found to be related to differences in cross-country growth performance.[6]

Figure 1: A classification of the literature on policies and growth



The *second branch* of the literature emphasizes the reliability of policies, i.e. their stability and uncertainties surrounding their implementation. Within this branch most studies use "objective" measures of political instability to proxy for uncertainties. The variables most often used are average numbers of violent political events[7] (e.g. riots or political assassinations), the number of or the estimated probability of government change[8] (e.g. orderly government changes

6 For a survey see Barro and Sala-i-Martin (1995) and for a comparative analysis Levine and Renelt (1992).

7 E.g. Alesina, Oezler, Roubini and Swagel (1996) or Barro (1991).

8 E.g. Londregan and Poole (1990) or Cukierman, Edwards and Tabellini (1992)

or revolutions and coups) and/or the volatility of macroeconomics variables[9] (e.g. standard deviations of inflation or tax incomes).

Clearly these "objective" variables are incomplete proxies for the variety of institutional uncertainties that entrepreneurs are confronted with in their daily business operations. For instance they disregard more micro-aspects which entrepreneurs consider important such as uncertainties in tax legislation, large and unpredictable changes in labor regulations, uncertain and arbitrary decisions of courts or unclear proceedings in the allocation of all sorts of licenses etc.[10] Two examples can help making the point. Take for instance Thailand[11]. Indicators of political instability which are based on counting the number of coups would characterize Thailand as a country with high political uncertainty. But the interviews we conducted with businessmen suggest that the coups did not affect the credibility of the institutional framework and that entrepreneurs did not fear wide-ranging policy swings or reversals. The opposite case is Peru in the 1980s.[12] Despite the apparent stability of the government, legislation through executive and emergency decrees was so extensive that the private sector faced a much more uncertain environment than measures of the number of government changes could capture. These examples highlight the two problems of all objective indicators of political instability as proxies for policy reliability: The first problem is that they concentrate on events that the private sector may not perceive as important and the second is that they fail to capture many uncertainties that the private sector perceives as crucial.

In essence the problem of "objective" variables is that they measure instability and not uncertainty. Instability can be objectively observed whereas uncertainty is subjective to the

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9 E.g. Aizenman and Marion (1993) Easterly and Rebelo (1993) or, more recently, Hausmann and Gavin (1996).

10 See Borner, Brunetti and Weder (1995) for reports on interviews conducted with private businessmen in 10 LDCs.

11 See Brunetti and Weder (1995a).

12 See Keefer (1990).

individual investor. Because investment decisions are based on the subjective evaluations of businessmen, a variable that captures these perceptions would seem more promising when trying to explain investment and growth.

The subjective measures of political uncertainty that have been used in the literature[13] are based on opinions of external experts. Companies that specialize in assessing country risks commercially provide such indicators. The drawback of these indicators is that they are aimed at *foreign* firms and the problems for foreign investors and local entrepreneurs may differ quite substantially. For instance, to a large degree these indicators reflect risks of nationalization and impediments to repatriation of revenues that do not arise in similar intensity for domestic entrepreneurs. Also, the degree to which the investors are kept abreast of regulatory changes may differ significantly for multinational and domestic firms. Finally, multinationals may receive a very different treatment from politicians and bureaucrats than the large majority of small local firms. Given that in most countries, the development of the private sector mainly depends on local investors, an indicator based on their perceptions would seem a promising way for a more encompassing measurement of political uncertainty and its effects on investment and growth. [14]

In this paper we aim at filling this gap by constructing a measure of the credibility of rules based on a private sector survey among domestic entrepreneurs.

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[13] See Mauro (1995) and Knack and Keefer (1995).

[14] The importance of local investors is underlined by the findings of Feldstein and Horioka (1980) and the literature it triggered, which shows that a large portion of countries' investment generally comes from domestic savings.

2. Measuring credibility

2.1 Methodology of the private sector survey

A large scale private sector survey was conducted and responses from almost 3,000 firms in 58 countries were collected. Drawing from previous work [15], we designed a questionnaire which was aimed at examining the major sources of uncertainty. The questions were not designed to highlight institutional differences among countries but asked generally if entrepreneurs were threatened by uncertainty in their relations with the state. The questionnaire contained questions on: (i) the predictability of laws and policies, (ii) the subjective evaluation of political instability (iii) the security of property and persons (iv) the reliability of judiciary enforcement, and (v) uncertainty stemming from corruption and bureaucratic discretion.[16]

All questions had six standardized responses. For instance in question number 1 entrepreneurs were asked whether they had to cope regularly with unexpected changes in rules and regulations which could seriously affect their business. The six answers ranged from "completely predictable" to "completely unpredictable". Based on these standardized answers indices could be constructed for every question.[17]

The questionnaires were distributed through World Bank missions and/or local consulting companies. The instructions were to observe a stratification of the sample by size, of the geographic location and of the proportion of purely local companies, i.e. companies which do not have any foreign participation. The questionnaire was designed for direct mailing, but as a result

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15 See Borner, Brunetti and Weder (1995) for a description of a similar but much smaller exercise and Brunetti and Weder (1995b) for an econometric analysis of the results from that earlier project.

16 The questionnaire also included questions on the efficiency of government in providing services, on specific obstacles for private entrepreneurs and on the overall government-business interface. These questions were partly based on the experience with private sector assessments which have previously been conducted by the World Bank and they were used for different parts of the World Development Report 1997.

17 Entrepreneurs were also asked how the situation was 10 years ago. The average of the response for 10 years earlier and the value of 1996 was used to construct a 10 year average (for the transition economies only 5 year averages were considered). For the indicators of „security of property", „judiciary enforcement" and „perceived political instability" we asked directly in the questionnaire how the rating was 10 years ago. For the indicators of „predictability" and „corruption" we asked one overall question for several questions at the end of the block.

of low quality of the mail system in some countries mail delivery was supplemented or substituted by hand delivery. The overall response rate of the survey was more than 30 percent

The intention was to conduct the survey in as many countries as administratively possible. However, countries' governments were asked if they agreed to participate. At the completion of this paper usable data is available from 58 countries including 20 African, 9 Latin-American, 9 Eastern European countries, 9 States of the Former Soviet Union, 1 Asian country and 10 OECD country.[18] See Appendix 3 for the list of countries used in the different data sets. For reasons of confidentiality of the World Bank, individual countries' responses cannot be identified at this point but more detailed statistics on a regional level can be found in the companion paper Brunetti, Kisunko and Weder (1997). Table 1 presents some descriptive statistics of the survey

Table 1. Private sector survey: Descriptive statistics

	Total	Min.	Max.	Median	Mean	Standard deviation
Returned questionnaires [1]						
LDC	2,554	17	124	50	57	26
OECD	195	14	26	19	19	4
Company description [2]						
Company size						
small (less than 50 employees)		0	83	35	40	23
medium (between 50 and 200 employees)		12	72	29	31	13
large (more than 200 employees)		0	71	25	28	19
Companies outside of capital city		1	100	52	51	25
Purely local companies		24	90	67	65	15

1) Number of returned questionnaires
2) Percentage of the total number of questionnaires returned per country

In the empirical analysis we will split up this sample. A core sample of 41 countries encompasses all countries where we have reliable data for all economic variables used and for a ten year period. This core sample will be used in most of the econometric analysis. In subsection 4.5. we will provide tests for an extended sample of 53 countries, including some of the transition economies surveyed as well as separate tests for the transition countries alone. The

[18] 9 of the OECD countries were provided by a separate survey organized by the authors at the University of Basel

regression results in this subsection have to be treated more carefully because of inferior data quality in the economic variables.

2.2. *Construction of the credibility indicator*

The credibility-indicator was designed as a broad measure of the reliability of the institutional framework as perceived by private entrepreneurs. It encompasses several different sources of uncertainty in the interaction of government and private sector and summarizes them into one global indicator. The credibility-indicator is composed of five subindicators. It is constructed as the simple mean of the average answers that make up these five subindicators.[19]

(1) *Predictability of rule making*: Extent to which entrepreneurs have to cope with unexpected changes in rules and policies and whether they expect their governments to stick to announced major policies. The degree to which entrepreneurs are usually informed about important changes in rules and if they can voice concerns when planned changes affect their business. (average of questions 1-4)

(2) *Subjective perception of political instability:* Reflects whether government changes (constitutional and unconstitutional) are perceived to be accompanied by far-reaching policy surprises which could have serious effects on the private sector. (average of questions 5-6)

(3) *Security of persons and property*: Reflects whether entrepreneurs feel confident that the authorities would protect them and their property from criminal actions and whether theft and crime represent serious problems for business operations. (average of questions 7-8)

(4) *Predictability of judicial enforcement*: Captures the uncertainty arising from arbitrary enforcement of rules by the judiciary and whether such unpredictability presents a problem for doing business. (question 9)

(5) *Corruption*: Asks whether it is common for private entrepreneurs to have to pay some irregular additional payments to government agents to get things done. (question 10)

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[19] The individual questions that we asked for the construction of these indicators can be found in tappendix 1.

2.3. *Possible problems with selection bias and measurement error*

Below we discuss possible selection biases and measurement errors of our approach. In most cases we believe that they should not seriously affect the quality of the results.

A first possible source of selection bias is that governments had to be asked if they agreed that firms in their country participate in the survey. This introduces the problem that the countries with low credibility and low growth could choose not to participate in the survey because their government might fear to have this fact exposed. This bias would exclude the worst cases of low credibility. Not all countries were asked in the first place because the most important constraint in determining which countries were covered was the internal administrative capacity of the World Bank to organize the survey in a short time. Of the countries that were asked only 5 explicitly chose not to participate and in 5 more there was no official response or the resident mission preferred not to conduct the survey.

Selection of surveyed enterprises by World Bank missions and local consulting companies might be a second source of bias. It is conceivable that in some cases the list of companies that the World Bank mission had available was not representative for the entire population of private firms. However it is not evident that these companies would have a systematically different perception of the uncertainty of government policies and in which direction this possible difference would go. Furthermore, in the instructions we asked that the sample should cover a percentage of companies outside the capital city and additional stratification was attained with respect to firm size and foreign participation. These requirements have contributed to balance the sample.

The fact that the questionnaire involved some delicate questions on the relationship to the government might be another source of selection bias. There could be two possible problems. Entrepreneurs which are completely exasperated with their government might take the opportunity to vent their anger while entrepreneurs who feel reasonably happy might choose not to answer to the survey. In this case the bias would be to consistently underestimate credibility.

The other possibility is that entrepreneurs who are desperate have given up and do not even care to submit a questionnaire. This would lead to an overestimation of credibility. Similarly, some entrepreneurs might fear that governments find out about their responses and therefore present a too rosy picture. In order to temper this fear we conducted the survey anonymously and asked for no company-specific data which would allow to identify the responder. All in all, the direction of a possible company-level bias is not evident: it could lead to under- as well as overestimation of our variable of interest.

A more serious source of measurement error could be that purely local entrepreneurs might not have the experience to put their answers in relation to the situation in other countries. About 60 percent of the total sample of enterprises were purely local, i.e. they had no foreign participation and did not export. Of course entrepreneurs might still have had good knowledge of other countries (through imports, or they might even be nationals of other countries) but probably in the smaller enterprises there might be businessmen who were „purely local". On the one hand this is exactly what we want, because when a local entrepreneur feels severely threatened by uncertainty this would affect his investment behavior in the country. On the other hand, this possible measurement error poses problems in interpreting the relative positions of countries and may lead to problems in the cross country analysis.

Another problem for correct measurement might arise from the fact that the survey was conducted in 1996 and the decade averages for the indicators were built by asking about the situation 10 years ago. One possible source of bias would be that people do not exactly remember the past and tend to think that „everything was better in the past". It seems that this bias is not overwhelming because entrepreneurs did differentiate between their evaluations of the past in the different questions, i.e. in some cases they clearly stated that the situation had improved while in others they thought it had worsened.

An additional possible measurement problem might be that the indicator might be measuring nothing else but the private investment rate. It is conceivable that entrepreneurs would respond to questions about the business environment with their general "gut feeling"; that

their responses would not reflect their opinion about the institutional framework but whether they invested or not. This problem doesn't seem to be overwhelming as the answers of individual entrepreneurs differed substantially from question to question. Businessmen seemed to clearly distinguish between, say, the perceived political stability and the level of corruption. An entrepreneur who would just be expressing his "gut feeling" on the country would tend to tick the same or very similar ratings for all questions; the degree of differentiation in answers for different questions from the same respondents is, therefore, comforting.

Finally, a serious selection bias is that our sample does not include the East Asian miracle economies which had the highest growth rates during the past 10 years. At the same time, in our earlier study (Brunetti and Weder 1995b), these countries proved to have remarkably credible institutions. Therefore the sample tends to be biased against finding significant effects of credibility on growth.

3. Specification and data sources

In the empirical analysis we use cross-section regression analysis to evaluate the hypothesis that high credibility is associated with higher growth rates and higher rates of investment. Starting with the contributions by Kormendi and Meguire (1985) and in particular Barro (1991) this has become the standard method for analyzing the sources of cross-country differences in economic performance.

Our indicator and subindicators of credibility will be added as an additional explanatory variable in the most common specification of such growth regressions. This specification regresses the average rate of growth on the starting level of per capita GDP and human capital. The first variable controls for the convergence effect predicted by neoclassical growth theory; the higher initial GDP per capita the lower will be the ceteris paribus growth rate as decreasing returns to capital reduce the growth effects of additional capital. According to this argument, a country with low starting level of GDP should grow faster and gradually converge to the levels of higher developed countries. The problem with this approach is that it does not work for country

samples that include LDC's and DCs.[20] Mankiw, Romer and Weil (1992) have argued that the neoclassical growth model does not predict absolute but conditional convergence. Each country does converge, but not to a common steady state but to its own steady state that depends on country characteristics, most prominently the level of human capital. As a consequence, more recent cross-country growth regression analysis has included, as we also do, at least a measure of human capital as an additional right-hand variable in the basic specification.

In addition to testing the credibility measures in this basic specification we will check whether the results are sensitive to adding individual additional explanatory variables that are frequently used in the empirical growth analysis. The specification we test, therefore, has the following form:

$$\text{Growth8493} = a_0 + a_1 \text{LnGDP85} + a_2 \text{LnSchooling85} + a_3 \text{Credibility} + a_4 X + u$$

„Growth8493" is the average per capita growth rate for the period 1984 to 1993 calculated from the updated data set provided by Summers and Heston (1991). „LnGDP85" is the natural logarithm of per capita GDP in 1985 Summers and Heston as well. „Lnschool85" is the natural logarithm of the mean years of schooling in 1985. This variable is provided by Barro and Lee (1994). Credibility is the average indicator calculated from our survey approach for the last decade.[21] X is an additional variable that is drawn from a sample of standard explanatory economic and political variables for economic growth. [22]

As *additional economic variables* we will include the following three frequently used measures: The average rate of inflation („Inflation") and the average rate of government consumption per GDP („Govern. Consump.") for 1984-1993 provided by Summers and Heston and the average degree of openness to international trade measured as the sum of exports and imports as a percentage of GDP („Trade") calculated from World Bank sources.

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20 See e.g. Barro and Sala-i-Martin (1992).

21 For Poland and Hungary the average was calculated only for the last 5 years.

22 Precise definition of data and data sources can be found in the appendix.

As *additional political variables* we individually include five measures. The average degree of democracy from 1984-1993 measured by the indicator of political rights compiled by Freedom House („Political Rights"). From Easterly and Levine (1996) we use the 1980-1989 averages of the number of assassinations per million of population („Assassinations"), the number of unorderly transfers of government („Coups") and a dummy for whether a country experienced a war in this period („Wars"). Finally we use a composite indicator of the average quality of bureaucracy for 1984-1993 („Bureaucracy") that was calculated by the World Bank from the data provided by Knack and Keefer (1995) and Mauro (1995). This indicator is an average composite of a BERI-measure of the speed and efficiency of the civil service, an ICRG-measure of the general efficiency of government bureaucracy and a BI-measure of bureaucracy and red tape.

All in all we estimate 9 specifications of growth regressions in order to check the reliability of the association between credibility and growth.[23]

In addition we will check how credibility affects economic growth. Credibility can influence growth by either affecting the accumulation of capital or by affecting the allocation of capital to different sectors. We can try to disentangle these effects by separately estimating investment regression in order to check the effect on accumulation and growth regressions that control for investment in order to check the effect on allocation.[24] In the empirical section we will only display investment regressions; results on growth regression controlling for investment are only mentioned but not shown, they are available on request.

4. Results

Using specifications and data discussed in the previous part, this section presents the results of the cross-country regression analysis. We proceed in four steps. In subsection 1 we present the basic results of the overall credibility indicator in growth- and investment-regressions

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[23] Appendix 4 provides correlation matrixes for the credibility indicator and the various economic and political variables used in the empirical analysis.

[24] See King and Levine (1993) or Fischer (1993).

for 41 countries for which we have reliable and reasonably complete data. Subsection 2 discusses some problems of specification and tests whether they are related to the sample or the period covered. Subsection 3 tests each of the five subindicators that together make up the credibility indicator. In subsection 4 we will test whether the result holds in a sample that includes only relatively small firms with no foreign participation. Finally, subsection 5 adds a number of transition economies to our sample and estimates this larger sample of 53 countries as well as a small sample of 18 countries that only includes transition economies; for this extension we are forced to work with less reliable and consistent data.

4.1 Basic growth and investment results

We first test the relation between the aggregate indicator of credibility and average per capita growth rates for the period 1983-1994. The higher the value of this indicator the more credible the institutional framework is perceived to be so that we expect a positive relationship. The simple scatterplot is shown below (Figure 2):

Figure 2: Scatterplot of Credibility and GDP per Capita Growth

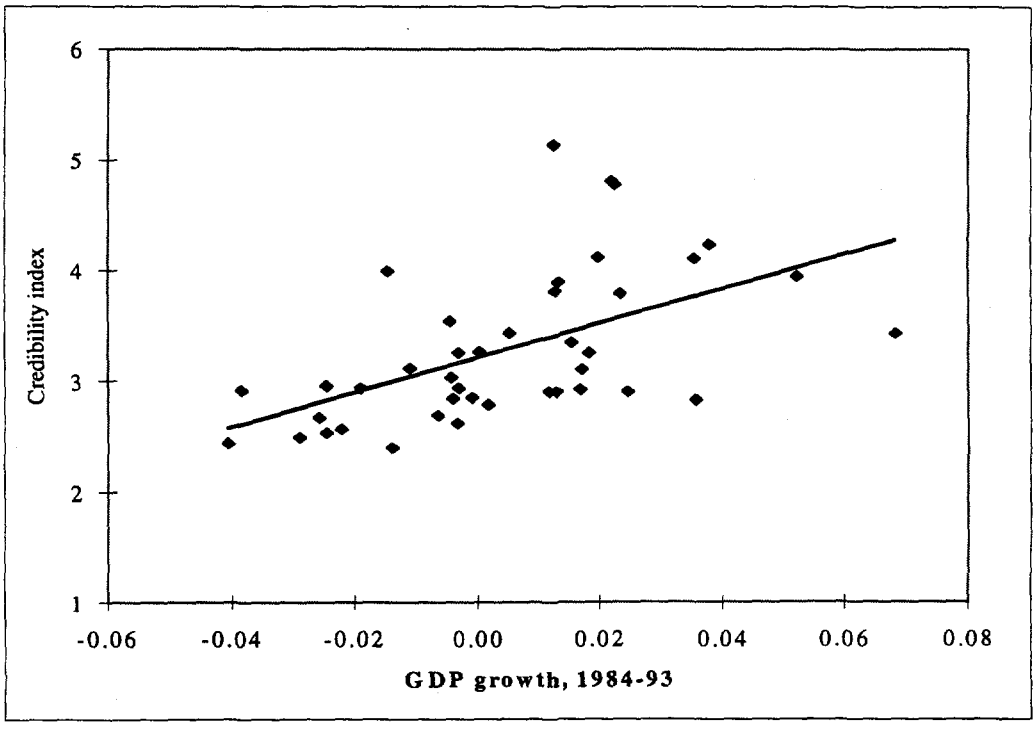


Table 2 shows multivariate regression results.[25] The first regression shows that the sign of the coefficient is positive in the basic specification that contains GDP per capita and average

Table 2: OLS Growth Regressions for Credibility Indicator

Dependent Variable: Average Growth Rate of GDP per Capita, 1983-1994

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-0,063*	-0.059	-0,076*	-0,067*	0,038	-0.057	-0,067*	-0.059	-0,082*
	(-2,10)	(-1,42)	(-2,41)	(-2,12)	(0,71)	(-1,87)	(-2,09)	(-1,77)	(-2,25)
Ln GDP per Capita	0.002	0,002	0,003	0,002	-0.006	0.0003	0,002	0,002	0,005
	(0,37)	(0,28)	(0,46)	(0,43)	(-0,96)	(0,06)	(0,39)	(0,26)	(0,80)
Ln School	0,003	0,003	0,004	0,003	0.0001	0.007	0,003	0,004	0,002
	(0,48)	(0,46)	(0,55)	(0,45)	(0,02)	(0,94)	(0,42)	(0,53)	(0,23)
Govern. Consump.		-0.008							
		(-0,15)							
Inflation			0,384						
			(1,24)						
Trade				0,006					
				(0,45)					
Political Rights					-0,007*				
					(-2,26)				
Assassinations						-79.67			
						(-0,56)			
Coups							0,001		
							(0,05)		
Wars								-0.003	
								(-0,30)	
Bureaucracy									-0.022
									(-0,97)
Credibility	**0,014***	**0,014***	**0,013**	**0,014**	**0,011**	**0,016***	**0,015***	**0,014***	**0,016***
	(2,12)	**(2,10)**	**(1,87)**	**(1,90)**	**(1,73)**	**(2,22)**	**(2,10)**	**(2,09)**	**(2,19)**
Adjusted R^2	0,26	0,24	0,27	0,24	0,33	0,29	0,21	0,21	0,23
Observations	41	41	41	41	41	39	40	40	38

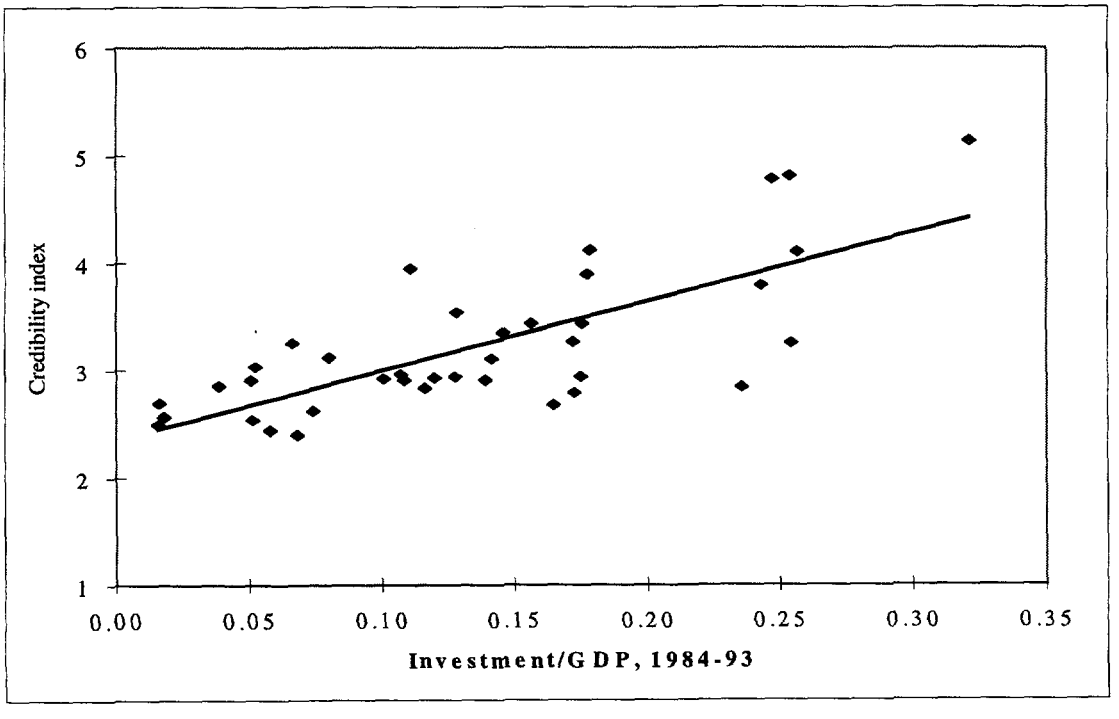
1) T-statistics in Parenthesis
* significant on the 5 percent confidence level
** significant on the 1 percent confidence level

[25] We also tested a more narrow credibility indicator based only on the questions which directly ask entrepreneurs about problems for their business operations (questions 1, 4, 5, 6, 8, and 9 in appendix 1). The results for growth and investment regressions were strengthened when working with this narrower indicator. We thank Bill Easterly for pointing out that such a narrower indicator would tend to suffer from endogeneity and general measurement problems.

years of schooling as additional right-hand variables. The coefficient is significant at the 5 percent confidence level. Regressions 2 to 9 test whether this result is sensitive to the inclusion of additional economic and political right-hand variables. In general the result proves to be reasonably robust to the addition of further right hand variables. In the case of the rate of government consumption, the number of assassinations, the number of coups, the number of wars and the quality of bureaucracy, the indicator of credibility has the expected positive sign and is significant on the 5 percent level. If we include the rate of inflation, the extent of international trade or the index of political rights, the coefficient of the indicator is significant only at the 10 percent confidence level.

We proceed to check whether credibility has a positive impact on growth through higher rates of investment. Figure 3 shows that investment and credibility are highly correlated.

Figure 3: Scatterplot of Credibility and Investment



To test this relation more formally, in Table 3 we regress the average rate of total investment per GDP in the period 1983-1994 on the same set of variables as used in the growth regression.

Table 3: OLS Investment Regressions for Credibility Indicator

Dependent Variable: Average Investment Rate 1983-1994

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-0,30** (-4,66)	-0,24* (2,71)	-0,29** (-4,20)	-0,28** (-4,23)	-0,32* (-2,67)	-0,322** (-5,22)	-0,304** (-4,44)	-0,277** (-3,92)	-0,349** (-4,43)
Ln GDP per Capita	0,037** (3,21)	0,033* (2,62)	0,037** (3,14)	0,036** (3,02)	0,039** (2,75)	0,039** (3,48)	0,037** (3,10)	0,034** (2,81)	0,044** (3,14)
Ln School	-0,003 (-0,22)	-0,005 (-0,33)	-0,004 (-0,25)	-0,002 (-0,16)	-0,003 (-0,17)	-0,016 (-1,05)	-0,005 (-0,35)	-0,0004 (-0,03)	-0,005 (-0,27)
Govern. Consump.		-0,122 (-1,05)							
Inflation			-0,313 (-0,46)						
Trade				-0,027 (-0,90)					
Political Rights					0,002 (0,82)				
Assassinations						249,6 (0,87)			
Coups							-0,014 (-0,49)		
Wars								-0,015 (-0,82)	
Bureaucracy									-0,052 (-1,04)
Credibility	**0,047**** **(3,22)**	**0,047**** **(3,24)**	**0,048**** **(3,21)**	**0,050**** **(3,33)**	**0,048**** **(3,16)**	**0,053**** **(3,72)**	**0,050**** **(3,22)**	**0,047**** **(3,18)**	**0,056**** **(3,45)**
Adjusted R^2	0,71	0,71	0,71	0,68	0,71	0,74	0,66	0,68	0,73
Observations	41	41	41	41	41	39	40	41	38

1) T-statistics in Parenthesis
* significant on the 5 percent confidence level
** significant on the 1 percent confidence level

Regression (1) shows that the coefficient of the credibility measure has the expected positive sign and is highly significant (at the 1 percent level). Together with the also highly significant GDP per capita this minimal specification explains 71 percent of the cross-country variations in investment rates. The result proves to be remarkably robust as can be seen in the

extended specifications tested in regressions (2) to (9). The coefficient of the credibility indicator keeps its positive sign and is always significant at the 1 percent confidence level *in all* specifications tested. Given these results it can safely be stated that higher credibility is strongly related to higher rates of investment. This suggests that a credible institutional framework affects growth mainly by lowering the accumulation of resources.

4.2 Specification issues with standard economic variables in the growth regressions

In this section we discuss some peculiarities of the results obtained in the growth regression for the other control variables; in Table 2 most *standard economic variables* do not enter with the expected sign and they are mostly not significant. The GDP per capita even has the „wrong" positive sign in most of the regressions. Similar problems arise for the other additional economic variables i.e. government consumption, inflation and trade that are all insignificant. We experimented with a number of additional economic controls and had trouble finding any significant results. This differs from the results usually obtained in the growth literature where samples of about 100 countries and time periods of about three decades are considered. One possibility is that the period under consideration is too short to find the standard long run relationships. Alternatively our sample of 41 countries could differ systematically from larger country samples, or some peculiarity in the decade under consideration may lead to different results than in longer series. Our test suggest that both kinds of biases are present.

In order to sort out if this is a problem of the decade and/or of our country sample we tried varying both the country sample and the time period. Table 4 gives an overview of the results for the two state variables, GDP per capita and schooling, which are the most important in our context as we include them in every regression.

Table 4: Test for sample or period peculiarities with state variables

Dependent variable: Growth of GDP per capita

	Benchmark[1)]	Our sample	Sample test[2)]	Period test[3)]
	All countries 3 decades	"our countries" 1 decade	"our countries" 3 decades	all countries 1 decade
GDP/capita*	significant (-).	insignificant (+)	insignificant (-)	insignificant (-)
School*	significant (+)	insignificant (+)	insignificant (+)	insignificant (+)

* Sign of the coefficient in brackets

1) The benchmark is based on 117 countries for the period of 1960-1989 (data from King and Levine 1993).

2) The sample contains the 35 of the 41 countries included in Tables 1 and 2, for which we had data over the longer period.

3) The sample contains 68 countries for which we had data for the eighties (data from Mauro 1995).

The benchmark column presents the results of growth regression with the two state variables for a large sample of countries over 3 decades. The GDP per capita is negative and significant and the schooling variable positive and significant. In our sample and period both variables are positive and insignificant. To test whether a sample problem lies at the heart of this difference we run a growth regression with our sample of countries using averages for three decades. The result is shown in the third column: again both variables are insignificant indicating that indeed there is an idiosyncrasy in our country sample. The third column tests if the decade of the eighties is special in the sense that the benchmark results do not hold for this shorter period. Again, our test using a large sample of countries shows that this is the case: both variables are insignificant indicating that our period is also in part responsible for the results.[26] The conclusion, therefore, is that the specification problems are in part based on our country sample and in part on the period of observation.

Because of these specification issues we run growth regressions in which we do not include the state variables but directly include the other control variables separately. Table 5 shows the results. Again, most of the controls were not significant but the significance of the credibility indicator improved markedly. It is now significant on the 1 percent level in 7 out of 8

[26] The fact that in different decades the standard results do not necessarily hold was also observed by Easterly, Kremer, Pritchett and Summers (1993)

regressions. In the following sections we use the base specification which includes the two state variables. We note, though, as the comparison of the results from Table 2 and Table 5 shows, that this weakens the results for the credibility indicator.

Table 5: OLS Growth Regressions for Credibility Indicator

Dependent Variable: Average Growth Rate of GDP per Capita

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Constant	-0.047* (-2.04)	-0.067** (-3.72)	0.059** (-3.57)	-0.009 (-0.36)	-0.061** (-3.80)	-0.059** (-3.50)	-0.055** (-3.35)	-0.058** (-3.31)
Govern. Consump.	-0.028 (-0.61)							
Inflation		0.332 (1.09)						
Trade			0.005 (0.34)					
Political Rights				-0.005* (-2.29)				
Assassinations					-50.6 (-0.37)			
Coups						-0.003 (-0.24)		
Wars							-0.003 (-0.35)	
Bureaucracy								-0.007 (-0.39)
Credibility	**0.017** (3.30)**	**0.018** (3.87)**	**0.018** (3.78)**	**0.009 (1.50)**	**0.02** (4.22)**	**0.02** (3.82)**	**0.018** (3.82)**	**0.02** (2.83)**
Adjusted R^2	0.26	0.26	0.26	0.35	0.29	0.25	0.26	0.24
Observations	41	41	41	41	39	40	41	38

1) T-statistics in Parenthesis
* significant on the 5 percent confidence level
** significant on the 1 percent confidence level

4.3 Subcomponents of the credibility indicator

Tables 6 and 7 present results for the individual subcomponent of the credibility indicator for the basic growth and investment regressions respectively. These tables show an interesting picture of the effect of subcomponents on growth and investment.

Table 6: OLS Base Growth Regressions for Subcomponents of Credibility Indicator

Dependent Variable: Average Growth Rate of GDP per capita 1983-1994

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.072* (-2.25)	-0.056* (-3.48)	-0.058 (-1.97)	-0.062* (-2.05)	-0.064* (-2.03)	-0.057 (-1.86)
Ln GDP per Capita	0.004 (0.68)	1E-6 (0.61)	0.001 (0.24)	0.005 (0.95)	0.005 (0.91)	0.005 (0.88)
Ln School	0.005 (0.67)	0.008 (1.79)	0.008 (1.15)	0.005 (0.70)	0.004 (0.51)	7E-4 (0.09)
Predictability	0.01 (1.32)					
Predictability II [2)]		0.015** (2.84)				
Property Security			0.014* (2.57)			
Judiciary				0.007 (1.77)		
Lack of Corruption					0.006 (1.05)	
Political Instability						0.008 (1.56)
Adjusted R^2	0.20	0.32	0.29	0.23	0.18	0.22
Observations	41	49	41	41	41	41

1) T-statistics in Parenthesis
2) Includes 8 additional countries from a previous survey reported in Borner, Brunetti and Weder (1995) of which the South East Asian "Tigers" drive the result.
* significant on the 5 percent confidence level
** significant on the 1 percent confidence level

The indicator of *predictability* has the expected sign but is not significant in either the growth or the investment regression. We suspect that the sample bias which results from the omission of the East Asian „miracle economies" was particularly important here. These countries had particularly good predictability results in our previous study; they were „outliers" on all accounts: growth, investment and predictability. For the indicator of *predictability* II we added 8 countries, including some East Asian countries, from our previous survey conducted in 1993 which also covered the four questions that compose the predictability indicator. [27] The result of both the growth and the investment regressions are dramatically improved when these additional countries are included; in both cases the indicator is significant at the 1 percent level.

[27] These were the only 8 countries covered in the previous studies but not (yet) covered by the new survey: Brazil, Chile, Guatemala, Indonesia, Malaysia, Panama, Singapore and Thailand.

This gives at least an indication that it would be interesting to conduct the survey in these countries and that predictability might be an important component of overall credibility even though for our sample of 41 it does not appear significant.

Table 7: OLS Base Investment Regressions for Subcomponents of Credibility Indicator

Dependent Variable: Average Growth Rate of GDP per capita 1983-1994

	(1)	(2)	(3)	(4)	(5)	(6)
Constant	-0.299**	-0.08	-0289**	-0.299**	-0.308**	-0.278**
	(-3.97)	(-1.78)	(-4.13)	(-4.64)	(-4.76)	(4.23)
Ln GDP per Capita	0.054**	8E-6	0.045**	0.045**	0.04**	0.044**
	(4.09)	(1.46)	(3.61)	(4.20)	(3.47)	(3.91)
Ln School	0.002	0.049	0.007	0.002	-0.006	-0.015
	(0.10)	(3.73)	(0.41)	(0.12)	(-0.38)	(-0.95)
Predictability	0.004					
	(0.17)					
Predictability II [2)]		0.046**				
		(3.09)				
Property Security			0.024			
			(1.82)			
Judiciary				0.029**		
				(3.28)		
Lack of Corruption					0.037**	
					(3.17)	
Political Instability						0.031**
						(2.96)
Adjusted R^2	0.59	0.52	0.62	0.68	0.68	0.67
Observations	41	49	41	41	41	41

1) T-statistics in Parenthesis
2) Includes 8 additional countries from a previous survey reported in Borner, Brunetti and Weder (1995).
* significant on the 5 percent confidence level
** significant on the 1 percent confidence level

The *security of property rights* - which includes also a question about perceived personal security - is highly significant in the growth regressions. This is particularly interesting since this sample of 41 does not include the transition economies in which problems of security and property rights are well publicized. We also experimented with extended growth regressions for the sample of 41 in which we only include this subindicator and found that it is very robust to

inclusion of further right-hand variables. Surprisingly the security of property appears insignificant in the investment regression.

The inverse pattern appears in the indicator of *judiciary reliability:* it is not significant in the growth regression but highly significant in the investment regression.

The same pattern applies to the *corruption* indicator: it is significantly associated with investment but not with growth. Again, we would have expected that corruption affects not only the rate of accumulation of resources but also the allocational efficiency of their use. In particular because the aggregate investment rate comprises public as well as private investment and public investment projects are often famously missallocated through bureaucratic corruption. It is interesting to note, though, that this result is corroborated by Mauro (1995) who with completely different data and for a larger sample of countries also found that corruption affected investment but not growth directly.

The indicator of *perceived political instability* has the same properties as the previous two: it is significant in the investment regression but not in the growth regression. This results contrasts with the findings in the growth literature where some objective political instability measures such as coups and revolutions are found to affect growth. It is conceivable, though, that perceived political instability would affect mostly the investment rate - after all, the kind of uncertainties that arise from large political events may be more difficult to hedge than for instance property rights insecurity (which were found to be significantly associated with growth). In order to hedge the latter it may be enough to employ a private security officer, to hedge the former the only way might be to move resources out of the country.

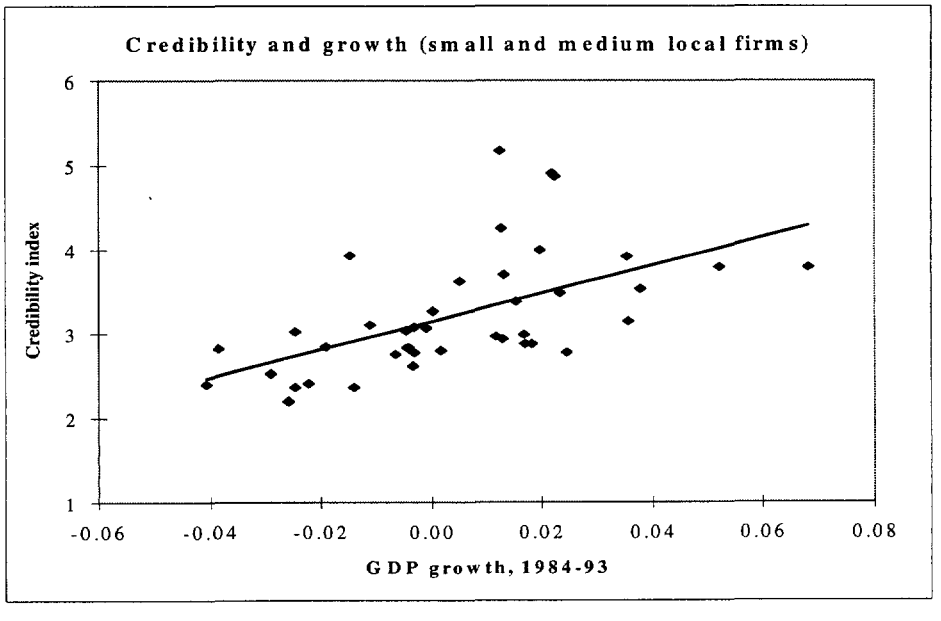
Overall the analysis of the individual subcomponents of credibility has given an interesting and differentiated picture. The analysis also substantiates our case for using a general indicator of credibility which encompasses all major sources of uncertainty rather than looking for the one perfect subindicator: Some uncertainties may act more through the accumulation and

others more through the allocation channel. Given that in the growth analysis we are interested in both, the summary indicator of credibility seems appropriate.

4.4. Subsample of small and medium enterprises with no foreign participation

In this section we discuss results for a subsample of enterprises namely the ones which are small or medium in size and are local, i.e. have no foreign participation (SMLEs). They are a particularly interesting set of companies because in most countries a large percentage of investment comes from local rather than foreign sources. This makes the perception of companies without foreign participation particularly interesting. Also, the small and medium sized companies are likely to be the „outsiders" in the political process. Large as well as foreign entrepreneurs can often be expected to have more clout in the political process and to have insider knowledge and treatment. Their perception may therefore not be representative for the large majority of small business people. The scatterplot of growth and credibility for this sample is show below in Figure 4.

Figure 4: Scatterplot of Credibility Calculated for the Sub-sample of Small- and Medium-sized Local Enterprises and GDP per capita growth



Growth regression results for this sample are shown in Table 8 which is organized in the same way as Table 2. Comparing these two tables shows that the results for the full sample are strengthened by restricting our sample to the small to medium sized and local enterprises. In particular the credibility indicator retains significance in all equations, the coefficient is larger than for the full sample and the equations explain an average of 2 percent more of the variance in growth.

Table 8: OLS Growth Regressions for Subsample of Small and Medium Local firms

Dependent Variable: Average Growth Rate of GDP per Capita, 1983-1994

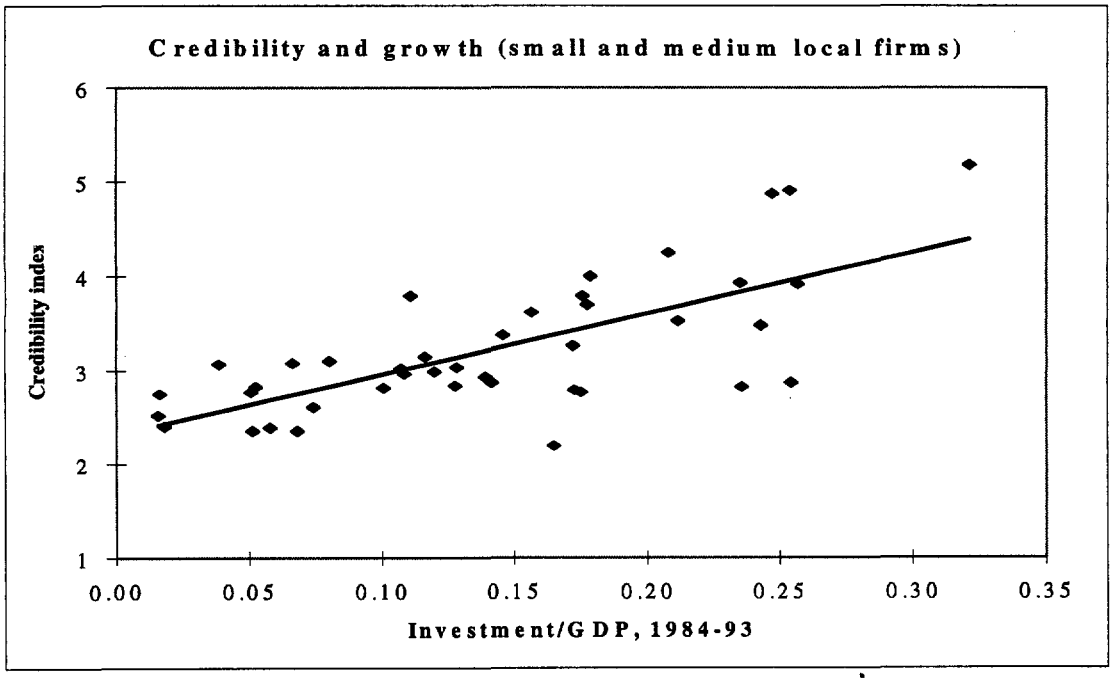
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-0.06*	-0.056	-0.07*	-0.064*	0.038	-0.055	-0.06	-0.059	-0.077*
	(-2.04)	(-1.38)	(-2.31)	(-2.08)	(0.74)	(-1.86)	(-2.07)	(-1.81)	(-2.18)
Ln GDP per Capita	0.001	0.001	0.002	0.002	-0.01	3E-5	0.002	0.001	0.004
	(0.25)	(0.18)	(0.35)	(0.31)	(-1.08)	(0.006)	(0.28)	(0.21)	(0.67)
Ln School	0.005	0.005	0.005	0.004	0.001	0.008	0.004	0.005	0.004
	(0.68)	(0.66)	(0.73)	(0.63)	(0.18)	(1.08)	(0.62)	(0.68)	(0.50)
Govern. Consump.		-0.007							
		(-0.13)							
Inflation			0.35						
			(1.13)						
Trade				0.007					
				(0.51)					
Political Rights					-0.01*				
					(-2.26)				
Assassinations						-34.3			
						(-0.25)			
Coups							9E-4		
							(0.07)		
Wars								-8E-4	
								(-0.09)	
Bureaucracy									-0.021
									(-0.94)
Credibility	**0.015***	**0.015***	**0.013***	**0.014***	**0.012***	**0.016***	**0.016***	**0.015***	**0.016***
	(2.47)	**(2.44)**	**(2.19)**	**(2.29)**	**(2.13)**	**(2.56)**	**(2.48)**	**(2.41)**	**(2.53)**
Adjusted R^2	0.28	0.26	0.29	0.27	0.36	0.32	0.26	0.26	0.26
Observations	41	41	41	41	41	39	40	41	38

1) T-statistics in Parenthesis
* significant on the 5 percent confidence level
** significant on the 1 percent confidence level

The scatterplot of credibility of small and medium local enterprises and investment is shown below (Figure 5).

The investment analysis in Table 9 shows the opposite result to the growth regressions: The coefficient of credibility is smaller in Table 9 than in Table 3 and the equations explain about 5 percent less of the variation in investment rates across countries. This suggests that investment of small and medium local firms is less sensitive to lack of credibility than investment of large and/or foreign investors. A plausible conjecture is that the group of small and medium entrepreneurs has few alternatives to investing in their own country. Large and foreign firms may base their investment decisions on comparisons of conditions across countries whereas small and medium firms may have less knowledge and possibilities to invest abroad.

Figure 5: Scatterplot of Credibility Calculated for the Sub-sample of Small- and Medium-sized Local Eneterprises and Investment



We also estimated growth regressions including investment as a right-hand variable to check whether small and medium local firms are more susceptible to the credibility of their business environment as far as the efficiency of the allocation is concerned (not shown). Their responses explain a larger share of the growth variation than in the full sample of companies and

the coefficient of credibility is larger and significant in most equations whereas for the overall sample these coefficients do not reach significance at the 5 percent level.

Table 9: OLS Investment Regressions for Subsample of Small and Medium Local firms

Dependent Variable: Average Investment Rate 1983-1994

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-0.29** (-4.37)	-0.23* (-2.54)	-0.28** (-3.91)	-0.28** (-4.01)	-0.30** (-2.43)	-0.318** (-4.94)	-0.29** (-4.17)	-0.274** (-3.74)	-0.32** (-3.92)
Ln GDP per Capita	0.04** (3.34)	0.036** (2.76)	0.04** (3.25)	0.039** (0.31)	0.041** (2.77)	0.043** (3.73)	0.04** (3.23)	0.038** (3.04)	0.045** (2.99)
Ln School	0.001 (0.68)	-0 (-0.03)	8E-4 (0.05)	0.002 (0.12)	0.001 (0.09)	-0.012 (-0.79)	-0 (-0.02)	0.003 (0.20)	0.001 (0.82)
Govern. Consump.		-0.12 (-0.98)							
Inflation			-0.32 (-0.46)						
Trade				-0.018 (-0.59)					
Political Rights					8E-4 (0.11)				
Assassinations						396.4 (1.32)			
Coups							-0.01 (-0.36)		
Wars								-0.011 (-0.58)	
Bureaucracy									-0.031 (-0.61)
Credibility	**0.037** (2.72)**	**0.037** (2.72)**	**0.038** (2.72)**	**0.038** (2.75)**	**0.037* (2.65)**	**0.041** (3.14)**	**0.039** (2.70)**	**0.036* (2.61)**	**0.041** (2.76)**
Adjusted R^2	0.66	0.66	0.65	0.65	0.65	0.69	0.64	0.65	0.67
Observations	41	41	41	41	41	39	40	41	38

1) T-statistics in Parenthesis
* significant on the 5 percent confidence level
** significant on the 1 percent confidence level

These findings are consistent with the view that small and medium local enterprises are outsiders to the political process and may have to protect their assets by allocating them to projects that are less susceptible to institutional uncertainty. Therefore the small and medium local firms, although they are less likely to lower their investment, are more likely to put their resources to less efficient use in the face of low credibility. Large and/or foreign firms, on the other hand, can hedge their bets by investing in other countries or by influencing the political

process. The efficiency of their investment in the country is more dependent on the level of credibility than the one of small firms but their overall investment is less so as they can invest abroad.

4.5. Growth results for an extended sample and for transition economies

In this last section we present some results for a larger sample including all transition economies for which data could be gathered. These results should be regarded as tentative because of data limitations when including transition economies. The results are not directly comparable with the previous sections because we had to rely on other data sources for the economic variables than for the sample or 41. The larger data set is all from World Bank sources (see Appendix 2). Given that 10 year averages are not very sensible in the case of transition economies we look at the average growth rate for 1990-1995. We use the 10 year average of credibility for the non transition economies and a 5 year average for the transition economies. The scatterplot between credibility and growth for this extended set is shown in Figure 6.

Figure 6: Scatterplot of Credibility and GDP per capita Growth for extended set

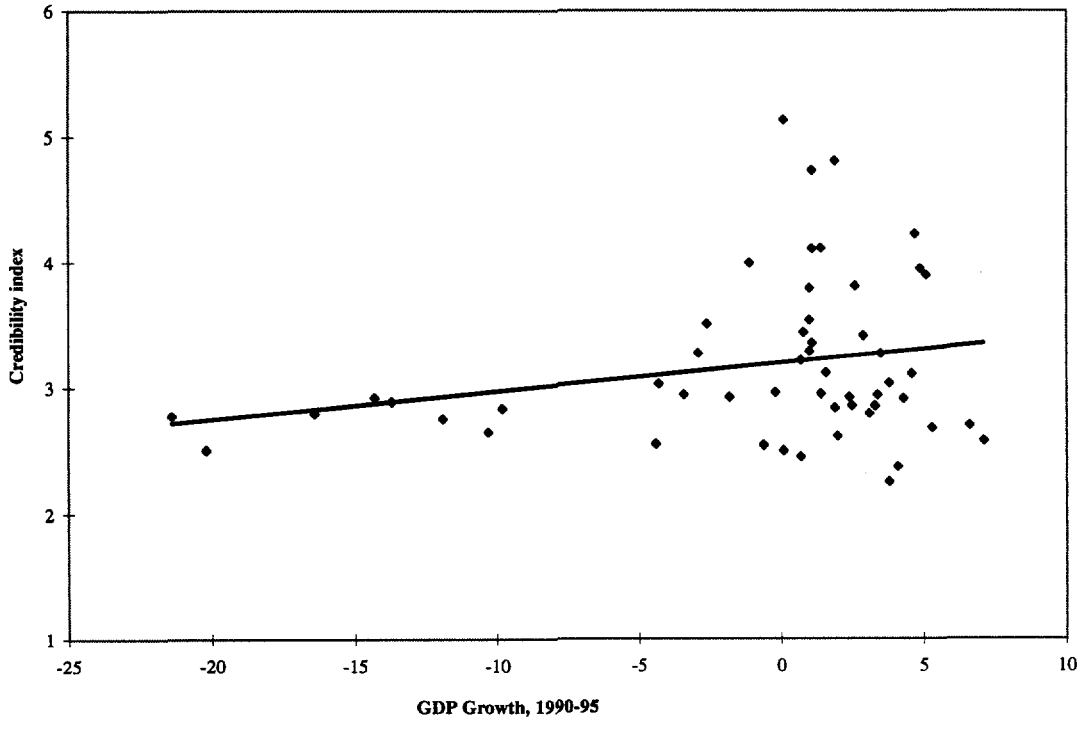


Table 10 shows results for two specifications for the extended sample. In the base regression (1) credibility is significant and of the correct sign. In this sample the schooling variable is significant with a negative sign, presumably because the transition economies create a strong outlier with high measured schooling and negative growth. However it looses significance when inflation is introduced as additional control (regression (2)). Inflation is highly significant for this period and sample, again showing the influence of the transition economies. Credibility retains significance in this specification indicating it may be important in explaining differences in growth performance even in this larger sample of countries.

Table 10: OLS Growth Regressions for extended sample and for Transition Economies

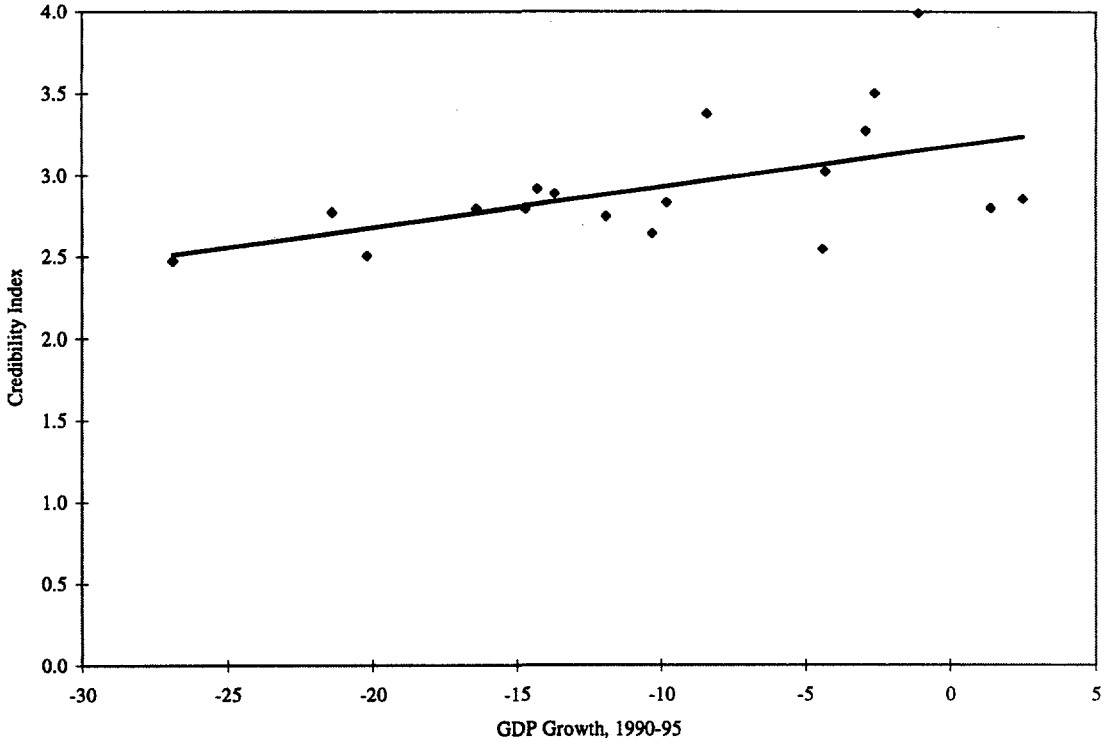
Dependent Variable	Growth GDP per capita for full set (1)	Growth GDP per capita for full set (2)	Growth GDP per capita for transition (3)	Growth GDP per capita for transition (4)	Growth GDP per capita for transition (5)	Growth GDP per capita for transition (6)
Constant	-2.43 (0.32)	9.41 (1.58)	-43.37 (-3.24)	-6.72 (-0.14)	142.5 (1.33)	-6.72 (-0.14)
Ln GDP per Capita	-0.80 (-0.40)	-1.74 (-1.15)		-5.56 (-0.87)		
Ln School 90	-4.16** (-2.07)	-0.94 (-0.58)			-37.85 (-1.65)	
Inflation		-0.02** (-5.97)				-0.013* (-2.53)
Credibility	**5.93**** **(3.46)**	**2.96*** **(2.05)**	**11.40*** **(2.51)**	**15.09*** **(2.87)**	**6.03** **(1.33)**	**1.98** **(0.42)**
Adjusted R^2	0.35	0.63	0.24	0.31	0.24	0.39
Observations	50	49	18	16	16	16

1) T-statistics in Parenthesis
* significant on the 5 percent confidence level
** significant on the 1 percent confidence level

Clearly the results for this sample have to be interpreted with caution mainly because of data limitations, short observed time period, as well as intrinsic problems of measuring and explaining growth in countries that went trough such a major structural brake.

To see if credibility can contribute to explaining differences in performance within the transition economies we tested some regressions for this subsample of 18 countries. With this small sample we chose to include a maximum of two right hand variables at the time. The scatterplot for credibility and growth in the transitions economies is below (Figure 7).

Figure 7: Scatterplot of Credibility and GDP per capita Growth for Transition Economies



Regressions (3-6) in Table 10 show that credibility is significant in the simple regression and when we control for initial income. It retains the right sign but looses significance when we control for schooling and inflation. It appears that the disruptions created by inflation and the macropolicies that fueled it overshadowed institutional problems during the transition period. We experimented with different measures of inflation (consumer price inflation, the GDP deflator) and this result prevails. We also experimented with the more recent growth rates of these economies to exclude some of the early transitionary effect. We still found a significant

negative influence of inflation on the average growth rate of 1993-95, but credibility was more closely associated with growth in this period (p=0.12 not shown). It may be that institutional uncertainties become more important as the transition is ending and these countries slowly approach more "normal times" and private sector development becomes central. It will be interesting to see if the private sectors' perception of their institutional framework is a good predictor of the future investment and growth of these countries.

5. Conclusions and directions for further research

This paper has presented first results from an ongoing research on the effects of credibility as perceived by local entrepreneurs on the economic performance of a country. We constructed an overall indicator of credibility based on survey data and tested whether it contributes to explaining differences in growth and investment across countries. We found that credibility was significantly associated with cross country differences in growth and investment in a sample of 41 countries for which comparable data was available. This result was strengthened when we looked at a subsample of all small, medium and purely local companies (i.e. companies that have no foreign participation). We also conducted tentative analysis in a sample including with transition economies. The results are promising: credibility is closely associated with differences in growth in this sample as well.

For the next rounds of analysis we aim at further expanding our country coverage. In particular, we will try to obtain survey results from some NICs, especially some East Asian tigers. The credibility ratings of these countries would be particularly interesting as they were the most successful LDCs in the past decades.

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Appendix 1: Questions used for the construction of credibility indicator[28]

1. Do you regularly have to cope with unexpected changes in rules, laws or policies which materially affect your business?

   Changes in laws and policies are

   (1) completely predictable ☐
   (2) highly predictable ☐
   (3) fairly predictable ☐
   (4) fairly unpredictable ☐
   (5) highly unpredictable ☐
   (6) completely unpredictable ☐

---

2. Do you expect the government to stick to announced major policies?

   (1) always ☐
   (2) mostly ☐
   (3) frequently ☐
   (4) sometimes ☐
   (5) seldom ☐
   (6) never ☐

---

3. "The process of developing new rules or policies is usually such that affected businesses are informed."

   This is true

   (1) always ☐
   (2) mostly ☐
   (3) frequently ☐
   (4) sometimes ☐
   (5) seldom ☐
   (6) never ☐

---

4. "In case of important changes in laws or policies affecting my business operation the government takes into account concerns voiced either by me or by my business association."

   This is true

   (1) always ☐
   (2) mostly ☐
   (3) frequently ☐
   (4) sometimes ☐
   (5) seldom ☐
   (6) never ☐

---

[28] The indicators were calculated by assigning a 1 for the least favorable and a 6 as the most favorable rating.

5. "*Constitutional changes of government* (as a result of elections) are usually accompanied by large changes in rules and regulations that have an impact on my business."

   To what degree do you agree with this statement?

   (1) fully agree ☐
   (2) agree in most cases ☐
   (3) tend to agree ☐
   (4) tend to disagree ☐
   (5) disagree in most cases ☐
   (6) strongly disagree ☐

   does not apply ☐

---

6. "I constantly fear *unconstitutional government changes* (i.e. coups) that are accompanied by far-reaching policy surprises with significant impact on my business."

   To what degree do you agree with this statement?

   (1) fully agree ☐
   (2) agree in most cases ☐
   (3) tend to agree ☐
   (4) tend to disagree ☐
   (5) disagree in most cases ☐
   (6) strongly disagree ☐

   does not apply ☐

---

7. "Theft and crime are serious problems that can substantially increase the costs of doing business."

   To what degree do you agree with this statement?

   (1) fully agree ☐
   (2) agree in most cases ☐
   (3) tend to agree ☐
   (4) tend to disagree ☐
   (5) disagree in most cases ☐
   (6) strongly disagree ☐

---

8. "I am not confident that the state authorities protect my person and my property from criminal actions"

   To what degree do you agree with this statement?

   (1) fully agree ☐
   (2) agree in most cases ☐
   (3) tend to agree ☐
   (4) tend to disagree ☐
   (5) disagree in most cases ☐
   (6) strongly disagree ☐

---

9. "Unpredictability of the judiciary presents a major problem for my business operations."

   To what degree do you agree with this statement?

   (1) fully agree ☐
   (2) agree in most cases ☐
   (3) tend to agree ☐
   (4) tend to disagree ☐
   (5) disagree in most cases ☐
   (6) strongly disagree ☐

10. "It is common for firms in my line of business to have to pay some irregular "additional payments" to get things done."

    This is true

    (1) always ☐
    (2) mostly ☐
    (3) frequently ☐
    (4) sometimes ☐
    (5) seldom ☐
    (6) never ☐

Appendix 2: Description of variables and sources

Variable	Description	Period	Source
1. GDP growth			
Set of 41	Average annual growth of real GDP per capita in 1985 international prices	1984-93	Summers & Heston
Extended*	Average annual growth rate of real GDP	1990-95	World Bank
2. Gross investment			
Set of 41	Real investment over GDP in 1985 international prices	1984-93	Summers & Heston
3. Initial per capita GDP			
Set of 41	Log of initial per capita GDP in 1985 international prices	1985	Summers & Heston
Extended*	Log of initial per capita GDP in 1992 international prices	1992	World Bank
4. Initial schooling			
Set of 41	Log of average years of schooling	1984-93	Barro & Lee
Extended*	Log of gross secondary school enrollment in 1980 for set of 41 and for 1990 for additional countries	1980, 1990	World Bank
5. Government size			
Set of 41	Average Government consumption/GDP in 1985 international prices	1984-93	Summers & Heston
6. GDP deflator			
Set of 41	Average GDP deflator in 1985 international prices	1984-93	Summers & Heston
Extended*	Average GDP deflator in local currency	1990-95	World Bank
7. (Export+Import)/GDP			
Set of 41	Average ratio of (Export+Import)/GDP in current prices	1984-93	World Bank
8. Assassination			
Set of 41	Average number of political assassinations	1980-89	Easterly & Levine
9. Coups			
Set of 41	Average number of coups	1980-89	Easterly & Levine
10. War			
Set of 41	War dummy	1980-89	Easterly & Levine
11. Gastil index of political freedom (GIPF)			
Set of 41	GIPF ranging from a high of 1 to a low of 7	1984-93	Freedom house

* See Appendix 3 for the list of countries included in the extended set. Data sources and definition also applies to additional countries in transition set" in the terminology of appendix 3.

Appendix 3: Country list

Set of 41 countries	Additional countries in extended set[29]	Additional countries in transition set
Austria	Armenia	Albania
Benin	Azerbijan	Estonia
Bolivia	Belarus	Georgia
Cameroon	Bulgaria	Kyrgyz Republic
Colombia	Czech Republic	
Congo	Guinea	
Costa Rica	Kazakstan	
Cote d'Ivoire	Latvia	
Ecuador	Lithuania	
Fiji	Russia	
France	Slovak Republic	
Germany	Ukraine	
Ghana	Uzbekistan	
Guinea Bissau		
Hungary		
Ireland		
Italy		
Jamaica		
Kenya		
Madagascar		
Malawi		
Mali		
Mauritius		
Mexico		
Mozambique		
Nigeria		
Paraguay		
Peru		
Poland		
Portugal		
Senegal		
Spain		
Switzerland		
Tanzania		
Togo		
Uganda		
UK		
United States		
Venezuela		
Zambia		
Zimbabwe		

[29] Due to lack of macroeconomic data for the period 1990-1995, Fiji is not included in the extended set.

Appendix 4: Correlation Matrices for Basic Set of 41 Countries

Table 4.1. Correlation matrix: Credibility indicator, sub-indicators and economic variables

	Credibility	Predictability	Political instability	Property security	Judiciary	Lack of corruption	GDP growth	Invest	LN GDP per capita	Schooling	Gov. size	GDP deflator	(exp+imp)/GDP
Credibility	1.00												
Predictability	0.79	1.00											
Political instability	0.87	0.62	1.00										
Property security	0.85	0.59	0.66	1.00									
Judiciary	0.90	0.62	0.65	0.78	1.00								
Lack of corruption	0.90	0.73	0.71	0.65	0.79	1.00							
GDP growth	0.54	0.45	0.50	0.52	0.43	0.44	1.00						
Invest	0.76	0.55	0.74	0.56	0.62	0.75	0.45	1.00					
LN GDP per capita	0.71	0.68	0.72	0.53	0.46	0.70	0.47	0.79	1.00				
Schooling	0.60	0.53	0.71	0.32	0.35	0.61	0.42	0.62	0.78	1.00			
Government size	-0.45	-0.45	-0.52	-0.32	-0.25	-0.39	-0.32	-0.57	-0.63	-0.54	1.00		
GDP deflator	0.12	0.21	-0.08	0.16	0.21	0.10	0.21	0.00	-0.01	-0.03	-0.24	1.00	
(exp+imp)/GDP	0.23	0.27	0.17	0.14	0.26	0.20	0.17	0.05	0.06	0.11	0.16	-0.13	1.00

Table 4.2: Correlation matrix: Credibility indicator, sub-indicators and policy variables

	Credibility	Predictabiliy	Political instability	Property security	Judiciary	Lack of corruption	Assassinations	Coup	War	Political rights	Bureaucracy
Credibility	1.00										
Predictabiliy	0.81	1.00									
Political instability	0.85	0.67	1.00								
Property security	0.83	0.59	0.59	1.00							
Judiciary	0.88	0.61	0.58	0.74	1.00						
Lack of corruption	0.92	0.74	0.71	0.67	0.81	1.00					
Assassinations	0.16	0.03	0.23	-0.02	0.12	0.23	1.00				
Coup	-0.12	-0.26	-0.26	0.06	0.04	-0.12	0.01	1.00			
War	-0.21	-0.22	-0.18	-0.32	-0.08	-0.15	0.48	0.08	1.00		
Political rights	-0.67	-0.63	-0.77	-0.48	-0.36	-0.62	-0.17	0.13	0.23	1.00	
Bureaucracy	0.69	0.69	0.51	0.52	0.56	0.73	0.05	-0.37	-0.16	-0.60	1.00

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