

FINANCIAL MARKET EFFICIENCY, INSTITUTIONS AND GROWTH: AN INTERNATIONAL ECONOMETRIC ANALYSIS FOR 1997 - 2002

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Abstract

The paper tests the hypothesis of a positive impact of democratization on growth, economic development and changes in well-being. We construct an empirical model to explain the impact of political institutions (democracy), economic institutions, financial market efficiency, scientific achievements and “financial or FDI” geography on growth. The empirical work based on a wide database including several indicators assessed by the authors support the hypothesis of decisive role of democratic political and efficient economic institutions in stimulating economic growth. The main results also highlight the importance of effective allocation of financial resources.

JEL Code: I31, O11, O17, G21

Keywords: Capabilities, Democracy, Development, Finance, Institutions, Growth

1. Introduction

In case of human development, apart from economic institutions for providing material well being of the members of society there are also several institutions important to supply “happiness”¹ to the nations, and among them democracy, the core normatively desirable

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¹ Or, more accurately, in Sen’s terminology, democracy makes possible ‘agency- freedom’ for the citizens.

political institution of our time, plays the central role. Democracy is sometimes thought of as an even more important, determinant of welfare than the purely economic and growth-enhancing institutions.

For example, Rodrik (2000) discusses democracy as a meta-institution for building modern institutions. Our previous study mainly emphasized the importance of economic institutions to explain the growth in transition economies (Piñero et al., 2005). Institutional factor was discussed along with initial conditions of reforms specific to the sample of observed countries, FDI and democracy. In this paper the emphasis is on both *political* and *economic* institutions. We also augment our economic institutional analysis by including crucial financial aspects related to the banking sector. In short, we are trying to fill some of the political and financial factors gap in our previous analysis. We hope to contribute in this way to the ongoing theoretical and empirical refinements in this area of research. Recent studies (Barro (1991); Grossman and Helpman (1994); Lucas (1988); Mankiw, Romer, and Weil (1992); Pack (1994); Romer (1994); and Solow (1994) suggest that growth is determined by a much larger set of endogenously determined variables than previously studied. Many authors emphasize the importance of political institutions, particularly that of democracy, for growth acceleration. Generally, as Acemoglu, Johnson and Robinson (2004) document, the institutional factor is more decisive in this period because of new technologies requiring larger investments. Minier (1998) finds that the countries that democratized subsequently grow faster *ex ante* than similar countries that shied away from democratization. Ulukaev (1997) notes that per capita GDP for a particular country allows one to determine the type of its socio-political structure with a relatively high degree of accuracy. For example, a country where per capita GDP exceeds \$10000 in our world is always democratic.

Contrariwise, stable democracy seemingly does not exist in countries with per capita GDP less than \$2000.^{2,3}

² This requires the important reminder that the statement is an empirical one only. Low per capita GDP may not necessarily lead to a lack of democracy.

Tavares and Wacziarg (2001) try to disentangle the effect of democracy on growth and conclude that democracy boosts growth because of its favorable effect on the accumulation of human capital and by reducing income inequality. Bekaert, Harvey and Lundblad (2004) note that political factors may play an important role in determining the magnitude of the shocks an economy faces and in setting up the institutional framework to help smooth shocks. However, on the economic side, Popov (1998) has also shown that taking into account the indicators of different initial conditions in the regression analyses shows that there is no statistically significant interrelation between rates of liberalization and GDP dynamics. For the efficiency of state institutions it does not seem to matter if they have democratic or authoritarian beginnings. Furthermore, in countries without strong democratic traditions the transition from authoritarianism to democracy seems to be accompanied by falls in institutional efficiency. Helliwell (1994) also suggest that the relationship is negative. Thus, there is no common approach or agreement among the social scientists regarding the theorization and measurement of how exactly democracy affects economic growth.

The reverse causation between economic growth and political freedom has been discussed and singled out in Barro and Sala-i-Martin (1995); Huber, Rueschemeyer, and Stephens (1993); Levine and Renelt (1992); Levine and Zervos (1993); Przeworski and Limoni (1993); and Solow (1994) specifically concerning the direction and significance of the impact of political freedom on economic growth and the contribution of economic growth, if any, to the enhancement of political freedom. However, following the more holistic theories offered by Sen (1999), Khan (2004a-d, 2003a-c,

Like the famous ‘all swans are white’ proposition such inductive statements are subject to refutation by contrary observations. See H. A. Khan, “On Paradigms, Models and Theories”, for a detailed discussion of the methodological and philosophy of science issues. Substantively, in this case, however, the statement in the text still holds for the most part in a tendential sense.

³ Theoretically, it should also be kept in mind that the empirical work in this tradition does not distinguish between formal and ‘deep’ democratic elements as does Khan in his work on South Korea and Taiwan.

1999a-b, 1989), and others (Khan and Kumssa, 1996; Khan and Thorbecke, 1988) leads one to introduce an entire spectrum of institutional structure and then consider their effect on development. Thus, at a minimum, both economic and political institutions must be considered along with other factors that influence economic growth⁴. Methodologically, in order to address the main aspects of development, we consider both institutional and financial factors in this study. In order to avoid misunderstanding, we hasten to add that we view growth as one component of development, and not always and not necessarily the decisive one. As Anand and Sen (2000, p. 2031) write: *“It is, of course, true that being rich, wealthy and affluent can be among the most important contributory factors in generating well-being, and the opulence-oriented approach to economic progress certainly cannot be criticized for being irrelevant to the success of human living. On the other hand, insofar as it neglects other crucial factors, such as public care and social organization, which also contribute to the well-being and freedom of individuals, the approach is deeply limited and defective”*. For this purpose, certain quantitative techniques are applied to assess the role of the political meta-institution of democracy and to measure economic efficiency within the framework of economic institutions.

Later these quantitative indicators are used to explain the growth together with financial and geographic factors. Therefore, the paper is organized to derive the indicators in the second part so that the relevant assessments are made for the political (democracy) and economic institutions for the sample of 85 countries. The empirical work using these indicators for explaining the growth is presented in the third section. Summary and conclusions follow.

⁴ The recently proposed FOLIS theory does precisely this. It also goes further in the normative direction. See Khan’s chapter on Taiwan in the MIT Press (2002) volume on “Technology and Modernity” for an example of how success in building a technological system can generate demands for more democracy which can then be defended on grounds of both efficiency and equity. Thus a virtuous circular causation process can be unleashed through the process of democratization and technological development.

2. Constructing proxies

2.1. Democracy Measures. While there are several organizations that have assessments for democracy, in this paper we have constructed our own assessments by using estimation procedures based on binary dependent variable models (logit and probit). It is motivated by the argument that since democracy is the political meta-institution that shapes the structure of modern institutional framework, we need something more than just so-called ‘expert’ evaluations. At the same time, one needs some preliminary data on political regimes in different countries in order to assess the role and extent of democracy. Here the Political freedom and Civil Liberties indexes of Freedom House are the necessary initial point, which allow us to build the binary indicator (See DEM in the annex 1).

The goal is to quantify the relationship between the individual characteristics and the probability of occurrence of the event. In our case it will be the probability of having democratic regime in the particular country. As the probability may vary in range of [0-1], we can refer to this number as an indicator of democracy with a higher value indicating greater (prospect for) democracy.

The outputs for logit and probit analyses are summarized in Table 1. In both cases the indicators are robust to model specification. While both meet main requirements, we choose probit (based on slightly smaller the AIC and SBC criteria and larger pseudo R-squared) to arrive the fitted values for DEM (DEMF, see the Annex 2) used as a proxy for democracy (political institutions) which is hypothesized to be causally positively related to growth.

Table 1. Comparison of Logit and Probit Models of Democracy

Model	Probit Model	Logit Model
CONSTANT TERM	-9.289 (-4.02)	-16.257 (-3.75)
LOG(GDP)	0.891** (3.32)	1.554**(3.16)
RELIGION	1.447**(3.21)	2.592**(3.07)
LOG(CAPITALIZATION)	0.203*(1.82)	0.353*(1.75)
McFadden R ²	0.539	0.537
S.E. of regression	0.326	0.326
AIC	0.733	0.735
SBC	0.848	0.850
Log likelihood	-27.147	-27.250
LR statistic (3 df)	63.434	63.229
Probability (LR stat)	1.08E-13	1.20E-13
N.obs.	85	85

Note: The heteroskedascity test (Davidson and MacKinnon, 1993) for the probit model with Chi-squared statistics equal to 1.253 allow us to accept the null hypothesis of homoskedasticity. zstats. are given in parentheses. ** significant at 1%, * significant at 10% level.

2.2. Assessing Framework of Economic Institutions. The logic of evaluation of institutions was based on the assumption that the institutional framework of leading developed countries is complete. Therefore, the level of separate institutions' development, as well as the entire framework, is equal to 1 in this idealized case. Of course, this is just an assumption, needed for providing the research with relative grounds for comparison.⁵

⁵ Again, in scientific terms, this is really the creation of a (cardinal) scale for measurement. The mapping from the space of existing institutions to the closed interval [0,1] has been clearly defined as a relative one. This means that relative to the existing developed country institution we can measure the efficacy of any other comparable institution through this well-defined mapping. Since the ordering is complete, the cardinal index does allow us to compare any two institutions on the space of the real interval. This need not and does not, however, imply that the existing developed country institutions are perfect in some absolute sense, and can not be further

Thus, all institutions vary within the range [0;1]. We used a modification of previously developed index (Piñeiro et al, 2005) to evaluate the formal market institutions. The indicator reflects the share of interaction regulated by the formal rules while the remaining part of relations represents informal ones. Given the standards of relativity adopted above we can call this remaining part, the institutional “deficit”. The total “deficit” is represented in the form of the following operational indicator:

$$\sum_{k=1}^n (1-i_k) \cdot w_k = \sum_{k=1}^n w_k - \sum_{k=1}^n i_k \cdot w_k = 1 - \sum_{k=1}^n i_k \cdot w_k = (1-I) \quad (1)$$

where:

- k - the regular number of the institutional system's formal components (institutions)
- n - the total number of formal institutions included in observation
- i - indicator of separate formal institutions in 0-1 range
- ω - the weight of the separate elements
- I - the weighted aggregate index.

As one can see the total “deficit” equals one minus the aggregate index. Normally “deficit” consists of the traditional (informal) institutions. To reflect the process of economic transition in transition economies our previous work considered also inherited institutions, which are out of scope of this paper. Thus

$$(1-I) = T = \sum_{k=1}^n (1-i_k) \cdot w_k \quad (2)$$

where:

T = the traditional (informal) institutions. These institutions are comparable with shadow economy share in GDP (H/GDP).

$$I = \sum_{k=1}^n i_k \cdot w_k = 1 - T \quad (3)$$

improved. For a theoretical approach to a normative critique of the incompleteness of developed countries' democracy, see Khan (1998) part II.

We used average shadow economy size in market economies (OECD average) as a comparison ground to arrive the adjusted operational indicator of institutional development (AOI):

$$AOI = (1-H/GDP) / (1- HX/GDPX) \quad (4)$$

where: H = the shadow economy size, and X highlights the average indicators for market (OECD) economies.

The main advantage of the operational indicator over the weighted index is that here the “weights” are set by the market itself. And we do not need to consider separate components. In case of adjusted operational indicator for most effective systems the values may slightly exceed the level of 1 which means that institutions are even more effective than OECD average. We took AOI equal to 1 in such cases. To evaluate AOI for the sample of the countries (85 countries) we used shadow economy estimations by Schneider (2002) presenting them in percent of total GDP format instead of in percent of official GDP format (see the annex 3) popular in literature on methodology for indirect assessment of shadow economy.

3. Empirical model

Our final regression results include the following explanatory variables which appear in table 2.

Table 2. The Variables in Empirical Model

Variable		
GROWTH	–	Change in GDP per capita, 1997-2002 (constant 1995 US\$) (increase)
DEMF	–	Our assessment for democracy (fitted value)
AOI	–	Adjusted operational indicator of Institutional development
BLRBA	–	Bank liquid reserve/assets ratio
SCIENCE	–	Scientific and technical journal articles
FDIGEO	–	FDI geography

The employed institutional factors to explain the net GDP per capita changes were political (democracy) and economic (AOI) institutions. Financial markets are represented by efficient financial management (opposite to bank liquid reserves/assets ratio) (see the description of the indicators in the Annex 2). Heteroskedasticity adjusted estimates of the model are presented in table 3.

All the factors are robust to model specification (see the section 4). Both institutional factors (DEMF and AOI) are especially efficient in explaining growth. Note that for the indicators of bank liquid reserves/assets ratio (BLRBA) and FDI geography (FDIGEO) the relationship with growth needs to be interpreted with some care. Thus, the negative coefficients here mean that the lower is the ratio of high liquidity reserves or the closer is the country to the largest FDI donor, the higher is GDP per capita in the countries.

Table 3. The WLS Estimates of Empirical Model Dependent Variable: GROWTH

Factors	Estimates	t-stat
Constant term	-2541.415 **	-3.278
DEMF	735.276 **	3.278
AOI	3878.593**	3.880
BLRBA	-16.663 **	-2.807
SCTECH	0.971**	2.732
FDIGEO	-0.980 **	-4.161
Adj. R-sq.	0.731	
F-stat (model test)	45.15	
Prob.	0.00	
Chi-sq. stat (White test)	26.884 ^a	
Chi-sq. crit (11df,1%)	24.725	
N obs.	82	

Note: ^a H_0 of homoskedasticity is rejected. ** significant at 1% level.

We include SCTECH to reflect the differences in human capital development. Different similar studies of growth proxy the human capital through the factor of education (E.g. Guisan et al. (2001), Krueger and Lindahl (2003)). All the factors in the model are significant at 1% confidence level. Particularly, democracy is one of the most interesting factors in the model. A significant finding is that most countries that have registered high growth in GDP per capita during the period 1997-2002, have democracy indicator over 0.9 (see the chart-a in Annex 4). Only Argentina with comparatively good estimates of democracy registered fall in GDP. In fact, Freedom House also has given “Free” status to two of these three countries: Argentina and Uruguay. Assessments based on the probit model may also be misled by the religion factor, while only Argentina had high capitalization and satisfactory level of per capita GDP. In contrast, Hong Kong and Singapore have registered significant growth in spite of lack in democracy. The rest of the sample follows the rule reflecting positive non-linear relationship between democracy and growth and the revealed interrelation with the remaining factors (see chart 1-b,d in Annex 4) also support the relationships reflected in the model.

4. Robustness check

This section investigates the robustness of the empirical findings to a number of experiments with the estimated models (see the Annex 3).

We tried the robustness of the model one by one excluding the regressors. Table 4 presents the results. Signs and statistical significance are as expected, so that robustness is not lacking. Only the coefficients of SCTECH registered a fall in size however remaining statistically significant. In option (2) the significance of BLRBA drops out of the 5% confidence level, remaining significant at 10%. Besides the BLRBA all the factors in the model remain significant at 1% confidence level.

Table 4. Testing the Robustness of the Model of GROWTH

	Number of factors excluded				
	(0)	(1)	(2)	(3)	(4)
Constant term	-2541.41 (-3.278)	-3228.87 (-3.872)	-4022.01 (-4.666)	-4527.39 (-5.280)	-529.94 (-7.237)
DEMF	735.28 (3.278)	994.28 (4.191)	1262.16 (5.229)	1295.46 (5.231)	2001.68 (9.085)
AOI	3878.59 (3.880)	3699.41 (3.665)	4603.14 (4.393)	4975.76 (4.675)	
BLRBA	-16.66 (-2.807)	-11.43 (-1.790)	-15.71 (-2.335)		
SCTECH	0.97 (2.732)	0.135 (3.566)			
FDIGEO	-0.98 (-4.161)				
Adj. R-squared	0.731	0.674	0.626	0.604	0.501

Note: If the factors are robust both in terms of coefficient signs and statistical significance, t-stats. are given in the parentheses.

4. Conclusion

This paper tests the hypothesis of a positive impact of democratization on growth, economic development and welfare. We employ a probit model to estimate the probabilistic indicator for democracy for a sample of over 80 countries. Cross-country regressions are applied to explain the impact on growth of political institutions (democracy), economic institutions, efficiency of financial management, volume of *scholastic* research in the fields of *natural science* and “financial or FDI” geography.

The empirical results show that the factors in the model are statistically significant for explaining changes in GDP per capita. Constructed geographic factor, distance from the largest FDI donors for each continent, also significant at 1% confidence level, is one step ahead of similar geographic factors applied by other authors, e.g. distance from Ecuador (Rodrik (2003)) or from Düsseldorf (Fisher

and Sahay, 2000). It shows how the country could benefit because of the prosperity of the neighbor states. Of course it is a simplified proxy, as generally in open economy the prosperity of all the neighbors could matter. It appears that, in context of institution-building, the countries with stronger democracies (with scores over 0.9) have registered more significant progress in per capita GDP during the period 1997-2002. The contribution of institutional factors (political and economic) in growth is not proportional to the scale of economy and creates strong incentives of simultaneous improvement of quality of life. In fact better institutions must also be interpreted in the same way.

The robust negative impact of additional bank liquid reserves/assets ratio proves that only long-term investments by banks facilitate growth. Thus, for developing countries both democracy and sound financial management policies in the banking sector are important for generating both growth and capabilities enhancement for the citizens. Finally we must note that all these are necessary conditions rather than the straightforward factors of growth. Their proper combination is what economy needs for effective utilization of traditional factors of growth. On the other hand the main source to improve these conditions is the growth itself.

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Annexes

Annex 1. Data description: a) DEM (Binary dependent variable, 0 or 1). A binary indicator was created based on the “Freedom in the World Country Ratings 1972-73 to 2001-2002” by Freedom House. We grade “1” all the countries with the status “Free” and “0” the countries with “Partially Free” or “Non Free” statuses. Thus the created series can be considered as expert evaluations of democracy by “Freedom House”. In this paper we shall use our own assessment for the selected countries using the “Freedom Status” as an initial guide. b) GDP per capita (current international \$). PPP adjusted indicator was taken from World Development Indicators database (WDI).c) Religion (0 or 1). Relevant to the subject of study a dummy indicator of dominant religion was built based on the information available from The World Factbook 2003. The countries where 50%

and higher share of population are Christian were graded “1”, while the rest countries got “0” grade. The idea is that Christianity is the best environment for developing democracy than any other belief. Without going deeper and arguing on the details why Christianity, we shall mention that the indicator is one of the most significant ones to explain democracy and allowed to improve our empirical model significantly (see chapter 3.1). e) Market capitalization of listed companies (% of GDP). Market capitalization (also known as market value) is the share price times the number of shares outstanding. The source for indicator is the WDI database. The described database is an extract from initially wider database which includes only the most significant indicators to explain democracy in selected countries.

A1. Data Description for “Democracy Database”

Country	dem	gdp	rel	cap
Albania	0	4830	1	...
Algeria	0	5760	0	...
Argentina	0	10880	1	100.900
Armenia	0	3120	1	1.400 ^c
Australia	1	28260	1	93.200
Austria	1	29220	1	15.500
Azerbaijan	0	3210	0	0.1 ^c
Bangladesh	0	1700	0	2.500
Belarus	0	5520	1	...
Bolivia	1	2460	1	19.400 ^r
Brazil	0	7770	1	26.900
Bulgaria	1	7130	1	4.700
Cameroon	0	2000	0	...
Chile	1	9820	1	70.700
Colombia	0	6370	1	12.000
Costa Rica	1	8840	1	14.600 ^c
Cote d'Ivoire	0	1520	0	11.400
Croatia	1	10240	1	17.500
Czech Republic	1	15780	1	22.900
Denmark	1	30940	1	44.400
Dominican Rep.	1	6640	1	0.800 ^c

Ecuador	0	3580	1	7.500
Egypt, Arab Rep.	0	3810	0	29.000
Ethiopia	0	780	0	...
Finland	1	26190	1	105.600
France	1	26920	1	67.600
Georgia	0	2260	1	...
Germany	1	27100	1	34.600
Ghana	1	2130	1	12.000
Greece	1	18720	1	51.800
Guatemala	0	4080	1	1.100 ^e
Honduras	0	2600	1	8.700 ^b
HongKong, China	1	26910	0	286.700
Hungary	1	13400	1	20.200
India	1	2670	0	25.700
Indonesia	0	3230	0	17.300
Iran, Islamic Rep.	0	6690	0	8.300 ^e
Israel	1	19530	0	43.800
Italy	1	26430	1	40.300
Jamaica	1	3980	1	74.200
Jordan	0	4220	0	75.600
Kazakhstan	0	5870	0	5.400 ^c
Kenya	0	1020	1	11.500
Kyrgyz Rep.	0	1620	0	0.300 ^a
Latvia	1	9210	1	8.500
Lithuania	1	10320	1	10.400
Malaysia	0	9120	0	130.700
Mexico	1	8970	1	15.900
Moldova	0	1470	1	23.700 ^e
Morocco	0	3810	0	23.800
Mozambique	0	1050	0	...
Nepal	0	1370	0	14.600
Netherlands	1	29100	1	96.100
Nicaragua	0	2470	1	...
Nigeria	0	860	0	13.800
Norway	1	36600	1	35.300

Pakistan	0	1940	0	17.200
Panama	1	6170	1	21.600 ^e
Peru	1	5010	1	23.700
Philippines	1	4170	1	50.000
Poland	1	10560	1	15.000
Romania	1	6560	1	10.000
Russian Fed.	0	8230	1	35.900
Senegal	0	1580	0	...
Singapore	0	24040	0	115.400
Slovak Rep.	1	12840	1	7.900
Slovenia	1	18540	1	21.000
South Africa	1	10070	1	174.000
Spain	1	21460	1	70.700
Sri Lanka	0	3570	0	10.100
Sweden	1	26050	1	73.700
Switzerland	1	30010	1	207.100
Tanzania	0	580	0	4.300 ^e
Thailand	1	7010	0	36.300
Tunisia	0	6760	0	10.100
Turkey	0	6390	0	18.500
Ukraine	0	4870	1	7.400
United Kingdom	1	26150	1	119.200
United States	1	35750	1	106.400
Uruguay	1	7830	1	0.800 ^e
Uzbekistan	0	1670	0	0.400 ^d
Venezuela, RB	0	5380	1	4.200
Vietnam	0	2300	0	...
Yemen, Rep.	0	870	0	...
Zambia	0	840	1	6.000 ^e

Note: dem=democracy ¹ (Dependent), 2002; gdp= GDP per capita², 2002; rel= Religion³ ; cap= Market Capitalisation of Companies Listed², 2002. Instead of missing values a null value (0.001) is taken for market capitalization of listed companies, as in most cases in these countries the indicator is really very close to zero. ^a 1996, ^b 1998, ^c 1999, ^d 2000, ^e 2001. Source:1) World Country Ratings 1972-73 to 2001-2002, Freedom House,2) WDI Database,3) World Factbook 2003

Annex 2. Data description: a)Growth (constant 1995 US\$). 1997-2002 change in GDP per capita indicator, calculated based on the data taken from World Development Indicators database (WDI).

b)DEMF (democracy assessment / political institutions) (in 0-1 range). Fitted values from the probit model of democracy, c)AOI (Efficiency of economic Institutions) (in range 0-1). As a proxy for economic institutions a modification of our index of institutional efficiency was used (Pineiro et al, 2004), for this sample of countries calculated on informal economy assessments by Schneider (2002). d)Bank liquid reserves to bank assets ratio (%) taken from World Development Indicators database (WDI). e)Scientific and technical journal articles. Scientific and technical journal articles refer to the number of scientific and engineering articles published in the following fields: physics, biology, chemistry, mathematics, clinical medicine, biomedical research, engineering and technology, and earth and space sciences. Source: World Development Indicators database (WDI). f)FDI geography (km). Indicator reflects the distance of the Capital of the country from the closest giant FDI donor (Capital of the country). Taking into account simple distance from Europe (Fisher and Sahay, 2000) or some other geographic point is not sensitive enough. Thus we introduce an alternative proxy, baased on the observation that nowadays the leadership tends to rotate rapidly among main financial centers of the world. Six FDI donors were selected (1 per continent) based on the FDI outward stock indicator by 2002 (World Investment Report 2003): 1)USA, 2)UK, 3)Hong Kong, 4)Australia, 5)Brazil, 6)South Africa (see Annex 4 for more details).

A2. Data Description for “Growth Database”

Country	growth	demf	aoi	blrba	scitech	fdigeo
Albania	353.3	0.0460	0.878	10.51	17	1895.8
Algeria	151.5	0.0015	0.873	12.51 ^a	162	1666.3
Argentina	-1604.8	0.9157	0.934	9.5	2361	2336.7
Armenia	252.4	0.2729	0.801	11.42	142	3605.5
Australia	2650.3	0.9865	1	1.2 ^a	12525	0.000
Austria	3461.4	0.9698	1	2.29 ^a	3580	1237.6
Azerbaijan	220.1	0.0052	0.729	10.22	66	3963.8

Bangladesh	59.9	0.0067	0.864	8.57	148	2426.2
Belarus	552.4	0.0587	0.791	7.73	564	1871.5
Bolivia	4.6	0.3888	0.701	5.79	33	2161.5
Brazil	81.1	0.7907	0.838	23.58	5144	0.000
Bulgaria	393.7	0.6473	0.856	8.87	801	2018.2
Cameroon	78.3	0.0000	0.882	28.04	61	3748.6
Chile	296.7	0.8875	0.978	2.96	879	3014.7
Colombia	-162.9	0.6801	0.842	6.7	207	3655.0
Costa Rica	448.8	0.7881	0.928	12.32	69	3294.0
Cote d'Ivoire	-76.6	0.0117	0.837	6.21	40	4904.6
Croatia	846.5	0.8333	0.878	14.26	545	1340.4
Czech Rep.	469.8	0.9203	0.984	3.78	2005	1035.9
Denmark	3653.8	0.9839	0.991	1.24	4131	958.75
Dominican R.	387.7	0.4822	0.887	18.82	6	2364.3
Ecuador	-23.5	0.4439	0.872	3.34 ^d	20	3773.7
Egypt,A.R.	149.6	0.1042	0.867	17.06	1198	3515.3
Ethiopia	8.8	0.0000	0.835	13.54	95	4028.7
Finland	4382.7	0.9850	0.99	4.06 ^b	4025	1832.6
France	3299.1	0.9823	1	0.37 ^a	27374	346.2
Georgia	167.7	0.0091	0.7	14.39	112	3541.0
Germany	2223.3	0.9758	1	1.3 ^b	37308	934.3
Ghana	55.3	0.3056	0.846	11.16	73	4631.5
Greece	2281.1	0.9578	0.911	17.2 ^c	2241	2397.5
Guatemala	54.8	0.3394	0.773	22.04	14	3006.8
Honduras	-9.2	0.3461	0.783	23.05	11	2938.9
HongKong,Cn	1516.2	0.8287	1	0.23	1817	0.000
Hungary	1262.3	0.8918	0.936	5.19	1958	1455.6
India	80.7	0.0549	0.952	5.58	9217	3742.4
Indonesia	-89.3	0.0655	0.981	11.11	142	3276.2
Iran, I. Rep.	252.8	0.1562	0.985	26.77	624	4404.5
Israel	-67.4	0.6111	0.961	8.85	5025	3611.8
Italy	1722.1	0.9762	0.922	1.22 ^b	17149	1435.8
Jamaica	-11.5	0.6622	0.859	22.28	44	2329.7
Jordan	70.5	0.1654	0.981	27.14	204	3634.5
Kazakhstan	574.7	0.1124	0.818	4.42	104	4135.7

Kenya	-19.0	0.1204	0.872	8.15	252	2870.7
Kyrgyz Rep.	45.1	0.0016	0.838	11.25	10	4287.2
Latvia	839.4	0.7662	0.837	5.95	153	1680.2
Lithuania	660.7	0.8075	0.899	10.91	214	1729.0
Malaysia	-29.7	0.4307	0.893	3.41	416	2528.7
Mexico	294.0	0.7967	0.9	7.07	2291	3039.2
Moldova	29.8	0.2418	0.807	16.55	92	2148.3
Morocco	129.5	0.0971	0.859	8.1	386	2015.6
Mozambique	57.8	0.0000	0.835	14.24	14	439.1
Nepal	14.5	0.0105	0.846	21.1	39	2950.3
Netherlands	2850.2	0.9876	1	0.23 ^a	10441	361.0
Nicaragua	64.9	0.0112	0.807	30.91	8	3120.6
Nigeria	-1.6	0.0031	0.742	17.89	397	4464.5
Norway	2842.1	0.9876	0.984	4.7	2598	1156.5
Pakistan	18.2	0.0247	0.856	9.02	277	4195.3
Panama	292.7	0.7118	0.714	..	37	3339.9
Peru	5.2	0.6525	0.732	25.44	56	3167.7
Philippines	55.2	0.6480	0.817	8.46	164	1129.9
Poland	834.8	0.8324	0.918	5.63	4523	1450.6
Romania	116.0	0.6762	0.871	61.73	785	2097.4
Russian F.	648.4	0.8208	0.802	13.98	15654	2509.5
Senegal	55.2	0.0000	0.818	15.88	66	4369.8
Singapore	1572.6	0.7466	1	2.51	1653	2597.6
Slovak Rep.	652.6	0.8432	0.985	5.2	871	1290.7
Slovenia	2098.2	0.9374	0.922	4.01	599	1229.6
South Africa	223.0	0.9220	0.912	2.69	2018	0.000
Spain	2387.5	0.9719	0.955	..	12289	1261.9
Sri Lanka	85.9	0.0630	0.81	8.13	84	4042.7
Sweden	4534.3	0.9817	0.984	0.38 ^c	8326	1434.6
Switzerland	2316.8	0.9924	1	0.91	6993	750.2
Tanzania	31.4	0.0004	0.74	12.95	92	2404.0
Thailand	46.7	0.2517	0.767	3.38	470	1724.8
Tunisia	369.2	0.1683	0.846	3.38	237	1825.9
Turkey	-96.7	0.1872	0.887	9.01	2761	2834.3
Ukraine	198.3	0.5519	0.77	8.96	2194	2131.4

UK	2368.6	0.9858	1	0.29	39711	0.000
USA	2653.6	0.9928	1	1.29	163526	0.000
Uruguay	-1108.5	0.5407	0.775	12.4	144	2281.7
Uzbekistan	89.4	0.0021	0.873	..	236	4665.7
Venezuela	-629.1	0.5415	0.877	23.18	448	3593.8
Vietnam	87.9	0.0001	1	6.31	98	860.8
Yemen	27.9	0.0000	0.919	16.52	10	4885.4
Zambia	8.6	0.0697	0.787	22.78	26	1145.4

Notes: growth= Change in GDP per capita, 1997-2002 (constant 1995 US\$); demf= Democracy (Fitted), 2002; aoi= Adjusted operational indicator of institutional development, 1999/2000; blbra= Liquid reserves ratio in bank assets, 2002; sctech= Scientific and technical journal articles, 1999; fdigeo= Distance from major FDI donors, 2002. Source: WDI Database and authors' own calculations based on WDI, WF 2003, World Country Ratings 1972-73 to 2001-2002 and Shneider (2002). Notes: ^a 1997 ^b 1998, ^c 2000, ^d 2001.

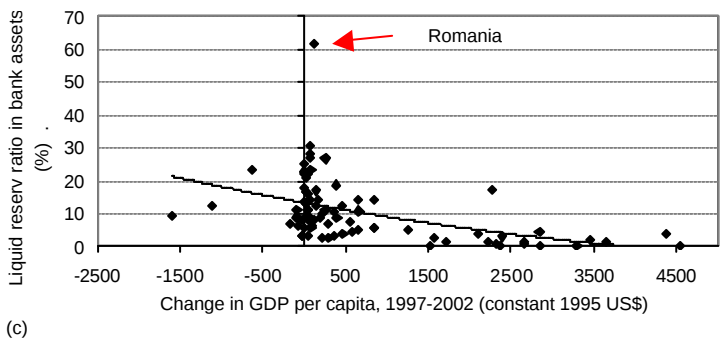
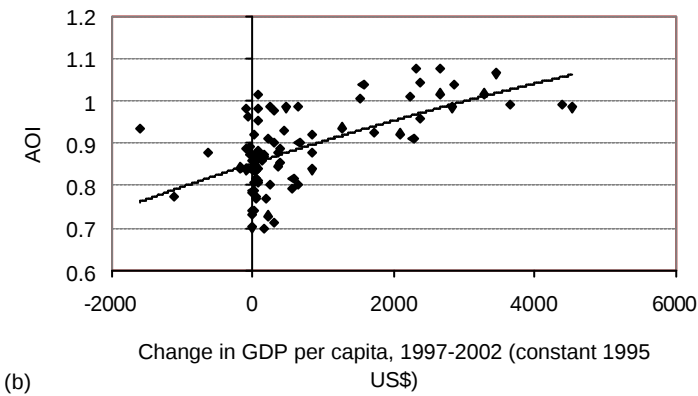
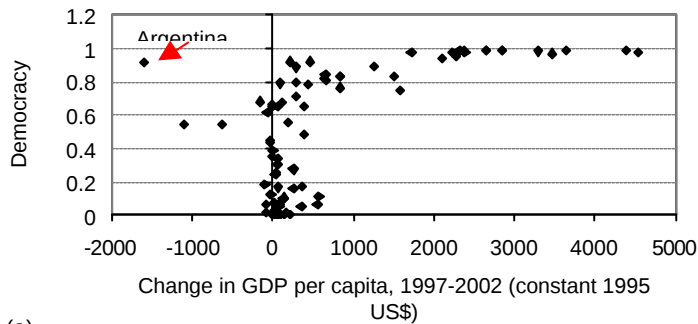
A3. Shadow Economy Indicator, 1999/2000: IE and AOI

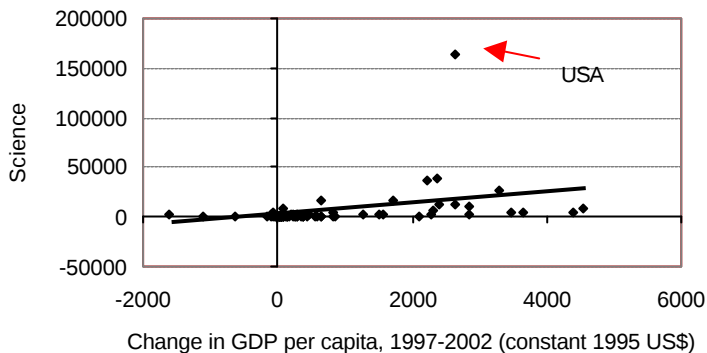
Country	IE % of official GDP	IE % of total GDP	AOI	Country	IE% of official GDP	IE % of total GDP	AOI
Albania	33.4	25.0	0.879	Kyrgyz Rep.	39.8	28.5	0.838
Algeria	34.1	25.4	0.874	Latvia	39.9	28.5	0.838
Argentina	25.4	20.3	0.935	Lithuania	30.3	23.3	0.899
Armenia	46.3	31.6	0.801	Malaysia	31.1	23.7	0.894
Australia	15.3	13.3	1.016	Mexico	30.1	23.1	0.901
Austria	10.2	9.3	1.063	Moldova	45.1	31.1	0.808
Azerbaijan	60.6	37.7	0.730	Morocco	36.4	26.7	0.859
Bangladesh	35.6	26.3	0.864	Mozambique	40.3	28.7	0.835
Belarus	48.1	32.5	0.791	Nepal	38.4	27.7	0.847
Bolivia	67.1	40.2	0.701	Netherlands	13	11.5	1.037
Brazil	39.8	28.5	0.838	Nicaragua	45.2	31.1	0.807
Bulgaria	36.9	27.0	0.856	Nigeria	57.9	36.7	0.742
Cameroon	32.8	24.7	0.882	Norway	19.1	16.0	0.984
Chile	19.8	16.5	0.978	Pakistan	36.8	26.9	0.857
Colombia	39.1	28.1	0.843	Panama	64.1	39.1	0.714
Costa Rica	26.2	20.8	0.929	Peru	59.9	37.5	0.733

Cote d'Ivoire	39.9	28.5	0.838	Philippines	43.4	30.3	0.817
Croatia	33.4	25.0	0.879	Poland	27.6	21.6	0.918
Czech Rep.	19.1	16.0	0.984	Romania	34.4	25.6	0.872
Denmark	18.2	15.4	0.991	Russian Fed.	46.1	31.6	0.802
Dominican R.	32.1	24.3	0.887	Senegal	43.2	30.2	0.818
Ecuador	34.3	25.5	0.873	Singapore	13.1	11.6	1.036
Egypt, A.R.	35.1	26.0	0.867	Slovak Rep.	18.9	15.9	0.986
Ethiopia	40.3	28.7	0.835	Slovenia	27.1	21.3	0.922
Finland	18.3	15.5	0.991	South Africa	28.4	22.1	0.913
France	15.3	13.3	1.016	Spain	22.6	18.4	0.956
Georgia	67.3	40.2	0.701	Sri Lanka	44.6	30.8	0.810
Germany	16.3	14.0	1.008	Sweden	19.1	16.0	0.984
Ghana	38.4	27.7	0.847	Switzerland	8.8	8.1	1.077
Greece	28.6	22.2	0.911	Tanzania	58.3	36.8	0.740
Guatemala	51.5	34.0	0.774	Thailand	52.6	34.5	0.768
Honduras	49.6	33.2	0.783	Tunisia	38.4	27.7	0.847
Hong Kong, Cn	16.6	14.2	1.005	Turkey	32.1	24.3	0.887
Hungary	25.1	20.1	0.937	Ukraine	52.2	34.3	0.770
India	23.1	18.8	0.952	UK	12.6	11.2	1.041
Indonesia	19.4	16.2	0.982	United States	8.8	8.1	1.077
Iran, I. Rep.	18.9	15.9	0.986	Uruguay	51.1	33.8	0.776
Israel	21.9	18.0	0.961	Uzbekistan	34.1	25.4	0.874
Italy	27	21.3	0.923	Venezuela, RB	33.6	25.1	0.877
Jamaica	36.4	26.7	0.859	Vietnam	15.6	13.5	1.014
Jordan	19.4	16.2	0.982	Yemen, Rep.	27.4	21.5	0.920
Kazakhstan	43.2	30.2	0.818	Zambia	48.9	32.8	0.787
Kenya	34.3	25.5	0.873				

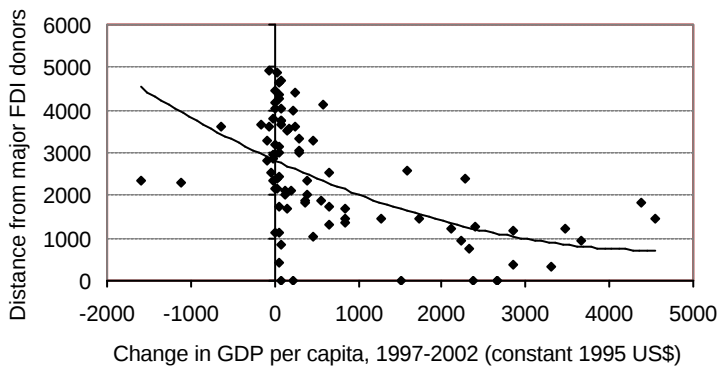
Note: IE= Informal Economy; AOI= Adjusted operational indicator of Institutional development Source: Shneider (2002) and authors' own calculations

4. Impact of Separate Explanatory Factors on Growth





(d)



(e)