

# Political Institutions and Human Development

## *Does Democracy Fulfil its “Constructive” and “Instrumental” Role?*

Sebastian Vollmer<sup>1</sup> and Maria Ziegler<sup>2</sup>

FIRST DRAFT. DO NOT QUOTE OR CIRCULATE!

### Abstract

Institutions are a major field of interest in the study of development processes. We contribute to this discussion concentrating our research on political institutions and their effect on the non-income dimensions of human development. First, we elaborate a theoretical argument why and under what conditions democracies compared to autocratic political systems might perform better with regards to the provision of public goods. Due to higher redistributive concerns matched to the needs of the population democracies should show a higher level of human development – if certain requisites permit their functioning. In the following we analyze whether our theoretical expectations are supported by empirical facts. First, we compare averages of life expectancy and literacy rates and test for significant differences between autocracies and democracies. Second, we estimate the densities of life expectancy and literacy for the respective political systems. After the descriptive part we run cross-country regressions checking whether being democratic has a positive impact on life expectancy controlling for the level of economic development. Finally, we perform a static panel analysis over the period of 1970 to 2003. The last model confirms not only the previous results that living in a democratic system positively affects human development even controlling for GDP. By analyzing interaction effects it also indicates that democracy's performance itself is affected by the circumstances: i.e. the level of education, of social fragmentation, of income inequality and the distribution of the population within a country.

*Keywords:* human development, democracy, political institutions, life expectancy, literacy, panel analysis.

*JEL classification:* I10, I20, H11

**Acknowledgements:** The authors would like to thank Stephan Klasen, Inmaculada Martínez-Zarzoso, Stefan Sperlich and Walter Zucchini for their helpful comments. Sebastian Vollmer acknowledges financial support from the Georg Lichtenberg program “Applied Statistics & Empirical Methods”. Maria Ziegler acknowledges financial support from the German National Merit Foundation.

---

<sup>1</sup> Ibero-America Institute for Economic Research and Center for Statistics, University of Göttingen.

<sup>2</sup> Corresponding author: Department of Economics, University of Göttingen, Platz der Göttinger Sieben 3, 37073 Göttingen. Phone: +49551397242, Fax: +49551397302, Email: mziegle@uni-goettingen.de.

# Political Institutions and Human Development

## *Does Democracy Fulfil its “Constructive” and “Instrumental” Role?*

### 1 Introduction

Institutions attract a lot of attention in the mostly, interdisciplinary study of the differences in the wealth of nations. Questions range from institutional effects on the one-dimensional perspective of economic development to the multidimensional one of human development. However, there still seems to be a bias towards the economic side of the coin (Knack and Keefer 1995, Hall and Jones 1999, Acemoglu, Johnson and Robinson 2001, Acemoglu, Johnson and Robinson 2002, La Porta et al. 2004).<sup>3</sup> This reflects the probably justified preference for the economy as the major driver of the development process and the focus on the property rights angle of institutions. But also with regards to institutions, the existing literature gives the impression that there is not enough precision about the term “institution” itself. On the one hand, there is a big use of performance indicators measuring how certain institutional systems function, e.g. when it comes to political stability or governance issues (Gradstein/Milanovic 2004: 516).<sup>4</sup> These issues are then often mixed up with the concrete output of an institutional setting, the policies. But, the performance and the policies together are the outputs of underlying structures and procedures as well as contextual factors. On the other hand, there are studies that focus on the effects of even those underlying structures and procedures which can be subsumed under the heading political system. This is what we understand under political institutions. When it then comes to political institutions research in the field of empirical development studies concentrates on the effect of democracies on growth, income inequality, the provision of public goods and the size of the public sector (Boix 2001, Gradstein/Milanovic 2004, Persson 2002, Persson/Tabellini 2006, Rodrik/Wacziarg 2005, Ross 2006, Stasavage 2005, Persson/Roland/Tabellini 2000). Only a few empirical studies attempt to link features of a political system to the non-income dimensions of human development measured as either health or education (Besley/Kudamatsu 2006, Franco/Álvarez-Dardet/Ruiz, Tsai 2006). With our paper we contribute to the latter

---

<sup>3</sup> A famous controversy in this context is the Geography vs. Institutions debate in the explanation and prediction of economic development.

<sup>4</sup> See for example the Worldwide Governance Indicators (Kaufmann/Kravy/Mastruzzi 2007).

strand of research investigating the relationship between political institutions and human development. In detail, we ask whether living in a democratic or autocratic political system makes a difference for the level of education and life expectancy as two dimensions of human development. Linked to this is the question whether democracies besides their intrinsic importance for the developmental process fulfil their *constructive* and *instrumental* role giving people the opportunity to express and aggregate their preferences and therefore steering public action in a efficient and effective manner (Sen 1999: 157).

In section 2, we develop a theoretical argument why and under what conditions democratic political systems compared to autocratic ones foster human development. It is important to note that our way of reasoning does not rely on the impact of democracy on economic development that thereupon affects human development. Our argumentation is based on the redistributive side in contrast to the property rights side of democracy. Moreover we also focus our in this way innovative analysis on factors which hinder or are conducive to a good performance of a democratic system in terms of public goods provision. In the subsequent sections we examine if there is empirical evidence for this relationship. First, we estimate the distribution of life expectancy and literacy for selected years and formally test for differences between democracies and autocracies. Second, we run parsimonious cross-country regressions controlling for the level of economic development. Third, we perform a panel analysis of a more sophisticated model including interaction effects between democracy and the main determinants of its functioning. Finally, we conclude.

## **2 The Political Economy of Democracy and Human Development**

### **2.1 How can political institutions influence human development?**

According to the rational choice strand of the new institutionalism in political science or the field of institutional economics, political institutions are the rules which govern the political game (e.g. Peters 1999, Hall/Taylor 1996). They not only determine via electoral rules which actors and preferences can access the political arena and get heard. They also provide the means to aggregate those preferences by establishing procedures for decision-making and distributing political power, i.e. the right to decide (Persson 2002: 886). The common output of institutions and preferences are policies. Although actors and other environmental constellations may change over time, policies in general will reflect the political institutions which produced them (Persson/Tabellini 2006: 321, Peters 1999). We will distinguish between two types of policies that may be favourable to human development: policies for the

protection of property rights and policies for redistribution. *Policies for the protection of property rights* encourage economic investment and contribute to economic development and economic growth (e.g. Acemoglu/Johnson/Robinson 2002). Growth is assumed, under certain conditions, to increase the welfare of the population by reducing poverty (Klasen 2004). *Policies for redistribution* have an equalizing impact on the distribution of wealth in a society. Especially through the provision of public goods and services, market failures shall be compensated and normative, social optima be arrived. The matching of society's and individual needs with an adequate redistribution scheme and an appropriate public provision of goods and services is the way by which political institutions may directly influence human development. Of course, one might argue, that there may be a trade-off between growth-enhancing property rights protection and equalizing, market-correcting redistribution. Nevertheless, the focus of this paper will be on policies of redistributing character which aim at better health and education for the population as a whole and especially for those groups – the poor – having otherwise disadvantaged access to these goods as they are not sufficiently provided by markets. If we assume that via these channels policies affect the level of human development, if we especially focus on redistributive policies and moreover, if policies mirror the political system in which society is steered according to certain political decisions, then the following questions emerge: *What political systems are more appropriate to produce policies that favour market-correcting redistributive policies as well as match the needs of the society and therefore promote human development?*

In general, democratic political systems are assumed to be the most appropriate systems to ensure first protection of property rights and second a redistribution that fulfils societal demands. Which of the two dimensions is more relevant depends on the certain formal and informal face of the democracy at hand. Since our focus is on redistribution, the first question is why democratic institutions may lead to more equal societies.<sup>5</sup> One of the most famous theoretical arguments is the model of Meltzer and Richard (1981). Without going into formal details, the median-voter hypothesis states that in democratic governments the median voter is the decisive voter. The more his income falls short of the average income of all voters, the higher the tax rate, i.e. redistribution he will decide. Therefore government spending should be larger and social services more extensive in democratic regimes – if a significant part of the voting public lives with only a few resources and a small part enjoys richness (Keefer/Khemani 2005: 2). In contrast, in authoritarian systems the distribution of wealth does not play a decisive role. All or a substantial part of the electorate is excluded from the

---

<sup>5</sup> See for example Gradstein and Milanovic (2004) for an empirical study finding evidence for this linkage.

decision-making process, and this precisely to avoid the redistributive consequences of democracy. As a result the size of the public sector remains small (Boix 2001: 2).

The fact that there is more redistribution in democratic regimes does not mean that the redistribution is appropriate to fulfil societal demands. Thus, a second question emerges: *Why are democratic governments compared to autocratic ones more responsive to the needs of the citizenry?* Talking with Sen (1999: 157), democracy – behind its “intrinsic” value – is of eminent importance for the process of development because of the “constructive” and “instrumental” role it plays in the aggregation of values, needs and priorities and their translation into well-designed policies benefiting the society. Political and civil liberties, for example those relating to free speech, public debate and criticism, as constituent parts of a democratic regime permit the formation of preferences and values and the understanding of the needs of the society. Democratic procedures then facilitate the transmission of these needs into the political arena where decision power is distributed amongst legitimate representatives of the society as a whole. The latter means that otherwise disadvantaged groups, whether they are minorities or only a broad mass of poor people in a developing country, get the opportunity to be heard and represented. But democracy not only helps to construct policies that are matched to the needs of the citizens. It is also instrumental in that control mechanisms like free and repeated, competitive elections and the compliance with the rule of law principle reduce discretionary and corrupt behaviour of even those representatives who hold political power. Democracy provides the incentives to create responsibility and accountability that induce political-administrative leaders to listen and act on behalf of the society they represent (Sen 1999: 147ff.). On the contrary, in an autocratic regime the usually small, ruling elite dictates the will of the people from above. This results from the repression of the political opposition and the prohibition of free expression and opinion impeding the conceptualization of the *volonté générale*. The state apparatus is (mis-)used in favour of the welfare of the ruling elite. Political measures increasing the welfare of the bottom quintile of society are only implemented if they simultaneously assure political power to the autocratic leaders and increase their welfare. Responsiveness, representation, accountability and moreover selection of competent political and administrative staff is inexistent in autocratic regimes (Besley/Kudamatsu 2006:313f.).

## **2.2 What determines public service provision especially in democracies?**

The formal existence of democracy does not guarantee that it functions in the idealized manner described above and therefore displays all the wished benefits for human

development. Problems arise if for certain reasons – located either at the agenda setting, the policy formulation, the implementation phase – the allocation of public expenditures is inefficient. Because poor people are highly dependent on public action as they cannot invest their own (nonexistent) private resources, they suffer the most from ineffective government in terms of redistribution and service provision (Keefer/Khemani 2005: 1). *What are the reasons for an ineffective allocation of public resources especially in democracies?*

A first and important factor is *income inequality* characterized by a distribution of income where the median income is a lot smaller than the average income. In general this means that the majority of people live at the lower bound of the distribution whereas only a few benefit from being rich. The reasoning behind the effects of inequality on human development can be twofold. First, such income inequality can induce inequalities in human development because in more unequal societies more people cannot afford to live a healthy life and to spend on education. This effect should even be higher in autocracies where service provision according to our argumentation does not function well. Democratic political system should compensate the negative effect of income inequality because of the redistributing character of the system. Moreover, if one interprets the median voter hypothesis well it follows that the higher income inequality in the sense described above the larger is the distance of the median voter's income to the average income. As a consequence more redistribution will be demanded. That means the higher income inequality is the higher is the redistributive effect of democracy. Consequently public service provision will be at a higher level and perhaps better quality which results in better outcomes in terms of human development.

Second, *imperfect information* of the citizens may lead to insufficient participation in terms of 'qualified' needs' expression. As a result the quality of responsive government manifesting itself in good designed policies reflecting society's demands and needs decreases. Moreover, accountability suffers from information constraints because voters cannot control politicians' behaviour. *Education*<sup>6</sup> is one of the important factors<sup>7</sup> having the potential to alleviate the

---

<sup>6</sup> We leave out cultural factors here because they are hard to measure. Inglehart and Welzel (2005) emphasize people's values as equally important as socioeconomic resources and civil and political rights. According to them, culture provides the link between economic development and democratic freedom. Without certain values like „human autonomy“ or „self-expression values“ fostering a priority on self-made choices human development might not be possible (Inglehart/Welzel 2005: 286f). Moreover such values are dependent upon a certain level of socioeconomic development. We assume that, although this is to be questioned, that the more education people have the more enlightened they are and the more freedom they demand to live the life they value.

<sup>7</sup> Other factors might be a well developed media sector and institutionalized parties that can be held accountable at all state levels and which overtake political education tasks (see Keefer/Khemani 2005: 5-9). But it can easily be seen that without education a media sector will not develop because of missing demand (for the role of the

information problem. Education not only in itself is a precondition for a higher living standard because it positively affects earnings and health etc. It is also found to be a requirement for democracies to develop and to persist. Moreover one can suppose that education leading to conscientious participation raises the quality of democracy. The latter may finally find its expression in a more efficient and effective provision of public goods (Lipset 1959, Glaeser/Ponzetto/Shleifer 2007, Keefer/Khemani 2005: 5-9).

*Social fragmentation* can be another factor disturbing the functioning of a democratic system measured by the public goods it provides. Research has found that social fragmentation or more concretely ethnic diversity leads to collective action problems, increased patronage as well as clientelism and in the end to an under-provision of public goods (Alesina/Baqir/Easterly 1999, Alesina/Ferrara 2005, Miguel/Gugerty 2005). For democratic systems social fragmentation may pose problems because mechanisms to hold the government accountable and responsible are weakened. In socially heterogeneous settings, governments are rewarded on basis of identity and not governmental performance (Keefer/Khemani 2005: 10). Moreover social fragmentation leads to political fragmentation that from a certain threshold value can result in increasing co-operation problems (Collier 2001: 137).

Since the population is the recipient and beneficiary of the services provided by government, one should also care about demographic factors. There is not a lot of literature concerning the effect of population, population growth and *population density* on the provision of services as well as human development. The existing studies focus mainly on the effect of demographic variables on the costs of service provision. Ladd (1992), for example, addresses the issue and finds that higher population density first decreases the cost of providing services because of economies of scale but only at a low level of population. From a certain, fast reached threshold the cost for providing services increase. We suppose a non-linear relationship, too. We assume that in very sparsely populated areas service provision is very costly and economies of scale cannot be used. The consequence is that the *ceteris paribus* better service provision in democracies because of the incentive to serve the people suffers as well as the wished outcome, i.e. improvements in human development. With increasing population density the costs of the public goods provision decrease but at a diminishing rate. For human development this means that at low levels of service provision and therefore low levels of

---

media see Besley and Burgess (2002). The same is supposed to hold for the institutionalization of parties and the accountability issues.

human development increases in population density yield larger effects than at high levels of service provision and human development.

### **2.3 Working Hypotheses**

Summarizing the theoretical arguments above, democratic regimes in comparison to autocratic ones are expected to lead to higher public expenditures. Additionally, public spending priorities in democracies reflect the needs of the society more than in autocratic ones, i.e. execution of public budgets will be in those sectors where public demand is most obvious. Since democratic control mechanisms shall assure the implementation of policies, i.e. compliance with laws, directives and orders, public action will translate into the wished human development outcomes, for example a better health status of the population or a lower illiteracy rate. But the performance of democracies will vary according to the specific circumstances. Education, social fragmentation as well as the level of income inequality and population density affect the level of the provision of public goods either independently of the political system or in interaction with it. Therefore the following general hypotheses can be deducted:

- a) Democratic political systems will yield better results in human development than autocracies and this even controlling for economic development.
- b) Education has a positive effect on the performance of democracy. Therefore the positive effect of democracy on human development will be higher the higher the level of education in a society.
- c) Social fragmentation lowers the positive impact of democracies on human development. The more socially diverse a country is the more difficult is it to provide services even in democracies.
- d) Being democratic compensates the negative effect of income inequality on human development. The higher the level of inequality and the more right skewed the distribution of income is, the bigger is the positive effect of democracy on human development.
- e) Population density has nonlinear but positive effect on human development. The positive effect of democracies on human development will be intensified the higher the population density is but at a diminishing rate.



### 3 Empirical Links between Democracy and Human Development

#### 3.1 Empirical Implementation

To quantify human development we use data on life expectancy and literacy obtained from UNDP, life expectancy is measured in years and literacy is an index value ranging from 0 to 100. The third dimension of human development, namely income, is not of interest for this paper, since there is much work on the relation between democracy and economic development readily available. Our data on political institutions, especially democracy comes from the Polity IV Project of the Center for International Development and Conflict Management at the University of Maryland. This dataset includes a Polity2 score ranging from 10 (highly democratic) to -10 (highly autocratic), while a zero score indicates a state between autocracy and democracy which we consider as not democratic.<sup>8</sup> From this Polity2 score we calculate two proxies for democracy: Following Besley and Kudamatsu (2006) we calculate the fraction of democratic years over the past five years (dem\_exp5), and alternatively the average Polity score over the last five years (mpol). The consideration of a period of five years reduces the uncertainty of how long the delay is until a change in democracy affects human development.

Other variables that we expect to have an impact on human development or that describe possible conditions under which democracy affects human development are the following: GDP per capita PPP in constant prices<sup>9</sup> from the Penn World Tables 6.2; Gini coefficients<sup>10</sup> from the WIDER dataset with improvements in terms of comparability across countries and across time by Grün and Klasen (2007); a measure of ethnic fractionalization<sup>11</sup> as proxy for

---

<sup>8</sup> A system can be classified as democratic if three interdependent elements exists: 1) competitiveness of participation, institutions and procedures allow citizens to express their political preferences; 2) openness and competitiveness of executive recruitment and constraints on the chief executive, so that the executive power is institutionally constraint.; 3) civil liberties. The last element as well as rule of law, system of checks and balances, freedom of the press etc. are not coded in the index as the latter are performance indicators of democratic regimes. Autocracies are defined vice versa. For more details see Marshall and Jaggers (2005: 13f.).

<sup>9</sup> US\$, base year: 2000.

<sup>10</sup> Gini coefficients are not available for every year. We therefore use a simple moving average between available observations to complete the dataset.

<sup>11</sup> The ethnic fractionalization measure renders the probability that two individuals selected at random from a population are members of different groups. It is calculated with data on language and race using the following formula  $FRACT_j = 1 - \sum_{i=1}^N s_{ij}^2$ , where  $s_{ij}$  is the proportion of group  $i$  ( $i = 1 \dots N$ ) in country  $j$  going from complete homogeneity (an index of 0) to complete heterogeneity (in index of 1). For more details see Alesina et al. (2003: 159f.).

social fragmentation from Alesina et al. (2003) which is constant over time<sup>12</sup>; data on population density from the World Development Indicators 2007. Taking the availability of all variables as criteria, we decided to analyse the period from 1970 to 2003, though some of the variables are available for longer time spans.

We suspect that democracy causes different emphases in public expenditures compared to autocracies. Therefore increases in public expenditures on health and education can be decomposed into two components: An increase due to higher total expenditures and an increase due to different priorities in government spending. While the first source is mainly driven by economic growth, we expect democracy to be a main driver of the second source. Unfortunately we were unable to gather good data for relative government spending for the given period. Only for more recent years the Government Finance Statistics of the IMF include information on these issues. If there were more of such data available, it would be very useful to examine the channels that democracy takes to affect human development more closely in the future.

Additionally let us stress that increases of private expenditures on health or education can be decomposed into increases of income and increases due to different priorities as well. There are different possible explanations for changes in priorities: It certainly plays a crucial role how much income remains after the satisfaction of basic requirements such as housing and nourishment. Moreover a high level of education might foster expenditures on health and education, and additionally the returns of health and education spending partly determine the level of the spending. However, as well as the public expenditures path of causation this channel of private spending cannot be investigated here due to data restrictions. Therefore, we must rely on the use of proxies like income itself or literacy and on our theoretical argumentation that underpins our empirical analysis.

### **3.2 Descriptive Results**

On average we observe that democracies have a higher life expectancy and a higher literacy rate than autocracies. In general this result remains true when we partition the dataset by income groups and compare only those countries which belong to the same income group.<sup>13</sup>

---

<sup>12</sup> According to Alesina et al. (2003: 160f), the assumption of stable group shares is not a problem, as examples of changes in ethnic fractionalization are rare. At least over the time-horizon of 20 to 30 years time persistence can be assumed.

<sup>13</sup> The income groups are defined according to Holzmann, Vollmer and Weisbrod (2007).

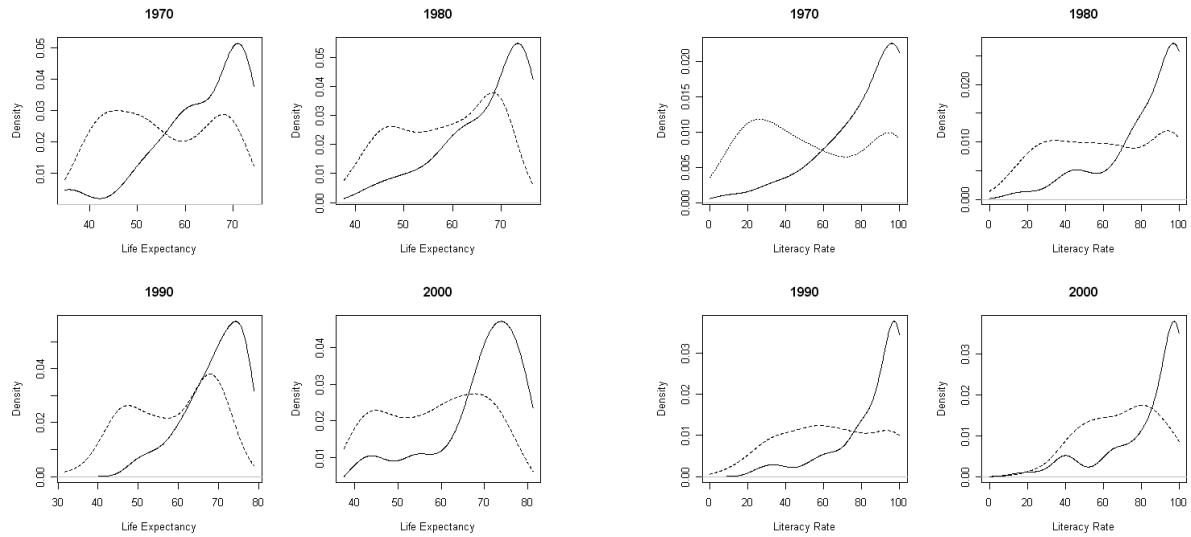
**Table 1      Comparison of Average Life Expectancy and Literacy for Democracies and Autocracies by Income Groups in 1970, 1980, 1990 and 2000**

	Life Expectancy				Literacy Rate			
	1970	1980	1990	2000	1970	1980	1990	2000
<b>High Income Autocracies</b>	61.37 n=12	66.07 n=11	69.43 n=11	71.23 n=8	69.01 n=11	73.18 n=10	83.37 n=10	81.01 n=7
<b>High Income Democracies</b>	69.84 n=25	73.37 n=31	75.12 n=36	76.73 n=40	94.09 n=25	96.27 n=31	96.58 n=35	97.55 n=40
<b>p-value</b>	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<b>Middle Income Autocracies</b>	54.67 n=12	60.04 n=27	62.47 n=19	62.20 n=21	69.01 n=11	64.71 n=26	66.82 n=16	76.22 n=17
<b>Middle Income Democracies</b>	59.18 n=25	62.75 n=22	66.34 n=41	68.18 n=51	94.09 n=25	75.57 n=18	80.79 n=37	87.89 n=44
<b>p-value</b>	<0.01	0.08	0.02	<0.01	<0.01	0.04	<0.01	<0.01
<b>Low Income Autocracies</b>	45.48 n=35	48.66 n=39	50.67 n=39	51.75 n=28	31.21 n=32	38.26 n=34	46.56 n=33	59.83 n=21
<b>Low Income Democracies</b>	47.59 n=6	52.27 n=10	54.70 n=7	51.74 n=23	39.77 n=5	49.14 n=10	51.23 n=7	57.01 n=22
<b>p-value</b>	0.27	0.10	0.12	0.55	0.19	0.08	0.29	0.67

In addition to the calculation of the average values we test whether the observed differences are statistically significant using a t-test, unpaired with unequal variances. All results are summarized in Table 1, showing that the differences between democracies and autocracies are most apparent among high and middle income countries, while they are not significant among low income countries.

Moreover, it is worthwhile to take a look at the densities of life expectancy and literacy for democracies and autocracies separately (Figure 1). We use kernel density estimators for this purpose and apply boundary corrections at 0 and 100 in case of the literacy rate and at the minimum and maximum values in case of the life expectancy. While for democracies both for life expectancy and literacy the mass of the distribution tends to the right hand side, there seems to be a group of autocracies with a low level and another one with a high level of life expectancy and literacy each.

**Figure 1      Density Estimates of Life Expectancy and Literacy for Democracies and Autocracies in 1970, 1980, 1990 and 2000**



Solid line: Kernel density estimator for countries being democratic in the given year. Dashed line: Kernel density estimator for countries being autocratic in the given year. 1970: 44 democracies and 103 autocracies; 1980: 46 democracies and 112 autocracies; 1990: 70 democracies and 89 autocracies; 2000: 99 democracies and 60 autocracies.

### 3.3 Cross-Sectional Analysis

In a very simple model we try to explain life expectancy with our two different measures of democracy (respectively) controlling for GDP and a set of dummies for global regions leaving out Sub-Saharan Africa. GDP is lagged for one period to avoid the apparent problem of endogeneity. Of course it would be desirable to add more explanatory variables to alleviate omitted variable bias. But since the number of observations is rather small this would imply to

**Table 2a WLS Regressions (proportional to squared residuals) for a Cross-Section of Countries. Measure of Democracy: dem\_exp5.**

	Life expectancy			
	1970	1980	1990	2000
_const	12.91* (6.23)	16.13** (4.93)	5.86 (4.50)	9.59* (3.75)
log(gdp) <sub>-1</sub>	4.32** (0.88)	4.39** (0.66)	6.12** (0.61)	5.22** (0.50)
dem_exp5	2.79 (1.50)	4.44** (1.25)	3.12* (1.29)	1.32 (1.26)
East Asia & Pacific	13.34** (2.11)	9.13** (1.64)	6.91** (1.47)	13.61** (1.58)
Europe & Central Asia	15.65** (2.33)	11.33** (1.77)	7.12** (1.65)	14.40** (1.45)
Latin America & Caribbean	10.18** (1.91)	9.37** (1.55)	7.07** (1.41)	14.57** (1.46)
Middle East & North Africa	7.76** (2.36)	6.73** (2.06)	6.67** (1.75)	13.40** (1.94)
North America	14.30** (3.82)	10.30** (2.99)	5.31* (2.67)	13.50** (3.00)
South Asia	7.15* (3.08)	5.15* (2.40)	5.56** (2.00)	12.32** (2.13)
Number of observations	80	114	122	143
Adj. R <sup>2</sup>	0.82	0.81	0.84	0.82

Standard errors in parentheses. \*\* significant at the 1 percent level, \* significant at the 5 percent level.

**Table 2b WLS Regressions (proportional to squared residuals) for a Cross-Section of Countries. Measure of Democracy: mpol.**

	Life Expectancy			
	1970	1980	1990	2000
_const	16.85* (6.41)	17.61** (5.10)	6.42 (4.81)	11.11** (3.76)
log(gdp) <sub>-1</sub>	4.10** (0.87)	4.47** (0.66)	6.26** (0.62)	5.07** (0.50)
mpol	0.25** (0.09)	0.27** (0.79)	0.20* (0.08)	0.15 (0.09)
East Asia & Pacific	12.42** (2.03)	8.92** (1.67)	6.35** (1.47)	13.63** (1.49)
Europe & Central Asia	14.24** (2.27)	10.88** (1.83)	6.40** (1.63)	14.49** (1.37)
Latin America & Caribbean	9.16** (1.79)	8.77** (1.55)	7.11** (1.37)	14.52** (1.39)
Middle East & North Africa	7.56** (2.35)	6.74** (2.08)	6.57** (1.77)	14.27** (1.91)
North America	12.74** (3.71)	9.71** (3.00)	4.50 (2.48)	13.32** (2.58)
South Asia	5.66* (2.57)	3.42 (2.28)	5.13* (2.00)	12.17** (2.17)
Number of observations	86	120	125	151
Adj. R <sup>2</sup>	0.83	0.81	0.85	0.85

Standard errors in parentheses. \*\* significant at the 1 percent level, \* significant at the 5 percent level.

control for too much with too little data. Breusch-Pagan and Cook-Weisberg tests as well as plots of residuals against predictors all indicate a problem of heteroskedasticity in simple OLS regressions. We therefore use weighted least squares techniques to estimate our model controlling for heteroskedasticity. The results are shown in Tables 2a and 2b.

As expected GDP has a very robust and positive impact on life expectancy. Furthermore, for all years except the year 2000 both measures of democracies carry a positive and significant sign. This is consistent with our findings from Table 1 for the year 2000 where we could not detect a difference in average life expectancy between democracies and autocracies in the low income group at all. But nevertheless and concluding cautiously, these results indicate that democracy could have a positive impact on life expectancy which goes beyond the well studied democracy and GDP link. However, to obtain more certainty the time dimension needs to be taken into account.

### **3.4 Panel Analysis**

Including the time dimension enriches our dataset and allows us to estimate a more sophisticated model compared to the cross-sectional analysis. Additionally to the measures of democracy and economic development already used in the cross-country regressions we include the literacy rate as a proxy of the population's ability to articulate their needs in the political arena, to control politicians' activities and as a proxy of the people's priority for private spending on education and health. We lag literacy for one period to overcome endogeneity problems. From a theoretical point of view the literacy rate has a direct effect on life expectancy via private expenditures and via more conscientious health behaviour. Moreover it describes a condition which facilitates the functioning of democracy. Hence, both the coefficient of the literacy rate as well as the coefficient of the literacy rate interacted with democracy is of interest of its own right.

In addition, as a result from our theoretical reasoning, we introduce the lagged gini coefficient, the measure of ethnic fractionalization and population density. As pointed out all variables describe conditions, which hamper or foster the functioning of democracy in terms of addressing the needs of the population. We are therefore mainly interested in their interaction with democracy. According to Cronbach (1987)<sup>14</sup> the variables used for interaction terms are centred to deal with problems of multicollinearity.

---

<sup>14</sup> See also Jaccard et al. (1990).

**Table 3 Cross-Sectional Time-Series FGLS regression with Panel Specific AR(1)**

Life expectancy				
	Dem_exp5	Mpol	Dem_exp5	Mpol
_const	21.17** (1.28)	40.19** (0.71)	43.66** (0.73)	44.28** (0.73)
dem_exp5	0.81** (0.08)		0.60** (0.08)	
mpol		0.06** (0.01)		0.05** (0.01)
log(gdp) _1	2.60** (0.09)	2.47** (0.09)	1.73** (0.09)	1.62** (0.09)
lit_1	0.23** (0.09)	0.23** (0.00)	0.24** (0.01)	0.24** (0.01)
gini_1	-1.83** (0.61)	-0.84** (0.31)	0.34 (0.31)	0.43 (0.32)
ethnic	-4.315** (0.41)	-4.53** (0.41)	-4.85** (0.40)	-5.00** (0.41)
ln_popdens	0.36** (0.06)	0.39** (0.05)	0.11 (0.07)	0.08 (0.07)
lit*dem_exp5 /	0.00 (0.00)		0.01** (0.00)	
lit*mpol		0.00* (0.00)		0.00 (0.00)
gini*dem_exp5 /	2.14** (0.61)		0.71 (0.58)	
gini*mpol		0.19** (0.04)		0.05 (0.04)
ethnic*dem_exp5 /	-1.83** (0.41)		-1.50** (0.39)	
ethnic*mpol		-0.15** (0.03)		-0.15** (0.03)
popdens*dem_exp5/	-0.06 (0.06)		0.06 (0.06)	
popdens*mpol		-0.00 (0.00)		0.01 (0.00)
East Asia & Pacific			1.88** (0.37)	1.97** (0.38)
Europe & Central Asia			3.80** (0.40)	4.21** (0.41)
Latin America & Caribbean			3.08** (0.34)	3.28** (0.34)
Middle East & North Africa			7.35** (0.39)	7.55** (0.41)
North America			6.45** (0.63)	6.82** (0.68)
South Asia			3.91** (0.42)	3.83** (0.40)
Number of Observation	3036	3036	3036	3036
Log likelihood	-470.9013	-449.82	-392.31	-376.19
Goodness of Fit	AIC 1027.803 BIC 1286.589	AIC 985.6315 BIC 1244.418	AIC 882.6121 BIC 1177.509	AIC 850.3791 BIC 1145.276

Standard errors in parentheses. \*\* significant at the 1 percent level, \* significant at the 5 percent level. Time dummies were included and jointly significant.

Furthermore, we add a set of dummies for global regions, leaving out Sub-Saharan African as reference category, and year dummies to the analysis. An F-test reveals the joint significance of the year dummies, however due to a better readability their values are not reported. The

inclusion of period effects allows us to capture overall upward trends in life expectancy that might be caused for example by technological improvements in the health sector (Pritchett/Summers 1996: 846). The period under study is 1970 through 2003. All results are presented in Table 3. Pre-estimation diagnostics indicate that heteroscedasticity and autocorrelation are important issues for our dataset and cause estimation problems. We therefore decided to estimate our model with a cross-sectional time-series FGLS regression with panel specific AR(1), addressing both issues simultaneously.

The results of our main explanatory variables are as expected from the theoretical derivations. Democracy, GDP and education all have a positive and highly significant impact on life expectancy. Ethnic fractionalization in contrast is negatively linked to life expectancy. Although the latter result mainly confirms theoretical expectations it must be taken with caution because of the highly critical assumption of homogeneity over years. But what do the interaction effects tell us? Democracy seems to have an even stronger positive impact on life expectancy when the population is more educated. High ethnic fractionalization on the contrary reduces the positive effects of democracy on life expectancy. Inequality carries a negative sign, but its interaction with democracy indicates that increases of life expectancy due to democracy are stronger in more unequal societies compared to more equal ones confirming in part the median voter hypothesis. However, the results for inequality are only significant when the regional dummies are not included. The regional dummies carry all a positive and significant sign and indicate that factors inhibiting human development exist foremost in Sub-Saharan Africa.

## **4 Conclusion and Further Research**

We believe that our study has its associated merits explaining the linkage between democracy and human development. In the theoretical section we clarify the causal channels of democracy influencing human development. In contrast to earlier studies which have their focus on property rights we, in addition, emphasize the importance of the redistributive effects of democracy. The influence of democracy on human development is investigated descriptively and analytically, the statistical analysis includes both the cross-sectional and the time dimension. Extending the existing literature we not only measure the influence of democracy on human development, but we further theoretically and empirically identify conditions which are important for the functioning of democracy in terms of improving the



level of human development. Additionally, we empirically find some evidence for the median voter theory.

We have shown empirically that there is a strong and robust link between democracy and life expectancy, even if one is controlling for the level of economic development. We have constructed our model in such a way, that to the best of our knowledge we can be quite certain, that this is a causal relation and not just a spurious correlation. However, it would certainly be useful and an improvement of our analysis to empirically identify and model the channels that democracy takes before it affects human development.

Furthermore, we empirically identified conditions and requirements that increase or decrease the impact of democracy on life expectancy. In very unequal societies the median voter is farther away from the mean income than in more equal societies<sup>15</sup>, therefore inequality combined with democracy accelerates the redistributive effects of democracy. Redistribution in favour of the bottom part of the distribution increases the average life expectancy, because the poor are in general farther away from the technological (or say medical) frontier of life expectancy and can thus obtain higher improvements than people closer to the frontier with the same amount of money.

The positive effect of education on life expectancy could be caused by priority changes in private spending, by more efficient private spending on education or by changes in private behaviour. Interestingly, the combined impact of democracy and education goes beyond the impact of both variables alone. Again, there are different possible explanations for this. First of all, education increases a person's ability to identify what is good or bad for herself, at least in the case of health. Additionally, education increases a person's ability to articulate her optimal needs in the political arena and to control in an according way.

Social fragmentation proxied by ethnic fractionalization and corresponding differences in preferences in contrast could possibly split the population in sub-populations and could therefore weaken the power of each sub-group to articulate and to assert their needs. Consequently we empirically find, that both ethnic fractionalization alone as well as ethnic fractionalization combined with democracy negatively affect life expectancy.

---

<sup>15</sup> The argument, that the median voter is farther away from the mean when a society is more unequal, is true for right-skewed distributions. This is usually the case for the national income distributions, which are quite close to log-normal distributions.

For population density combined with democracy there were no effects on life expectancy identifiable. We suspect that there is not only the expected positive but diminishing effect because of economies of scale as described in our theoretical part. Our interpretation is that the absence of an effect results from the fact that a higher population density both has positive and negative effects on the provision of public services and is therefore not observable in our model. The existence of many remote areas certainly increases the cost and difficulty to provide good public services to the entire population, thus population density should have a positive impact on life expectancy. On the other hand a more concentrated society can be seen as more complex system which is more difficult to manage.

Controlling for economic development, we can be quite certain, that democracy has an impact on human development which goes beyond its linkage with economic development. However, we can be less certain, that the influence comes directly from a democratic system or if it comes from other social and political factors which are very well proxied by democracy. Nevertheless, the results of our analysis are rather robust no matter what measure for democracy we used. The simple fraction of democratic years during the last five years in principle yields similar conclusions as the more complex average polity score over the same period.

In the background of democracy other factors might be at work as well. Future studies could incorporate social capital as well as the degree of decentralization of political-administrative system. Moreover it would be interesting to investigate whether the distribution of human development is more equal in democracies than in autocracies.

We cannot make many conclusions on the within-country distribution of life expectancy. However, increases of life expectancy can be decomposed into two main components: First, innovations improving the technological or medical frontier affecting all people who have access to this frontier, and second, individuals who are closing the gap to the technological frontier. Given better data on within country inequality of human development, it would be an interesting task for future research to investigate the distribution of human development more closely.

Additionally, it would be useful to include the statistical inference for literacy into the paper and to analyze the underlying dynamics of the model through the inclusion of lagged dependent variables and the use of the appropriate techniques for a dynamic panel setting.

## References

- Acemoglu, D., S. Johnson, and J. A. Robinson (2002): Reversal of Fortune: Geography and Institutions in the Making of the Modern World income Distribution, in: *Quarterly Journal of Economics*, Vol. 117, pp. 1231-1294.
- Acemoglu, D., S. Johnson, and J. A. Robinson (2001): The Colonial Origins of Comparative Advantage, in: *American Economic Review*, Vol. 91, No. 5, pp. 1369-1401
- Alesina, A. and E. La Ferrara (2005): Ethnic Diversity and Economic Performance, in: *Journal of Economic Literature* (43)3: 762-800.
- Alesina, A., A. Devleeschauwer, W. Easterly, S. Kurlat, and R. Wacziarg (2003): Fractionalization, in: *Journal of Economic Growth*, Vol. 8, No.2, pp. 155-194.
- Alesina, A., R. Baquir, and W. Easterly (1999): Public Goods and Ethnic Divisions, in: *The Quarterly Journal of Economics*, Vol. 114, No. 4, pp. 1243-1284.
- Besley, T. and R. Burgess (2002): The Political Economy of Government Responsiveness: Theory and Evidence from India, in: *Quarterly Journal of Economics*, Vol 117, pp. 1415-1451.
- Besley, T. and M. Kudamatsu (2006): Health and Democracy, in: *AEA Papers and Proceedings*, Vol. 96, No. 2, pp. 313-315.
- Boix, C. (2001): Democracy, Development, and the Public Sector, in: *American Journal of Political Science*, Vol. 45, No. 1, pp. 1-17.
- Collier, P. (2001): Implications of ethnic diversity, in: *Economic Policy Analysis*, Vol. 16, No. 32, pp. 129-166.
- Cronbach, L. (1987): Statistical tests for moderator variables: Flaws in analysis recently proposed, in: *Psychological Bulletin*, Vol. 102, pp. 414-417.
- Franco, Á., C. Álvarez-Dardet, and M. T. Ruiz (2004): Effect of democracy on health: ecological study, in: *BMJ (British Medical Journal)*, Vol. 329, pp. 1421-1423.
- Glaeser, E. L., G. A. M. Ponzetto and A. Shleifer (2007): Why does democracy need education?, in: *Journal of Economic Growth*, Vol. 12, pp.77-99.

Gradstein, M. and B. Milanovic (2004): Does Libert  = Egalit ? A Survey of the Empirical Links between Democracy and Inequality with some Evidence on the Transition Economies, in: *Journal of Economic Surveys*, Vol. 18, No. 4, pp. 515-537.

Gr n, C. and S. Klasen (2007): Growth, Inequality, and Well-Being: Comparisons across Space and Time, forthcoming in *Oxford Economic Papers*.

Hall, P. A., and R. C. R. Taylor (1996): Political Science and the Three New Institutionalisms, K ln: Max-Planck Institut f r Gesellschaftsforschung.

Hall, R., and C. Jones (1999): Why Do Some Countries Produce So Much More Output Per Worker Than Others?, in: *Quarterly Journal of Economics*, Vol. 114, No. 1, pp. 83-116.

Holzmann, H., S. Vollmer and J. Weisbrod (2007): Twin Peaks or Three Components? - Analyzing the World's Cross-Country Distribution of Income. *IAI Discussion Paper No. 162*, G ttingen: Ibero-America Institute for Economic Research, G ttingen.

Jaccard, J., C. K. Wan, and R. Turrisi (1990): The Detection and Interpretation of Interaction Effects between Continuous Variables in Multiple Regression, in: *Multivariate Behavioral Research*, Vol. 25, No. 4, pp. 467-478.

Kaufmann, D., A. Kraay, and M. Mastruzzi (2007): Governance Matters VI: Governance Indicators for 1996-2006, in: *World Bank Research Working Paper No. 4280*.

Keefer, P. and S. Khemani (2005): Democracy, Public Expenditure, and the Poor: Understanding Political Incentives for Providing Public Services, in: *The World Bank Research Observer*, Vol. 20, No. 1, pp. 1-27.

Klasen, S. (2004): In Search of the Holy Grail: How to Achieve Pro Poor Growth?, in: Tungodden, B., N. Stern, and I. Kolstad (eds.): *Toward Pro Poor Policies – Aid, Institutions, and Globalization*. New York: Oxford University Press, pp. 63-94.

Knack, S. and P. Keefer (1995): Institutions and Economic Performance: Cross Country Tests Using Alternative Institutional Measures, in: *Economics and Politics*, Vol.7, No. 3, pp. 207-27.

La Porta, R., F. L pez-de-Silanes, C. Pop-Eleches, and A. Shleifer (2004): Judicial Checks and Balances, in: *Journal of Political Economy*, Vol. 112, pp. 445-470.

Ladd, H. F. (1999): Population Growth, Density and the Costs of Providing Public Services, in: *Urban Studies*, Vol. 29, No. 2, 1992, pp. 273-295.

Lipset, S. M. (1959): Some Social Requisites of Democracy: Economic Development and Political Legitimacy, in: *The American Political Science Review*, Vol. 53, No. 1, pp. 69-105.

Marshall, M. G. and K. Jaggers (2005): *Polity IV Project. Dataset User's Manual*. Center for Global Policy. George Mason University.

Martyn, C. (2004): Commentary: Politics as a determinant of health, in: *BMJ (British Medical Journal)*, Vol. 329, pp.1423-1424.

Miguel, Edward und Mary K. Gugerty (2005): Ethnic Diversity, Social Sanctions, and Public Goods in Kenya, in: *Journal of Public Economics* 89(11/12): 2325-2368.

Meltzer, A. H. and S. F. Richard (1981): A Rational Theory of the Size of Government, in: *Journal of Political Economy*, Vol. 89, No. 5, pp. 914-927.

Persson, T. (2002): Do Political Institutions Shape Economic Policy, in: *Econometrica*, Vol. 70, No. 3, 883-905.

Persson, T., G. Roland, and G. Tabellini (2000): Comparative Politics and Public Finance, in: *The Journal of Political Economy*, Vol. 108, No. 6, pp. 1121-1161.

Persson, T. and G. Tabellini (2006): Democracy and Development: The Devil in Details, in: *AEA Papers and Proceedings*, Vol. 96, No. 2, pp. 319-320.

Peters, G. B. (2005): *Institutional Theory in Political Science*, London, New York: Continuum.

Pritchett, L. and L. H. Summers (1996): Wealthier is Healthier, in: *The Journal of Human Resources*, Vol. 31, No. 4, pp. 841-868.

Rodrik, D. and R. Wacziarg (2005): Do Democratic Transitions produce Bad Economic Outcomes, in: *AEA Papers and Proceedings*, Vol. 95, No. 2, pp. 50-54.

Ross, M. (2006): Is Democracy Good for the Poor, in: *American Journal of Political Science*, Vol. 50, No. 4, pp. 860-874.

Sen, A. (1999): *Development as Freedom*. Oxford: Oxford University Press.

Stasavage, D. (2005): Democracy and Education Spending in Africa, in: *American Journal of Political Science*, Vol. 49, No. 2, pp. 343-358.

Subramanian, S. V. and I. Kawachi (2004) Income Inequality and Health: What have we learned so far?, in: *Epidemiologic Reviews*, Vol. 26, pp. 78-91.

Tsai, M.-C. (2006): Does Political Democracy Enhance Human Development in Developing Countries, in: *American Journal of Economics and Sociology*, Vol. 65, No. 2, pp. 233-268.