Economic Effects of Democracy. An Empirical Analysis

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This research analyses through the use of instrumental varia-bles estimation whether democracy has an effect on variables be-longing to three different categories: fiscal policy, inequality in in-come distribution and political instability. It shows there is no sta-ble relation between democracy and fiscal policy variables between countries of the sample in the 1978-1988 period. Democracy, on the other hand, significantly affects the difference in middle class income share (positively) and in changes at the top of the execu-tive (negatively) [JEL Code: C21, E62, O15, O17].

1. - Introduction

The idea that there is a relation between democracy and eco-nomic development is very old. The formulation of the principle according to which democracy is a political system that works on-ly in countries that have reached a certain level of development is generally attributed to Aristotle in *Politics*. In more recent times, it is thanks to Lipset (1959) that this vision enjoys great favour

again. It is based fundamentally on two assumptions, namely that it is only in countries where there is already a certain level of collective well-being that the extension of the franchise will not encourage voting for policies that produce excessive redistribution and that only if the citizens have a sufficient level of education will the election of political leaders able to make the country prosper be possible[1].

On the other hand however, a substantial number of scholars have analysed the reverse link between democracy and economic growth, in other words what effects the adoption of democratic political institutions has on the economy of the country. The reasons behind this second line of research are numerous and are based fundamentally on interpreting democracy[2] as an information mechanism that allows citizens to offer the rulers feedback on the efficacy of the various economic policies adopted (Roll and Talbott, 2001), and on the positive effects that democracy has directly on some specific factors considered crucial for economic growth, like for example the accumulation of human capital and the distribution of income (Tavares e Wacziarg, 2001). For instance, for what regards the last one, the explanation lies in what Mulligan *et* Al. (2004) identify as the three tenets of voting theory: that voting mutes policy preference intensity, political power is equally distributed in democracies, and the form of voting processes is important.

The present analysis belongs to this second approach, aimed at determining the effects of democracy on growth. This is a field of research where the considerable quantity of literature produced has not however succeeded in clarifying definitively what the effects caused by democratic political institutions are. The difficulties inherent in this objective derive first of all from the impossibility to establish a priori whether democracy has a positive or

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[1] This is the line of thought preferred, amongst others, by Barro in various works such as Barro R.J. (1996).

[2] For a broader survey of the interpretations of democracy given by the recent political economics and political science literature see Section 2.2 about the independent variables.

negative effect on growth. The reason for this resides in the fact that democracy generates diverging effects on a whole series of variables on which economic growth is greatly dependant. Thus, for example, though economic theory on the one hand has identified democracy as a system that lowers the rate of physical capital investments and that is excessively susceptible to the individualistic pressure of the various lobby groups, on the other hand it has also underlined its importance in promoting a less unfair income distribution, in reducing political instability, in producing governments with lower consumption, and in promoting the accumulation of human capital[3]. Moreover there are also aspects for which it is impossible to determine whether a democratic government has better effects than an autocratic one: one of these is the safeguard of property rights. Indeed here it is equally plausible that the safeguard of private property be put at risk by a democratic government, due to redistribution requests from the majority of the population, as by an autocratic government that uses its discretionary powers in this respect.

It is precisely this diversity of effects on the various elements that determine growth that has generated, according to Borner *et Al.* (1995), the fundamental difference in attitude towards democracy between studies before and after the 80s. While in the latter what prevails is the idea of a compatibility between democracy and growth, in the former what prevails is the idea of a "cruel choice" between the two, due to the fact that democracy, by privileging consumption rather than investments (the only variable considered crucial for development in this period), supposedly does not make it possible to reach such rates of investment in physical capital as to generate economic growth in the following period[4]. If we add to

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[3] In the case of schooling, however, various scholars have tried to identify a link that goes in the opposite direction, namely that a higher rate of schooling will create a greater demand for political democracy (this is the case of LA PORTA R. *et* AL., 1998).

[4] EASTERLY W. (2001) speaks of the years between the end of the Second World War and the beginning of the '70s as being the "capital fundamentalism" years, that is when the idea that only capital investments could lead to economic development reigned among economists.

this, the influence of the economic success during those same years enjoyed by the Soviet countries, by Pinochet's Chile and by some countries in South-East Asia all ruled by autocratic governments, we then understand the suspected singular "relation between ideology and statistics" put forward by Przeworski and Limongi (1993) to explain the diverging results in earlier literature. Indeed their analysis shows that of the twenty one results produced by the eighteen studies considered, eight of the eleven prior to 1988 are in favour of a positive influence of autocratic regimes on growth, whereas none of the nine works published after 1987 is.

However ideology-based conditioning is certainly not the only reason why earlier literature on democracy and growth is as vast as it is inconclusive in terms of results. Indeed a second class of reasons resides in a series of methodological problems connected to the estimation of the effect of democracy on the GDP growth rate holding constant a series of other variables that determine growth. According to Tavares and Wacziarg (2001) the greatest limitation of earlier literature resides in this analysis methodology, the same one that, despite some different nuances, characterizes almost all studies on the economic effects of democracy. Since there is no theoretical argument whereby democracy should have a direct effect on growth but rather the theory indicates that its effect should emerge through its influence on variables that determine growth such as: the rate of investment, the accumulation of human capital, political instability and so on; by keeping them constant it will only be possible to estimate a democracy effect of scarcely relevant magnitude and significance[5].

The idea that is being put forward is therefore to identify the benefits and the costs of democracy for economic growth through a better empirical assessment of the effect of the latter on a se-

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[5] Furthermore it is very important to stress that the consequences of democracy on development also depend on what exactly we mean by democracy. A purely procedural definition of democracy could give rise to different predictions of these effects as compared the ones obtained by adopting broader and more "substantial" definition of the variable. This point will be illustrated in further details in Section 2.2 about the dependent variables. However it is clear that the key role is played by which institutional aspects are considered in the definition of democracy employed.

ries of growth "channels". It is this criticism levelled by Tavares and Wacziarg (2001) and the important results found in recent literature on democracy and income inequality (in particular by Dani Rodrik[6]), that led to our decision to analyse, in the finest detail possible, the relation between democracy and three types of variables generally considered of great importance to determine growth: fiscal policy, income distribution inequality and political instability was taken. Indeed these are the three elements that emerged from a detailed study of theoretical literature on the subject as being the most clearly influenced by democracy and also the most relevant for economic growth.

In particular, as regards fiscal policy[7], democracy is indicated as being a decisive element for government size in various models, for example Olson (1991), where governments of larger than efficient[8] dimensions correspond to non-democratic forms of government. The aim of the autocrat is to maximize the tax rate so that he can get the highest amount of resources to devote to its private interest (identified by Olson in ostentatious consumption and military expenses). On the other hand, in a democracy the median voter chooses a lower tax rate compared to the autocracy one. This occurs because a reduction from the autocratic tax rate will produce a very high welfare increase, deriving from the highest consumption of the private good, and only a small reduction, due to the decreased public good. Moreover this public good supplied by the government is a characteristic only of democracies given that in autocracies all tax revenues go exclusively to the advantage of the ruler.

For what regards the link between democracy and income inequality[9], this stems from the operating mechanism of the Meltzer

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[6] Refer to Rodrik D. (1999*a*; 1999*b*).

[7] The empirical linkage between fiscal policy and economic growth is analysed in several studies, see for instance Fisher S. (1993), Barro R.J. (1991) and Levine R. - Renelt D. (1992).

[8] In Przeworski A. - Limongi F. (1993) this holds true only for socialist autocracies, defined by them as "bureaucracies", while for the other forms of autocracy they continue to generate governments of inefficient dimensions but, in this case, they are smaller than the optimal ones chosen in democracies.

[9] The importance of income distribution as a determinant of economic growth as been addressed in several studies like Daveri F. (1996), Persson T. - Tabellini G. (1994) and Alesina A. - Rodrik D. (1994).

and Richard(1981)-type median voter models such as Persson and Tabellini (1994) and Alesina and Rodrik (1994), according to which citizens who vote freely for parties that are competing with each other, generate redistribution policies that depend on the income of the median voter. On the contrary in an autocracy there are not any constraint that will commit the ruler to accept the redistributive pressures coming from the population. Therefore in our research, all conditions being equal, we expect a higher level of democratisation to correspond to a lower level of income inequality.

Finally as regards political instability[10], Tavares and Wacziarg (2001) consider democracy as a mean to make the transfer of political power transparent and legally regulated. In addition the provision of freedom of expression should foster an open debate on candidates and policies that could prevent extremisms. Both these reasons imply that democracy should reduce political instability taken as meaning phenomena of violence linked to politics. Moreover Tavares and Wacziarg (2001) make an hypothesis that they do not test and namely that the shift from unconstitutional transfers of power (that come about through violence) to constitutional ones (that come about with free elections) has a counterpart in the increase in the absolute number of transfers. Democracy therefore supposedly generates a sort of trade-off between the type (elections or coups) and the frequency of transfers of political power.

2. - Data

2.1 *Dependent Variables*

The dependent variables on which the effect of democracy is analysed belong to three separate groups: fiscal policy, income distribution and political instability.

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[10] As for what regards political instability taken as meaning phenomena of violence linked to politics its relevance for economic growth has been analysed for instance by BARRO R.J. (1991) and SACHS J. - WARNER R. (1995). On the other hand, political instability taken as meaning frequency of changes in the executive has been studied as a growth-determinant for instance by ALESINA R. - OZLER S. - ROUBINI N. - SWAGEL P. (1992).

2.1.1 Fiscal Policy

As regards fiscal policy, to investigate the link between democracy and government size hypothesized by Olson (1991) we measured the latter with two different variables: the size of overall public expenditure (*EXPEN*) and the size of overall revenues and subsidies (*REVEN*) both referring to central government and measured as a percentage of the GDP.

Moreover we decided to investigate two further aspects of fiscal policy that could in some way be linked to democracy. First of all we took into consideration the size of social expenditure that allow redistribution policies generated by median voter models to be implemented. To this end we used a variable that indicates the amount of expenditure of central government for social security and the welfare state as a percentage of GDP (*SSW*).

Secondly, the other aspect of fiscal policy we analysed is budget deficit size, measured through the budget deficit/surplus of the central government as a percentage of GDP (*DEF*). The level of democratisation could affect the deficit in two different ways. Indeed in a country that has a particularly developed democratic system, the rulers must respect efficient budget policies and must not generate large deficits under penalty of not being re-elected. On the other hand however, countries with very low levels of democratisation are usually closed countries that are isolated from international capital markets and therefore may have no deficit because they cannot turn to those markets for funds.

For all the fiscal policy variables the source is the *Government Financial Statistics* (*GFS*) of the International Monetary Fund, available from 1972. In our empirical analysis, for cross-section regressions we used a sample of about 85[11] countries during the 1978-1988 period, while for the panel analysis we took the mean values over six sub-periods: 1972-1974, 1975-1979, 1980-1984, 1985-1989, 1990-1994, 1995-1999.

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[11] The sample covers 87 countries in the regressions where democracy is measured with *GASTIL* while it covers 82 when the independent variable is *POLITY*.

2.1.2 Inequality

The second group of dependent variables consists of the two measures used in order to take account of income distribution inequality. These are the Gini coefficient pertinent to the degree of income concentration of the whole economy (GINI), and a variable made up of the third and fourth quintile share of overall income (*MIDDLE*), aimed at measuring the size of the middle class.

The often contradictory results found in earlier literature on the subject can certainly be attributed in part to the frequently doubtful quality of the data used to measure income distribution. In this analysis, therefore, we used only data classified as "acceptable" in the Deninger and Squire (1996) dataset[12], since they come exclusively from population surveys with a representative coverage of both the territory and the type of income. This choice, though necessary in order to work on sufficiently reliable data, has lead to high costs in terms of sample size. In fact in the cross-section regressions the latter is made up of 55 countries[13] and for some of these only one value is available in the 1978-1988 period, and indeed the same scarcity of data made it impossible to carry out the analysis on them in panel form, as was done for fiscal policy variables.

2.1.3 Political Instability

Finally for political instability we used two different variables. Their aim is to reflect the two elements of the trade-off hypothesis levelled by Tavares e Wacziarg (2001), and namely that democracy on the one hand reduces phenomena of violence linked to political life, making transitions from one government to another non-violent, and on the other hand it increases the frequency with which these transitions occur. To measure the first element, we

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[12] Moreover the data were corrected following the suggestion of the two authors, thus increasing by 6.6 the value of the Gini coefficient for countries where this is measured on the basis of expenditure rather than income.

[13] When defining democracy with *GASTIL*, the sample is of 56 countries whereas with *POLITY* it is of 54.

used a variable that is widely used in economic literature that is the number of revolutions and coups per year (*REVCOUP*), while for the second, we used the annual frequency of changes in the executive, meaning the substitution of the Prime Minister or of at least fifty percent of his cabinet (*CABCH*). The source of these variables is the Arthur S. Banks Cross National Time-Series Data Archive that contains data from 1960 on for a large number of countries. However, given the importance of income inequality measurements to determine political instability, the size of the sample depends on the data in the Deninger and Squire dataset and therefore the considerations on the small sample already expressed for inequality are valid here too.

2.2 *Independent Variables: Democracy*

The basic independent variable in this study is democracy. In its procedural definition[14] democracy means a corpus of laws and procedures that regulate the transfer of political power and the free expression of political dissent at all levels of public life. Nevertheless there is still an open debate in the literature regarding whether this procedural definition is the appropriate one or whether other ones, expanded to take into account different elements (for instance some civil liberties like freedom of speech and of press[15]), are better. We have already illustrated earlier some results of the broad and inconclusive empirical literature on democracy and growth. A non negligible role in explaining those contradicting results is played by the different definitions of democracy adopted: an assessment of the degree of democracy based only on the formal body of constitutional rules could generate results quite different from those derived by adopting a more substantial approach to the effectiveness of democracy[16]. Fur-

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[14] The procedural definition of democracy is traditionally attributed to SCHUMPETER J.A. (1947).

[15] HUNTINGTON S.P. (1993) suggests these are essential elements of an effective democracy.

[16] This differences, however, characterize all the empirical studies that want to use the category of democracy for empirical analysis. For instance different notions of democracy explain the divergence in the result of PERSSON T. - TABELLINI G. (1994)

thermore the same diverging results could be produced by variables that weight in a different way the same constitutional features, like the level political competition allowed or the restrictions to the executive power or the degree of openness of the executive to minority groups. The problems connected with the uncertainty in the definition of democracy go along with the difficulties connected with measuring democracy which make all the available variables "noisy" indicators of the underlying latent variable[17]. Thus whatever our choice of variables representing democracy is, we will need to deal with the problem of measurement error (treated in the methodological section) and we need to acknowledge that a certain degree of arbitrariness exists in our choice of democracy. In trying to reduce the extent of these problems we have decided in this research to measure democracy by two different variables, both created to be subjective indicators[18] of the level of democratisation of a country[19]. *POLITY*, the first variable, was taken from the *POLITY* IV Project dataset by Marshall and Jaggers (2000) that contains data for all countries whose population exceeds 500,000 inhabitants since 1800, or since the year of in-

that inequality reduces economic growth only in democratic countries from the one of ALESINA A. - RODRIK D. (1994) that this effect of inequality on growth is present in countries of all kinds of political regimes. In this case the difference lies in the more "formal" definition of democracy adopted by Persson and Tabellini compared to the more "substantial" one of the other study (see DAVERI F., 1996).

[17] Among these possible variables, the most frequently used, apart from those that will be presented in the text, are those coming from the Banks' dataset and from Bollen (1990). This last paper contains also a broad treatment of the various problems connected with measuring democracy. Furthermore sometimes the "degree of democracy" is also indicated with simpler measures referring to specific institutional features. Generally this is the case of the extent of the franchise.

[18] Both the democracy variables, *POLITY* and *GASTIL*, have been used in the regressions in their original continuous form. This implies we have used ordinal measures as they were cardinal ones, thus we are assuming a linear response of the dependent variable to the democracy indicator used as regressor. The other possible choice, frequently used in this field of research, is to use a dummy variable to identify democracies. We have decided to avoid this second option as it would lead to results excessively dependent on the arbitrary choice of the threshold adopted to classify a country as a democracy. Nevertheless where the choice of a threshold value has been necessary in this research, as in the case of event study, we have indicated a country as a democracy if its value of *POLITY* in its original scale between –10 and +10 is above zero.

[19] The use of the two different indicators is intended both to detect whether differences in the estimated effects of democracy arise from the different definition of it (as explained in this section) and to develop the methodology of RODRIK D. (1999*a*) for assessing the problem of measurement error.

dependence if later, up to 1999. Basically this variable measures the degree of competition between parties, how open the executive is to new candidates and the limitations to which the executive is subjected. In the original dataset, *POLITY* ranges from –10 when there is total absence of democracy, to +10 if there is maximum democracy. However in order to make it easier to read the results of this empirical analysis, a scale ranging from zero to one has been introduced into *POLITY*, where the highest values indicate a higher level of democratisation. The computation of *POLITY*, as explained in Section 3 of the Appendix, comes from the score that a country receives for six different variables. In a later stage of the analysis the results derived from the usage of these "component" variables in the regressions will be presented with the aim of detecting which specific underlying institutional features determine the estimated results involving the aggregate index *POLITY*[20].

GASTIL, the second variable used to measure democracy, is the result of the simple average between two indicators of political rights and civil liberties recorded annually by Freedom House through its Freedom in the World survey covering almost all countries in the world since 1972[21].

Using the mean between the two indicators as a measurement of democracy, goes back to Helliwell (1992) and has since been used widely in subsequent empirical studies. The index thus created, differs from *POLITY* in so far as the latter is almost equal to the political rights component of *GASTIL*, while its second component, civil liberties, is totally extraneous to *POLITY*. With the indicator of civil liberties, it is indeed possible to measure different elements such as

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[20] The 6 components of *POLITY* belong to three different groups (see also Section 3 of the *appendix* 1):

1) Executive recruitment variables: *(a) XRREG*: regulation of the chief executive recruitment (higher value if more regulation is present); *(b) XRCOMP*: competitiveness of executive recruitment (higher value if competition is grater); *(c) XROPEN*: openness of executive recruitment (higher value if more open);

2) Independence of Executive Authority: *(a) XCONST*: executive constraints (lower value the fewer are the constraints to the executive power);

3) Political competition and Opposition: *(a) PARREG*: regulation of participation (higher value the grater is the regulation); *(b) PARCOMP*: competitiveness of participation (higher value the grater is competition).

[21] Afterwards in the text the variables of political rights and civil liberties will be called respectively: *POL-RIGHT* and *CIVIL-LIB*.

freedom of the press, of meeting, of association and of religious faith, as well as the respect of human rights, none of which are taken into consideration when attributing a rating with *POLITY*. The inclusion of these elements in the definition of democracy, finds its theoretical justification in Huntington (1993), who considers such rights necessary or indispensable to consider a state a true democracy.

The use of both indices is therefore useful in order to understand if there are differences in results according to the different definitions of democracy and if so, what are the precise sources of the discrepancies. In any case, *POLITY* and *GASTIL* are very closely related to each other in the sample used for the cross section, there is a 93% correlation and even their behaviour over time for the period during which they are both available, that is between 1972 and 1999, tends to be very similar[22]. On this last point, Graph 1 shows the evolution of *POLITY* (for both the entire sample and for the two subgroups of countries that conditioned the variation most, Sub-Saharan Africa and South America) from 1950 to 1999. The Graph 1 shows the peculiarity of the last thirty years that were marked by

GRAPH 1

DEMOCRACY 1950-1999

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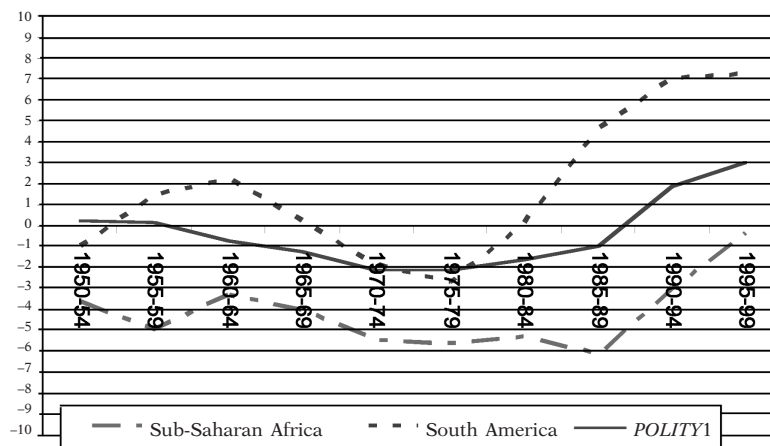
[22] Nevertheless the difference in the two rating schemes should be kept in mind in interpreting the estimated coefficients in the regressions reported in the section about empirical evidence.

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unprecedented growth of democracy in the world[23] and this enhances our objective to determine what impact this process will have on the economies of the countries concerned.

Moreover Table 1 gives some descriptive statistics on all the variables presented in this Section[24].

<div align="right">Table 1</div>

DESCRIPTIVE STATISTICS AND CORRELATIONS

1.1 Descriptive Statistics

	Obs.	*Mean*	*Median*	*Max.*	*Min.*	*Std. Dev.*
Fiscal Policy						
EXPEN	90	30.39	30.07	70.05	0.75	12.62
REVEN	90	27.53	25.51	73.57	0.49	12.21
SSW	90	5.25	2.40	22.49	0.05	5.68
DEF	90	–4.50	–3.70	25.30	–33.01	6.12
Inequality						
GINI	64	39.15	38.90	62.62	21.13	9.42
MIDDLE	64	38.38	38.89	43.97	29.69	3.65
Political Instability						
REVCOUP	150	0.20	0.09	1.36	0.00	0.32
CABCH	150	0.39	0.36	1.27	0.00	0.26
Democracy						
GASTIL	151	0.44	0.34	1.00	0.00	0.33
POLITY	138	0.43	0.21	1.00	0.00	0.37

1.2 Correlation Among the Two Indicators of
Democracy and Between them and Instruments

	GASTIL	*POLITY*	*DEM-AGE*	*ENGFRAC*	*EURFRAC*
GASTIL	1				
POLITY	0.93	1			
DEM-AGE	0.70	0.69	1		
ENGFRAC	0.36	0.33	0.50	1	
EURFRAC	0.50	0.48	0.39	0.49	1

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[23] There are almost 40 countries that have adopted democracy since 1974 (the year Huntington S.P. (1993) indicated as the starting point of the "third wave of democratisation").

[24] In addition Section 2 of the *Appendix* contains a complete list of all the variables used in the research and of their sources.

3. - Methodology

The methodology used to obtain the results that will be presented in the next Section takes account of the criticism levelled at earlier literature on democracy and growth in this context[25]. In particular the criticism addresses the little attention paid to the phenomenon of "simultaneity" and above all to the problem of direct reverse causation. This research therefore presents, as well as results obtained with *OLS* regressions, also those resulting from an analysis with instrumental variables. Furthermore, in order to go into the problem of reverse causation in greater depth, we also looked into political transition events, from a democratic regime to a non-democratic one and *viceversa*.

As for *OLS* regressions, we present the results of the linear analysis of democracy's effect on the dependent variables belonging to the three groups: fiscal policy, income distribution inequality and political instability. The data used here are the simple average values of the various variables during the 1978-1988 period. The results of the *OLS* regressions thus obtained, show the effect of democracy, while keeping a series of other variables constant. In order to choose the latter, we created our benchmark models basing ourselves on the indications in both theoretical and empirical economic literature, and after testing its robustness to variations in the set of regressors[26].

The validity of these results however depends on whether the hypothesis of conditional independence is respected, in other words it depends on the fact that the selection of democracy is random once it has been checked for the vector of other exogenous variables. So the analysis is repeated using instrumental variables, to

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[25] See Rodrik D. (1999*a*). See Persson T. - Tabellini G. (2003) for a more general examination of the type of problems that can affect this kind of analysis and for possible strategies to solve them.

[26] In particular, for fiscal policy, the indication of the other variables to be included in the set of exogenous variables along side democracy, comes mainly from the Persson T. - Tabellini G. (2003) study, whereas for income distribution inequality the sources are, Daveri F. (1996), Barro R.J. (1999) and Engerman S. - Sokoloff K.L. (1994), finally for political instability, they are the works of Alesina A. - Ozler S. - Roubini N. - Swagel P. (1992) and Alesina A. - Perotti R. (1996).

take account of the potential presence of distortions due to the omission of some variables that influence both democracy and the dependent variable. However, this also makes it possible to check whether the results have been conditioned by errors in measuring the variable. We have already stressed that this problem could be relevant in our case due to the difficulties in measuring democracy[27]. Following Rodrik (1999*a*) we have also specifically checked for this problem by instrumenting each measure of democracy using the other (see the results illustrated in the empirical evidence Section)[28]. Analogously another problem that could make appropriate using instrumental variables is the wrong direction of the causation link (a particularly relevant case in the relation between democracy and inequality[29]). The regressions run with a 2*SLS* are based on the use of three instrumental variables: time gone by since the country became democratic (*DEM-AGE*), fraction of English-speaking population (*ENGFRAC*) and the fraction speaking another European language (*EURFRAC*)[30]. The latter two variables are taken from the dataset used by Hall and Jones (1999), whereas the former one was calculated using the Polity IV Project data to measure the time during which the country has been a democracy[31]. It was possible to use all three variables as instruments of democracy in all the 2*SLS* regressions presented below except

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[27] Indeed measurement error would create "attenuation bias", that is the coefficient obtained through an *OLS* of the variable measured with error would be biased toward zero. In addition all the other coefficients would also be biased although in unknown directions. *OLS* is inconsistent in presence of measurement error. Thus for our analysis the use of instrumental variables could be of great importance.

[28] However, by using Rodrik's methodology, measurement error does not appear as a particularly severe problem as the estimates from *OLS* are very close to those obtained with instrumental variables. This same result was obtained by Rodrik D. (1999*a*) for *POLITY* and *GASTIL* in a sample of approximately 90 countries for the years 1985-1989.

[29] The idea that democracy is generated by and prospers in countries where there is a large middle class is the famous Barrington Moore theory. (See Boix C. - Garicano L., 2001).

[30] The latter two variables were used as instrumental variables by Hall R.C. - Jones C. (1999), whereas the former one was used by Persson T. - Tabellini G. (2003).

[31] In particular, in the cross-section a country was indicated as being democratic when its mean *POLITY* value during the 1978-1988 period was greater than 0.5. *DEM-AGE* is therefore given by (1988 - Dem-Year/188), where Dem-Year indicates the first year that the country under study was given a *POLITY* value strictly greater than 0.5.

two[32]. These two are the regressions where the dependent variable is respectively the middle class income share (*MIDDLE*) and the share of public spending for social security and the welfare state (*SSW*). In these two cases model over-identification tests led us to leave out the English-speaking population in the first case and the other European language speakers in the second case.

The analysis conducted with the two indexes of democracy, *POLITY* and *GASTIL,* could possibly be affected by an "excess of aggregation" in the sense that the effect of specific institutional features is hidden by the aggregate index of democracy[33]. To take account of this problem we have also reported the results of the *OLS*[34] regressions in which the single components of the indexes substituted the aggregate variables as independent variables[35].

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[32] See Table 1 for the correlation between the three instruments and democracy variables.

[33] This problem is made worst by the fact that the definition of democracy is so unclear and subject to measurement errors as explained in the previous section. Furthermore problems of multicollinearity of the aggregate index could depend on each of its components. However given that the aggregation takes place before the index of democracy is used in the regressions we do not know which component variables are responsible of multicollinarity and should thus be excluded from the aggregation.

[34] We did not have enough instruments to use IV estimation techniques.

[35] Possibly the reduction in the degrees of freedom due to the increased number of independent variables does not affect severely the results given the quite large number of observations available. Furthermore using all the components variables together in the regressions as we did is motivated by the risk of omitting relevant variables. However the *OLS* suffers from all the problems described above and this is why we do not consider very reliable the results so obtained (that are reported in Section 3 of the *Appendix*). Nevertheless a possible way (not tried in this research) to circumvent many of these problems could be the one of using a *Nonlinear Principal Component Analysis (NLPCA)*. This approach proposes several data transformations which could permit several improvement of the analysis in particular by making the coefficients invariant to monotonic transformations of the component variables (notice this could be obtained also for the aggregate indexes of democracy). This would help clarify the interpretation of the estimated coefficients in our cross-sections where we are in fact estimating partial derivatives using independent variables that are not continuous. In addition *NLPCA* would permit to save degrees of freedom while giving at the same time the possibility of a clearer understanding of the relative importance of the various components of democracy. Finally this technique could also be useful in cases in which the functional form of the relationship is not linear (notice for instance that BARRO R.G. (1999) finds some evidence of an inverted U-shaped relation between democracy and growth). For a presentation of the *NLPCA* procedures see for instance YOUNG F.W. - TAKANA Y. - DE LEEUW J. (1978), while for a more extensive treatment of the methodology see GIFI A. (1990). I am grateful to one of referees for suggesting me the improvements that the use *NLPCA* could bring.

Furthermore for fiscal policy the available data allowed us to use them in panel form, aggregating them like average values over 6 sub-periods: 1972-1974, 1975-1979, 1980-1984, 1985-1989, 1990-1994, and 1995-1999. Therefore for the three fiscal policy variables, we present the results obtained by using both regressions with "full fixed effects" (dummy variables for both countries and time), and regressions where, as Persson and Tabellini (2003) did, the time effects are replaced by observable variables. In particular the latter are the price of oil (*OIL*), used to indicate economic shocks common to various countries, and the (log) difference between real GDP in the country and its trend (calculated with the Hoddrick-Prescott filter), used to reflect specific shocks in single countries. Both types of analysis are however cumbersome because of the democracy variables that are rather stable over time and must explain variations in fiscal policy within single countries on the basis of a very low number of observations. Nevertheless this analysis is potentially very useful to assess the effect on fiscal policy of political regime transitions that single countries have gone through in the course of time, from democratic ones to non-democratic ones and vice versa.

Regime transitions are indeed an extremely interesting phenomenon and studies into them make it possible to reach results that are very important to determine the direction of causality in the link between democracy and the various dependent variables considered here. Therefore besides the analysis with instrumental variables, there is also a second methodology that was therefore systematically implemented in the research: the study of political regime transitions[36]. With the data taken from the *Polity IV Project*, it was possible to identify[37], between 1950 and 1999, 102[38]

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[36] In their analysis ROLL R. - TALBOTT I. (2001) show how studies on political regime transition events can be used to clarify the problem of the endogenous nature of democracy in its relation with the GDP level per capita.

[37] The criteria followed to identify cases classified as "transition" ones are: minimum 6 point variations in the *POLITY* index (between -10 and +10), different sign before and after the transition and new regime lasting at least three consecutive years respectively before and after the transition.

[38] The scarcity of data especially on income distribution prevented us from analysing all 102 cases of transition for all the variables under study.

regime transitions (58 towards democracy and 44 in the opposite direction) characterised by the suddenness of the event, by its intensity and by the stability of the institutions generated by it and prior to it[39]. Examination of these will be important in order to clarify the problem of endogenous determination of democracy.

4. - Results

In this Section, we shall present the results of our research. They have been divided according to the three groups of economic variables used to assess the effects of democracy in order to make their exposition as clear as possible.

4.1 *Fiscal Policy*

As regards fiscal policy, Table 2.1 shows the results of the cross section regressions applied to the two government size variables, to the share of public expenditure for social security and the welfare state and to the size of the budget deficit/surplus[40].

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[39] The complete list of transition countries and years can be found in Section 1 of the *Appendix*. Here *YEAR* = 0 indicates the transition year.

[40] The Table 2.1 also shows which other variables have been used as regressors along side democracy and which instruments have been used. The specification of the models of fiscal policy presented draws mainly from the results of PERSSON T. - TABELLINI G. (2003) and, analogously to the authors, we have tried to expand the specification to take into account several other variables suggested by the literature. In particular the additional variables used in the regressions for the government size were: *(a)* the degree of income inequality, as the functioning of median income voters models *à la* MELTZER A. - RICHARD S. (1981) implies inequality rises government spending; *(b)* the country's (log) population, as the size of population could affect the size of government in different directions (for instance through increasing returns to scale); and *(c)* the extent of heterogeneity in the country's population, as this can contribute to determine the government size as explained in ALESINA A. - BAQUIR R. - EASTERLY R. (1999). Nevertheless the results, presented in the second and in the fourth chapter of the thesis and not reported in this paper, are in line with those of PERSSON T. - TABELLINI G. (2003) indicating that all the additional variables are not statistically significant.

A different extension of the specification model which takes into account several institutional features like the rules for elections or the forms of government will be discussed later in the text.

The values in the table indicate that for central government expenditure and revenue, democracy is statistically irrelevant to explain the differences between countries. This result is valid irrespective of the way democracy is measured, with *POLITY* or with *GASTIL*. We also see that the coefficients of both democracy indicators are negative and considerably large. These results obtained with the use of instrumental variables are not very different from the ones obtained with OLS (shown in the lower part of Table 2.1), except for the loss of statistical meaningfulness[41] of the *POLITY* coefficient in the regression for government revenues[42]. In particular the negativity of the signs is in line with Olson's theoretical assumption (1991). Nevertheless the size of the coefficients is conditioned by the presence in the sample of a group of socialist countries marked by high levels of public spending and by very low levels of democratisation[43]. This last observation reveals the need for the distinction between socialist autocracies and other types of non-democratic states, as proposed by Przeworski and Limongi (1993). In any case, the non-meaningfulness of democracy is not a surprising result since models such as Olson (1991) are based on highly restrictive hypotheses that are very difficult to verify in reality[44].

The next columns, (5) and (6), of Table 2.1 show that democracy does not appear significant[45] even for the share of expenditure devoted to social security and welfare state. Moreover in this case the negative sign is even the opposite of the "correct" one proposed by economic theory and the presence of socialist countries does not suffice to justify this result. Therefore the data do

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[41] *POLITY's* statistical meaningfulness in this case is equal to 87%.

[42] In addition for what regards the problem of measurement error, if *POLITY* is used as an instrument for *GASTIL* the result of non-meaningfulness is confirmed. In particular in the case of the government expenditures the magnitude and standard deviation of *GASTIL* are respectively: –11.06 and 9.11, while the corresponding values for the case of government revenues are –16.27 and 8.29.

[43] In the case of *GASTIL*, for example, when applying the same *OLS EXPEN* regression of Table 2.1 with and without the socialist countries (always without the *SOCIALIST* dummy), the coefficients (and the standard deviation) are respectively –12.77 (6.57) and –2.75 (7.24).

[44] The hypotheses are for example that there is perfect information among voters, perfect competition among political parties and perfect agency.

[45] DAVERI F. (1996) also reached a similar result.

TABLE 2

FISCAL POLICY: CROSS-SECTIONS, PANEL AND EVENT STUDY

2.1 *Cross-Section Results*[a]

Dep. var.	(1) EXPEN	(2) EXPEN	(3) REVEN	(4) REVEN	(5) SSW	(6) SSW	(7) DEF	(8) DEF	(9) DEF
GASTIL	–17.63 (20.02)		–19.57 (17.66)		–5.62 (6.92)		0.54 (10.12)		
POLITY		–15.80 (12.40)		–16.55 (10.97)		–4.60 (5.06)		–3.28 (3.60)	
POL-RIGTH									–1.92 (1.13)
CIVIL-LIB									2.21 (1.45)
Obs.	86	82	86	82	86	82	86	82	87
OLS	–8.01 (7.39)	–6.48 (5.29)	–8.37 (6.45)	–9.55 (4.70)**	–0.78 (2.24)	–0.43 (1.66)	–1.60 (3.82)	–3.07 (2.95)	yes
R^2 (*OLS*)	0.48	0.54	0.58	0.62	0.78	0.79	0.26	0.30	0.28

[a] Standard errors in parentheses;
* significant at 10%; ** significant at 5%; *** significant at 1%.
Set of additional regressors: *lyp*; *trade*; *pop*15-64; *pop*65; *federal*; *oecd*; *socialist*; *conts&cols*.
Set of instruments: *dem-age*; *engfrac* (not for *SSW*); *eurfrac*.

not confirm the idea that democratic states use social expenditure to distribute benefits to a large slice of population, in contrast with the individualistic use of public resources that is meant to characterise autocracies[46].

Finally, as regards the relation between democracy and budget deficit, as shown in columns (7) and (8) of Table 2.1, again none of the coefficients of the two indicators are significant. Fur-

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[46] MULLIGAN C.L. - GIL B. - SALA-I-MARTIN X. (2004) find the same result of lack of significance of democracy (measured through *POLITY*) over a series of fiscal policy variables for a sample of 142 countries in the years from 1960 to 1990. In particular in their study democracy does not seem to affect policies that redistribute as those for education or for social security. However the same is also true for all the other fiscal policy measures that they analyze with the only exception of personal income tax flatness. For what regards this last one in fact democracies seem to have more flat income tax and thus lower redistribution.

thermore in this case, *POLITY* and *GASTIL* also have a different sign. This last result can however be explained by examining the components of *GASTIL*. The coefficients are in the last column of Table 2.1 and indeed they show the diverging effects caused by civil liberties that are negatively associated with deficit, and by political rights that are positively (like *POLITY*) and significantly associated with the deficit[47]. Finally, by examining the *OLS* R^2 it becomes clear that the specification chosen is only able to explain a limited part of the cross-country variation in deficit[48]. We must however admit that as regards the deficit not even the relative theories had offered definite indications since both the hypotheses are plausible: that of autocratic governments with low deficits because they cannot turn to the international capital markets and that of democratic governments with low deficits because they are held to sound management by democracy[49].

Let us now go onto the results of the panel analysis. Columns (1) and (4) of Table 2.2 show the evidence found for government size. As regards the analysis with fixed time and country effects, both democracy variables prove to be significant at 95% for expenditure and at 99% for revenues[50]. The size of the coefficients is much smaller than that found in the cross-section but the minus sign remains. However this result is not confirmed

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[47] These results were obtained using *OLS*. Furthermore this difference between the two variables composing *GASTIL* are characteristic of all the regressions of the three groups of fiscal policy variables. In particular civil liberties are positively associated with the government size (though never in a significant way) while political rights are negatively so and they are significant in the case of government revenues. The inverse signs and the complete lack of statistical meaningfulness characterize the relationship of these two variables with the composition of government spending.

[48] The amount of explained variance goes up to 63% with the inclusion, among the regressors, of a variable that measures the level of initial debt. This variable is available in the *GFS* for a sample of 46 countries in the 1978-1988 period.

[49] A (weak) confirmation of the validity of both hypotheses was obtained with *OLS* regressors not described here, the first one for a sample of only non developed countries (very low degrees of economic and democratic development as well as low levels of deficit) and the second one for a sample of only developed countries (the richer democratic countries have a lower deficit).

[50] Table 2.2 reports only the coefficients of *POLITY* (with the exception of the deficit regressions) because they are extremely similar to those of *GASTIL*.

TABLE 2 (*continued*)

2.2 *Panel Results* [b]

Dep. var.	(1) EXPEN	(2) EXPEN	(3) REVEN	(4) REVEN	(5) SSW	(6) SSW	(7) DEF	(8) DEF	(9) DEF	(10) DEF
GASTIL							−2.69 (1.40)**	−1.26 (1.46)		
POLITY	0.30 (1.52)	−3.03 (1.56)*	−1.39 (1.22)	−3.36 (1.22)**	0.27 (0.55)	−0.01 (0.49)			−1.55 (1.32)	−0.20 (1.14)
Country effects	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Time effects	no	yes	no	yes	no	yes	no	yes	no	yes
Obs.	405	447	408	452	338	375	420	464	402	444
R^2	0.90	87	0.92	0.92	0.96	0.96	0.75	0.72	0.75	0.72

[b] Standard errors in parentheses;
* significant at 10%; ** significant at 5%; *** significant at 1%.
Set od additional regressors: *lyp*; *trade*; *pop*15-64; *pop*65. Plus: *oil* and *yshock* where there are no time effects.

by what emerges when we replace the fixed time effects with the two variables related to the cost of oil and to idiosyncratic shocks. The coefficients of both variables lose meaningfulness[51], the sign in the expenditure regression becomes positive and both are further reduced in their size (which becomes almost equal to zero in the case of expenditure). Therefore, once again the link between government size and democracy appears to be rather weak and uncertain. Moreover given the limited variability of the democracy indices during the period examined, it is likely that the results will be heavily conditioned by some countries that underwent a transition from one political regime to another during the period studied.

In the case of the share of public expenditure for social security and the welfare state, both analysis methodologies produce very similar results for both democracy indices. Basically what emerges is that they have absolutely no statistical meaningfulness and that the size of their coefficients is close to zero. This fact tallies with what had already been observed in the cross-section,

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[51] They become statistically significant around 80%.

Table 2 (*continued*)

2.3 *Event Study*

	pre-transition	*post*-transition	Countries *pre-t*	Countries *post-t*
A) *From democracy to autocracy*				
EXPEN	30.69	34.28	6	8
REVEN	23.74	27.01	6	8
SSW	5.86	4.67	5	7
DEF	−8.46	−9.92	6	8
B) *From autocracy to democracy*				
EXPEN	28.85	27.09	22	25
REVEN	26.22	24.30	22	25
SSW	7.60	8.31	17	20
DEF	−3.20	−2.79	21	24

C) *Several specific cases*[c]

	EXPEN		REVEN		SSW		DEF	
	pre-t	*post-t*	*pre-t*	*post-t*	*pre-t*	*post-t*	*pre-t*	*post-t*
Bulgaria	52.39	42.28	53.47	36.33	11.35	12.98	−2.61	−6.27
Rumania	40.30	34.11	45.90	33.04	8.03	9.31	5.60	−1.73
Chile	42.65	32.26	29.85	31.90	12.79	7.92	−12.79	−1.01

[c] The transition toward democracy of Bulgaria and Rumania in 1990 and that toward autocracy of Chile in 1973.

it also shows that democracy does not explain the variation in social expenditure over time in the sample of countries studied.

Finally, as for the surplus/deficit, the two estimate methodologies (presented in columns (8) and (9)), produce consistent results when it comes to democracy's negative effect on budget surplus. Once again we find a difference between *POLITY* and *GASTIL* since the latter variable acquires meaningfulness at 95%. The very little economic relevance of the coefficients thus estimated remains.

Finally Table 2.3 also shows some results relating to the study of events. This seems to lead to results that basically correspond to those obtained from the regressions. In particular from the variations in government size measurements in the five years before and in the five years after a change in political regime[52] it is possible to see how after a transition to democracy, there is a drop in both revenues and expenditure of central government (even though they are both limited in size) and also how a transition in the opposite direction goes hand in hand with an increase in both variables (but larger in this case).

Studying events however does not help much to clarify the link between democracy and social expenditure since, as opposed to what transpires from the cross-section results (but in agreement with the panel ones without the time dummy), a transition to democracy is always followed by an increase in the share of public spending for social security and the welfare state, whereas the opposite occurs when the transition is to autocracy. The variation is in any case small.

The budget deficit situation appears to get worse after a transition to autocracy, whereas it improves when the country turns into a democracy. However it is necessary to note that there may be structural differences between the two categories of countries that embark upon these two opposite political paths as is suggested by their different average deficit values before the transition. The countries that become autocracies start off with a average deficit in the five years before the transition that is 8.46%, while the corresponding value for those that turn into democracies is 3.20%. Finally here again we note that the experiences of certain ex-socialist countries greatly affect the mean values as can be seen from the data for Bulgaria and Rumania reported in the lower box of the Table 2.3. These show how the transition to democracy in 1990 coincided with a drastic reduction in public expenditure and revenues of the central government. As further proof of the fact that it is the socialist or other orientation of the

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[52] In all the tables at the end of the text, the five years before the transition are indicated as *pre*-transition, while the five years after as *post*-transition.

government that plays a crucial role, we have included the data on the transition in Chile in 1973, from Allende's democratically elected socialist government to the military government that took over after Pinochet's coup: the consequences in terms of drop in public expenditure are basically similar to those produced by the transition to democracy in Rumania and Bulgaria.

A final concern regarding the analysis of fiscal policy variables involves the models specification we adopted. These models do not cover all the possible institutional influences that affect fiscal policy according to the political economics literature. Features that have been shown to be relevant are for instance the form of government[53] and the electoral rules[54]. In this respect Persson and Tabellini (2003) show that the government size is negatively associated with both presidential regimes and majoritarian systems, and the last one seems also to generate lower welfare spending and smaller government deficits[55]. In addition other characteristics that the literature addresses as possibly relevant are the budget ap-

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[53] For what regards regime types, theory has considered in first place the role played by the separation of powers and by the confidence requirement in determining a country's fiscal policy (where we should notice that this features are generally associated with real world regimes by indicating presidential regimes as those characterized by separation of powers and absence of confidence requirements and parliamentary regimes as those characterized by the opposite features). For the first one, the system of check and balances between different powers, Persson T. - Roland G. - Tabellini G. (1997, 2000) show how this can influence tax policy. Analogously Persson T. - Roland G. - Tabellini G. (2000) illustrate how, having or not a government subject to a confidence requirement, could affect both the composition of government spending and its overall amount.

[54] Among electoral rules, district magnitude and electoral formula are those generally indicated by the theory as more important in explaining fiscal policy. Persson T. - Tabellini G. (2000) and Milesi-Ferretti G.M. - Perotti R. - Rostagno M. (2000) predict that district magnitude influences the composition of government spending and its overall dimension. Analogously electoral formula is indicated by Persson T. - Tabellini G. (2000) and Lizzeri A. - Persico N. (2001) as a determinant of the composition of government spending.

[55] In particular the effects of electoral rules and political regimes detected by the authors are not only statistically significant but also economically relevant. In the case of government spending both presidential regimes and majoritarian elections each lowers the government size by approximately 5% of GDP. Analogously for what regards the composition of spending, majoritarian elections cut welfare spending by approximately 2-3% of GDP and produce smaller budget deficit, approximately 2% of GDP. Finally they also find that better democracies have larger welfare states only if they are proportional-parliamentary.

proval scheme, party structures, "war of attrition" in the government and in the parliament, frequency of government crises, intensity of the swings in the ideological preferences of governments and others (see Persson and Tabellini (2003) for a survey of the theoretical literature and an application to empirical analysis).

One possible way to bring this in our analysis would be to use the single components of the democracy indices in order to try to find out which specific aspects of democracy are conductive to differences between countries fiscal policies[56].

In the case of the components of *POLITY*[57] (see Section 3 of the *Appendix*) this would permit to discover that greater competition in the selection of the executive (*XRCOMP*), for instance an executive originating from free elections, is significantly associated with a cut in revenues. The same holds for the existence of clear and certain rules for the acquisition of the executive power (*XRREG*). In addition to the two above, for government expenditures a significant and positive effect comes also from grater openness in the access to executive power (*XROPEN*)[58]. This last aspect of political regimes seems also to be negatively associated with the dimension of the budget deficit, while, on the contrary, greater competitiveness in political participation seems to be conductive to larger budget deficits[59]. Finally, in line with the previous evidence about aggregated indicators, also the single components of *POLITY* are not statistically significant in explaining the composition of spending and thus in this case an approach fo-

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[56] However notice that this approach does not permit to analyze all the institutional features described above. Only some of them can be traced back to the variables composing our indices of democracy. Thus there is the possibility that our model specification is missing some relevant institutional feature.

[57] For what regards *GASTIL*, the diverging effects of its two components on the variables of fiscal policy have been illustrated previously in the text.

[58] In particular in the regression of the expenditures the coefficients and standard deviations are: *XRCOMP* (–11.92 (4.60)), *XROPEN* (2.64 (1.27)) and *XREG* (7.58 (4.06)). In the regression of the government revenues the corresponding figures are: *XRCOMP* (–9.67 (4.20)) and *XREG* (9.54 (3.70)). However notice that these results are not particularly robust as they are derived using OLS and this approach has all the drawbacks explained in the methodological section. In the same section the possibility of using *NLPCA* was briefly discussed.

[59] The coefficients and standard deviations are: *XROPEN* (–1.41 (0.71)) and *PARCOMP* (2.95 (1.23)).

cusing on different institutional features, as the one of Persson and Tabellini (2003), could be more useful.

4.2 *Income Distribution Inequality*

Table 3.1 presents the results that illustrate the effect of democracy on the middle class's share of income and on the Gini coefficient. The results show the positive effects of democracy in generating a more fair income distribution.

In particular as regards the regressions of the third and fourth quintile income share, democracy, however it is measured, is linked to this variable in a positive and significant manner. Furthermore the large size of the coefficients suggests that from the economic point of view this effect cannot be ignored. In particular a complete transition from autocracy to democracy generates an increase in the middle class's share of income that varies from 5.33 to 6.37% (which corresponds to just under two standard deviations of *MIDDLE*). When compared to the *OLS* regression results, these coefficients estimated with instrumental variables[60] have less statistical meaningfulness (even though it remains at over 90 percent) and greater magnitude. It is also interesting to note that the results in Table 3.1 are greatly influenced by the inclusion in the set of regressors of the dummy for the socialist countries. Without this, the coefficients of the democracy variables loose their meaningfulness and become much smaller[61]. Estimating with instrumental variables, which is an absolutely necessary methodology given the problems discussed above, makes it possible to identify an effect that ranges from democracy to middle class income. The results thus obtained therefore tally with those generated by models such as those

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[60] In this case the instruments are only *DEM-AGE* and *ENGRAC* since the over-identification test tells us to leave out *EURFRAC*.

[61] Indeed when compared to *OLS* estimated coefficients, if the regression is run without the dummy for the socialist countries, *GASTIL* receives a coefficient (and standard deviation) that amounts to 0.53 (1.65) and *POLITY* one amounting to 1.54 (1.32). Neither of them is statistically significant. The inclusion of the dummy increases the share of explained variance by 10 points.

based on the median voter[62] and especially models such as the Acemoglu and Robinson (2000), one which is also useful when interpreting the evidence illustrated below relating to political instability. For the sake of simplification, according to this last model, the governing elites grant an extension of the franchise in order to make their promise of a more fair future income distribution more credible so as to stave off the risk of revolutions and coups by the masses. The latter for their part, once they are free to vote, do indeed chose to implement policies apt to produce an income distribution which is more fair to them. Democracy is then followed by a drop in revolutions and coups and by an increase in middle class income, which is consistent with the present empirical results.

TABLE 3

INCOME DISTRIBUTION: CROSS-SECTION AND EVENT STUDY

3.1 *Cross-Section Results[d]*

Dep. var.	(1) GINI	(2) GINI	(3) MIDDLE	(4) MIDDLE
GASTIL	−6.68 (7.66)		6.37 (3.54)*	
POLITY		−5.48 (6.22)		5.33 (2.90)*
Obs.	56	54	56	54
OLS	−7.31 (3.77)**	−5.88 (2.67)**	5.08 (1.73)***	3.96 (1.25)***
R^2 (OLS)	0.85	0.86	0.80	0.80

[d] Standard errors in parentheses;
* significant at 10%; ** significant at 5%; *** significant at 1%
Set of additional regressors: *lyp*; *lyp²*; *prim*; *sec*; *agri*; *exp-fuel*; *tropical*; *socialist*; *conts&cols*.
Set of instruments: *dem-age*; *engrfrac*.

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[62] Even though an analysis of the relation between social expenditure (*SSW*) and democracy seems to have excluded the idea whereby the channel that leads to income redistribution in favour of the middle class is social security and welfare expenditure, there are other ways to obtain the same result. For example it could be achieved indirectly through the adoption of policies aimed at extending the right to study.

As for the Gini coefficient on the other hand, the results in Table 3.1 show that none of the democracy variables are significant when it comes to explaining the differences existing between the countries of the sample. However the sign is the "correct" minus sign forecast by the theory in the light of the positive effect that democracy is supposed to have when it reduces income concentration. In particular the change to estimating with instrumental variables makes the coefficients that were meaningful in *OLS*, meaningless. As in the previous case, the influence of the group of socialist countries on the results is considerable. In *OLS* not considering these as a separate category, actually leads to positive coefficients for the two democracy variables in the Gini coefficient regressions. This greater sensitivity of the Gini coefficient to the inclusion of the dummy for the socialist countries than of the middle class income can be explained by observing the data supplied by Deninger and Squire (1996). For the period considered in the cross-section, the average Gini coefficient for Bulgaria, Czechoslovakia, Hungary and Rumania is indeed 22.66[63]. This value is very close to the minimum in the sample that is 21.13[64]. However in the case of middle class income, we do not see such a great difference between socialist countries and others. For this variable the average value of these four countries is 41.67[65] as compared to 38.38[66] that is the average value in the sample.

These results for the data at our disposal show that democracy has one effect on middle class income and another on income differences within society as a whole. It is only the former that is significantly affected by democracy. However caution is necessary when drawing definitive conclusions from the results since they are based on a sample that, as already shown, is lim-

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[63] In particular the average values of the Gini coefficient between 1978 and 1988 are: Czechoslovakia, 21.13; Hungary, 22.22; Rumania, 23.38 (the value refers to the only observation available in 1989); Bulgaria, 42.38.

[64] The standard deviation of the Gini coefficient is 9.42.

[65] In particular the average *MIDDLE* values between 1978 and 1988 are: Czechoslovakia, 41.77; Hungary, 40.66; Rumania, 41.89 (the value refers to the only observation available in 1989); Bulgaria, 42.38.

[66] The standard deviation of *MIDDLE* is 3.65.

ited in size and could therefore lead to distortions due to country selection[67].

The lack of data also limits the possibility of using the analysis of transition events to confirm the regression results. Table 3.2 shows the mean values for the two variables of inequality for the five years before and the five years after the transition. This small number of cases of regime transitions is not in contradiction with the econometric evidence. Indeed middle class income drops in both cases of transition to autocracy (Brazil in 1965 and South Korea in 1972). The size of this variation however is more limited than what the regression coefficients would lead us to believe. Even more smaller is the average variation that occurs to the group of new democracies (the average value almost does not change at all as it passes from 39.34 to 39.36). Nevertheless some variations appear if we separate Poland, Hunghery, Rumania and Bulgaria from the other countries. Now it is possible to identify both an increase in the share of income of the middle class for non-socialist countries (this increase anyway is much smaller than what predicted by regressions: the average value goes from 37.82 to 38.46) and a decrease occurred in the four socialist countries (the average value declines from 41.24 to 40.48)[68].

The Gini coefficient variation on the other hand is stronger. While in the two cases of transition to autocracy the index behaves as forecasted by the theory, namely it increases (considerably in both cases), its mean value in cases of transition to democracy seems to contradict it by increasing (from 32.35 to 33.37). However the explanation lies once again in the peculiarity of the four socialist countries observed and for which data are present. Indeed in all four cases the transition to democracy was followed by a sharp increase in income concentration in the subsequent five years (the average value increases from 23.74 to 29.51). Whereas the mean value cal-

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[67] In any case it is necessary to use Deninger K. - Squire L. (1996) in order to have reliable data and to our knowledge there is no other study that carries out this type of analysis with a larger sample.

[68] From the little data we have (not reported) the situation doesn't seem to change in the years after the fifth.

3.2 Event Study

Year	Country	GINI		MIDDLE	
		pre-transition	*post*-transition	*pre*-transition	*post*-transition
A) From democracy to autocracy					
1965	Brazil	53.00	57.61	30.00	28.80
1972	Korea Rep.	32.40	39.10	39.11	37.81
	mean	42.70	48.36	34.56	33.31
B) From autocracy to democracy					
1985	Brazil	56.10	56.77	30.59	29.07
1978	Spain	37.11	26.79	42.69	42.63
1976	Portugal	40.58	36.80	37.28	40.50
1991	Poland	25.92	31.07	40.73	40.87
1990	Hungary	23.75	30.09	40.08	40.02
1990	Bulgaria	21.89	29.82	42.24	39.80
1990	Rumania	23.38	27.06	41.89	41.23
1992	Taiwan	30.14	30.78	40.41	41.09
1988	Pakistan	32.24	31.15	38.15	39.03
	mean	32.36	33.37	39.34	39.36
	mean 4 soc.	23.73	29.51	41.26	40.48
	mean non-soc.	39.23	36.46	37.82	38.46

culated for the other countries that became democratic drops from 39.23 to 36.46.

These results show that it seems confirmed the idea that democracy precedes a more equal income distribution and not *vice versa*, but overall they illustrate that it is absolutely necessary to use a larger sample of countries in order to clarify definitively the direction of the causality effect and to avoid distortions in the econometrical results due to the selection of countries to be included.

Finally, as we did for fiscal policy, we could try to use the single components of the democracy indicators in order to find out the specific institutional characteristics that affect inequality. This analysis would show that both greater civil liberties and stronger political rights are conductive to higher equality (higher *MIDDLE*

and lower *GINI*)[69]. On the other hand for what regards the components of *POLITY*, only a grater competitiveness in the political participation (*PARCOMP*) is associated with *MIDDLE* in a significant and negative way[70]. Nevertheless these results are highly sensible to the OLS methodology adopted to derive them[71].

4.3 *Political Instability*

Finally, as far as the last group of variables studied is concerned, the theory seemed to favour a positive effect of democracy on the reduction of the number of revolutions and coups due to the institutionalisation of political conflict and to the fact that political representation is granted to all social groups.

What has emerged from our empirical analysis is that democracy does indeed have a positive effect on the drop in number of revolutions and coups. Indeed the results in Table 4.1 show that there is a negative relation between the two democracy variables and the number of revolutions and coups. However the coefficients never reach statistically significant levels[72]. These results obtained with estimates based on instrumental variables are very similar to those obtained with *OLS*. By using this last analysis methodology it becomes evident that if we run the same regressions not including middle class income in the group of control regressors, the democracy coefficient appears to be negatively and significantly linked to the number of revolutions and coups. This result goes for *POLITY* and *GASTIL* and is based on samples of 123 and 130 countries respectively[73]. This could be explained pre-

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[69] Nevertheless the coefficients are never statistically significant.

[70] The estimated coefficient and standard error for *PARCOMP* are: –0.06 and 0.80.

[71] The methodological section has discussed the problems affecting OLS in this kind of analysis and has stressed that they can be severe in the regressions for income inequality. This is particularly true for the *GINI* coefficient regression where the result of a statistically significant effect of *XRCONST*(–), *XROPEN*(+) and *PARREG*(–) is thus not very reliable.

[72] A similar result in terms of coefficient sign and meaningfulness emerged also from TAVARES H. - WACZIARG R. (2001) from which this part of the research stems.

[73] If distribution variables are excluded, it becomes possible to expand the sample considerably. In column (3) of Table 4.1 only the coefficient estimates of *GASTIL* are reported but the results for *POLITY* are analogous.

cisely in the light of the Acemoglu and Robinson (2000) model quoted above, as an indirect effect of democracy mediated by the middle class income that previously appeared to be strongly influenced by democracy.

However the influence (even though conditioned by middle class income) that democracy has on the second variable we used to describe political instability, that is the frequency of top government constitutional changes, is direct and negative. The result obtained in this case was found to be robust to both estimation techniques. This holds true particularly for the *GASTIL* coefficient, which in 2*SLS* is meaningful above 90% level and is quite large (–0.72 compared to a standard deviation of *CABCH* of 0.26). But the POLITY coefficient is also almost statistically significant, since it becomes significant at 89%; while its size is similar to that of *GASTIL*, –0.66[74]. This result is all the more surprising when we see that countries, whose authoritarian regimes are subject to very little change at the top of the power pyramid, have very low levels of democratisation. However this evidence has a limitation, which is that it is based on a sample of only 52 countries. On the other hand, this is inevitable since the analysis of the elements that determine the frequency of change in the executive showed that the middle class's share of income is a very decisive element that cannot be excluded from the model[75].

Therefore in actual fact we started off intending to verify the hypothesis that Tavares and Wacziarg (2001) proposed but did not test, of a trade-off between the two forms of political instability that democracy would have us believe but what we actually found was that it has negative impact on both.

We now come to the results obtained by studying events (Table 4.2); the wide coverage in terms of countries and years in the dataset used makes it possible for us to carry out an analysis that is wider than previous ones. In particular, it is possible to trace back the evolution of the two variables of political instability in

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[74] The corresponding *OLS* coefficients, in the lower part of the table, are smaller but more significant in both cases.

[75] For instance in regression (5) of Table 4.2 the estimated *MIDDLE* coefficient (and standard deviation) is 2.92 (1.34) and it is statistically significant above 90%.

POLITICAL INSTABILITY:
CROSS-SECTIONS AND EVENT STUDY

4.1 *Cross Section Results*[e]

Dep. var.	(1) REVCOUP	(2) REVCOUP	(3) REVCOUP	(4) CABCH	(5) CABCH
GASTIL	–0.21 (0.17)		–0.24 (0.09)**	–0.72 (0.41)*	
POLITY		–0.19 (0.16)			–0.66 (0.40)
Obs.	61	59	130	53	52
OLS	–0.12 (0.11)	–0.06 (0.09)	yes	–0.50 (0.22)**	–0.27 (0.15)*
R^2 (OLS)	0.37	0.36	0.32	0.58	0.56

[e] Standard errors in parentheses;
* significant at 10%; ** significant at 5%; *** significant at 1%.
Set of additional regressors for *revcoup*: *inv*; *prim*; *middle* (non in (3)); *exp-fuel*; *conts&cols*
Set of additional regressors for *cabch*: *lyp*; *p-frac*; *prim*; *middle*; *govc*; *conts&cols*
Set of instruments: *dem-age*; *engrfrac*; *eurfrac*.

the twenty years before and after the regime transition[76]. From this we learn that a transition to democratic institutions is followed by a constant drop in the frequency of constitutional changes in the executive, a particularly big drop in the first five-year period (the average value drops from 0.63 to 0.40) but quite visible in the second five-year period too (a drop from 0.40 to 0.29 in this case). On the other hand transitions to autocracy, for this variable, go hand in hand with an initial drop in instability[77] (the mean value drops from 0.57 to 0.44) which is then followed by an increase in the second five year period that brings the mean value of political instability in this group of countries up to levels

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[76] When reading the results, it is however necessary to bear in mind the number of countries on the basis of which the average value of the variables was calculated. Indeed, at the two extremes, between –20 and –11 years and between +11 and +20 years respectively, the number of available observations is generally much lower that that for periods that are closer to the transition year ("year zero").
[77] As assumed by TAVARES J. - WACZIARG R. (2001).

Table 4 (*continued*)

4.2 *Event Study*

	Sub periods (years from the event, year = 0)					
	–20 to –11	–10 to 0	–5 to 0	0 to +5	+6 to +10	+11 to +20
A) REVCOUP						
From democracy to autocracy						
mean	0.37	0.35	0.35	0.37	0.30	0.08
no. of countries	6	30	30	30	28	15
From autocracy to democracy						
mean	0.37	0.37	0.43	0.26	0.29	0.32
no. of countries	22	31	31	31	15	7
B) CABCH						
From democracy to autocracy						
mean	0.40	0.58	0.57	0.44	0.51	0.42
no. of countries	4	32	32	34	32	22
From autocracy to democracy						
mean	0.68	0.51	0.63	0.40	0.29	0.28
no. of countries	12	18	18	21	10	3

that are much higher than those of the new democracies (in this case the change is from 0.44 to 0.51).

Furthermore we note that the values recorded for the number of revolutions and coups also appear to have a time association with democracy that tallies with the negative link shown by the regressions and predicted by the theory. For the 31 countries that in the five years before the advent of democracy have an average value of 0.43, then it drops to 0.26 in the following five years. The reverse happens in countries that become autocracies where indeed the corresponding values are 0.35 and 0.37 respectively. In this last case however, we note that the variation is almost nil and that if we look at the following

five years, average instability in these autocratic countries drops to 0.30.

Finally we should note that in this case no significant effect has been found using the disaggregated indicators of democracy[78].

5. - Conclusions

To sum up, democracy does not appear to have any special effect on fiscal policies whereas it does appear to have an effect on income distribution due to its positive link with the middle class income share and on political stability particularly due to its negative link with the frequency of constitutional change at the top of the executive. Furthermore these last two effects cannot be ignored given the large size of the estimated coefficients.

Therefore our research into the economic effects of democracy was not fruitless, quite the contrary, it has supplied further evidence to support various theories we started with. However what has also emerged is the need to clarify in greater detail which mechanisms lie behind the relation between democracy and inequality (since the relation with social expenditure has proved to be nonexistent) and the need to pursue research on the direction of the causality of this link.

Furthermore the three "channels" of growth studied here are not the only relevant aspects through which democracy and more generally the type of political institutions can affect economic development. Greater insight into the relation between democracy and elements such as the accumulation of human capital and the safeguard of property rights would certainly be illuminating.

Finally we must try to understand when democracy represents a really relevant analysis category and when it would be more useful to use other criteria to separate political regimes in order to identify the different effects they have on economic policies as the Persson and Tabellini (2003) study on the effects of presidential

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[78] Again notice the problems illustrated before relatively to this kind of analysis.

and parliamentary governments and of majority and proportional electoral systems shows for fiscal policy variables. Indeed the empirical analysis based on the single components of the two democracy indices that we presented deserves further attention, as it could produce results that lead to a better understanding of those specific characteristics of political institutions that are really conductive to economic growth and that can be hidden by the use of an aggregate variable as democracy[79].

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[79] Which also suffers from all the definition and measurement problems described before.

APPENDIX

TABLE 1

LIST OF EVENTS OF POLITICAL TRANSITION

1.1 *Democratic Events*

Country	Year = 0	*Polity prior*	*Polity post*	Variation
Nicaragua	1990	−1	6	7
Panama	1989	−8	8	16
Colombia	1957	−5	7	12
Venezuela	1958	−3	6	9
Haiti	1994	−7	7	14
Dominican Rep.	1978	−3	6	9
Mexico	1994	0	6	6
Guatemala	1966	−5	3	8
Guatemala	1986	−7	3	10
Honduras	1982	−1	6	7
El Salvador	1984	−6	6	12
Guyana	1992	−7	6	13
Ecuador	1979	−5	9	14
Perù	1980	−7	7	14
Brazil	1985	−3	7	10
Paraguay	1989	−8	2	10
Chile	1989	−6	8	14
Argentina	1983	−8	8	16
Uruguay	1952	0	8	8
Uruguay	1985	−7	9	16
Spain	1978	−7	9	16
Portugal	1976	−9	9	18
Poland	1991	−6	8	14
Hungary	1990	−7	10	17
Czechoslovak	1990	−7	8	15
Albania	1992	−9	5	14
Greece	1975	−7	8	15
Bulgaria	1990	−7	8	15
Romany	1990	−8	5	13
Guinea Bissau	1994	−6	5	11
Mali	1992	−7	7	14
Benin	1991	−7	6	13
Comoros	1990	−7	4	11
Niger	1992	−7	8	15
Nigeria	1979	−7	7	14
Central African Rep.	1993	−7	6	13
Congo	1992	−8	5	13

(continued)

TABLE 1.1 *(continued)*

Country	Year = 0	*Polity prior*	*Polity post*	Variation
Uganda	1980	–7	3	10
Ethiopia	1995	–8	1	9
Mozambique	1994	–6	6	12
Zambia	1991	–9	6	15
Malawi	1994	–9	7	16
Lesotho	1993	–7	8	15
Madagascar	1992	–6	9	15
Sudan	1965	–7	7	14
Turkey	1983	–5	7	12
Syria	1954	–7	7	14
Mongolia	1992	–7	9	7
Taiwan	1992	–1	7	8
Korea Rep.	1988	–6	6	12
Korea Peop. Rep.	1962	–7	1	8
Pakistan	1973	0	8	7
Pakistan	1988	–4	8	12
Bangladesh	1991	–5	6	11
Nepal	1990	–2	5	7
Cambodia	1993	–7	1	8
Philippines	1987	–6	8	14
Fiji	1990	–3	5	8

1.2 *Autocratic Events*

Country	Year = 0	*Polity prior*	*Polity post*	Variation
Panama	1968	4	–7	–11
Cuba	1955	3	–9	–12
Dominican Rep.	1966	8	–3	–11
Guatemala	1954	2	–6	–8
Guyana	1980	1	–7	–8
Perù	1968	5	–7	–12
Perù	1992	8	–3	–11
Brazil	1965	6	–9	–15
Chile	1973	6	–7	–13
Argentina	1966	0	–9	–8
Argentina	1976	6	–9	–15
Gambia	1994	8	–7	–15
Uruguay	1973	8	–8	–16
Greece	1967	4	–7	–11
Senegal	1963	0	–7	–6
Benin	1965	2	–7	–9
Sudan	1958	8	–7	–15
Sierra Leone	1971	1	–6	–7

TABLE 1.2 *(continued)*

Country	Year = 0	*Polity prior*	*Polity post*	Variation
Ghana	1982	6	–7	–13
Nigeria	1966	8	–7	–15
Nigeria	1984	7	–7	–14
Congo	1963	4	–7	–11
Uganda	1967	7	–7	–14
Uganda	1985	3	–7	–10
Burundi	1966	0	–7	–7
Somalia	1969	7	–7	–14
Zambia	1972	0	–9	–9
Zimbabwe	1987	1	–6	–7
Lesotho	1970	9	–9	–18
Swaziland	1973	0	–10	–10
Sudan	1969	7	–7	–14
Sudan	1989	7	–7	–14
Iran	1953	0	–10	–9
Egypt	1952	1	–7	–8
Jordan	1957	0	–9	–8
Korea Rep.	1972	3	–9	–12
Pakistan	1977	8	–7	–15
Myanmar	1962	8	–7	–15
Laos	1975	8	–7	–15
Malaysia	1969	10	1	–9
Singapore	1965	7	–2	–9
Philippines	1972	5	–9	–14
Byelorussia	1996	7	–7	–14
Azerbaijan	1995	1	–6	–7

2. - List of Variables and of their Sources

2.1 *Sources*

1) Banks A. (1979 and subsequent updates). [*BANKS*]

2) Deninger K. - Squire L. (1996). [*DS*]

3) Freedom House: Freedom in the World Survey (2001). [*FH*]

4) International Monetary Found: Government Financial Statistics (2001). [*GFS*]

5) Marshall M.G. - Jaggers K. (2000). [*POLITY*]

6) Persson T. - Tabellini G. (2003) dataset. [*PT*]

7) World Bank: World Development Indicators (2001). [*WDI*]

8) World Bank: Easterly, William, Economic Growth Resources downloadable collection of several databases (2002) (www.worlbank.org). [*EWB*]

2.2 *Variables*

AGRI	=	Agriculture, value added (% of GDP). [*WDI*]
CABCH	=	Major cabinet changes. [*BANKS*]
CIVIL-LIB	=	Subjective index of civil liberties. [*FH*]
CONTS&COLS	=	Dummy variables for colonial origin and geographical localization. [*EWB*]
DEF	=	overall deficit/surplus (as a % of *GDP*). [*GFS*]
DEM-AGE	=	Elapsed time since the country became a democracy. [*POLITY*]
ENGFRAC	=	Fraction of the population speaking English. [*PT*]
ETHNIC	=	Ethnic fractionalisation. [*EWB*]
EURFRAC	=	Fraction of the population speaking a European language different from English. [*PT*]
EXPEN	=	Total expenditures of the central government (% of *GDP*). [*GFS*]
EXP-FUEL	=	Dummy for exporters of fuels (mainly oil). [*EWB*]
FEDERAL	=	Dummy for federal states. [*PT*]
GASTIL	=	Simple average of *POL-RIGHT* and *CIVIL-LIB*.
GINI	=	Gini coefficient. [*DS*]
GOVC	=	Major government crises. [*BANKS*]
INV	=	Investment rate (as a % of GDP). [*WDI*]
LYP	=	Log real *GDP* capita. [*WDI*]
LYP2	=	LYP squared.
MIDDLE	=	Share of income of the third and fourth quintiles. [*DS*]
OECD	=	Dummy for OECD member countries. [*EWB*]
P-FRAC	=	Party fractionalisation index. [*BANKS*]
POL-RIGTH	=	Subjective index of political rights. [*FH*]
POLITY	=	Polity IV rescaled from 0 to 1. [*POLITY*]
POP15-64	=	Fraction of the population whose age is between 15 and 64 years. [*WDI*]
POP65	=	Fraction of the population aged 65 years or more. [*WDI*]
PRIM	=	School enrolment, primary (% gross). [*WDI*]
REVCOUP	=	Number of revolutions and coups d'etat per year. [*BANKS*]
REVEN	=	Total revenues and grants of the central government (% of *GDP*). [*GFS*]
SEC	=	School enrolment, secondary (% gross). [*WDI*]

SOCIALIST	= Dummy for socialist origin of the legal system. [*EWB*]
SSW	= Social security and welfare spending of the central government (% of *GDP*). [*GFS*]
TRADE	= Total trade (imports+exports) (% of *GDP*). [*WDI*]
TROPICAL	= Dummy for countries whose absolute latitude is less than or equal to 23. [*EWB*]

3. - Polity and its Components

For every country the value of *POLITY* is obtained by subtracting the value of the variable *AUTOC* from that of *DEMOC*. These last two variables are a weighted sum of the scores a country receives in several aspects of its political institutions. In particular the scores regard six different characteristics which are the components of *POLITY* and which can be grouped into three broader groups as follows (in parenthesis is reported how the score is attributed for each variable):

1) Executive Recruitment variables:

XRREG: regulation of the chief executive recruitment (1 if Unregulated, 2 if Designational/Transitional, 3 if Regulated).

XRCOMP: competitiveness of executive recruitment (1 if Selection, 2 if Dual/Transitional, 3 if Election).

XROPEN: openness of executive recruitment (1 if Closed, 2 if Dual Executive-Designation, 3 if Dual Executive-Election, 4 Open).

2) Independence of Executive Authority variables:

XCONST: executive constraints (1 if Unlimited Authority, 2 if Intermediate Category, 3 if Slight to moderate limitation, 4 if Intermediate Category, 5 if Substantial limitations, 6 Intermediate Category, 7 if Executive parity or subordination).

3) Political Competition and Opposition variables:

PARREG: regulation of participation (1 if Unregulated, 2 if Multiple Identity, 3 if Sectarian, 4 if Restricted, 5 if regulated)

PARCOMP: competitiveness of participation (0 if Not Applicable, 1 Repressed, 2 Suppressed, 3 Factional, 4 Transitional, 5 Competitive).

Given the scores a country has received in the above six variables then DEMOC is calculated as a weighted sum of: *(a)* the degree of competitiveness in the recruitment of the executive; *(b)* the openness of executive recruitment; *(c)* the limitations imposed to the executive and *(d)* the level of competitiveness of political participation. The weights are those reported in the right column:

XRCOMP
(3) Election	+2
(2) Transitional	+1

XROPEN (only if *XRCOMP* is classified (3) Election or (2) Transitional)
(3) Dual/election	+1
(4) Election	+1

XCONST
(7) Executive parity or subordination	+4
(6) Intermediate category	+3
(5) Substantial limitations	+2
(4) Intermediate category	+1

PARCOMP
(5) Competitive	+3
(4) Transitional	+2
(3) Factional	+1

For what regards *AUTOC*, its value depends on some characteristics of political regimes. In particular they are: *(a)* the competitiveness in the selection of the executive; *(b)* the openness of the executive; *(c)* the limits to the executive; *(d)* the regulation of political participation and *(e)* the competitiveness in political participation. *AUTOC* is given by the sum of the above variables with the following weights:

XRCOMP
(1) Selection	+2
(2) Transitional	+1

XROPEN (only if *XRCOMP* is classified (1) Selection)
(1) Closed	+1
(2) Dual/designation	+1

XCONST
(1) Unlimited authority	+3
(2) Intermediate category	+2
(3) Slight to moderate limitations	+1

PARCOMP
(1) Suppressed	+2
(2) Restricted	+1

PARREG
(4) Restricted	+2
(3) Factional/restricted	+1

Finally we report some descriptive statistics for the six component variables, their correlations and the results of *OLS* regressions in which they appear ad independent variables in place of *POLITY*.

Table 2

SEVERAL DESCRIPTIVE STATISTICS

	POLITY	PARCOM	PARREG	XRCOMP	XCONST	XROPEN	XRREG
Mean	−1.550	2.379	3.893	1.543	3.529	3.150	2.329
Median	−6	2	4	1	3	4	2
Max	10	5	5	3	7	4	3
Min	−10	1	2	0	1	0	1
Std. Dev.	7.465	1.566	0.811	1.055	2.271	1.444	0.593
Obs.	140	140	140	140	140	140	140

Table 3

CORRELATIONS BETWEEN VARIABLES

	POLITY	PARCOMP	PARREG	POLCOMP	XRCOMP	XCONST	XROPEN
POLITY	1						
PARCOMP	0.95	1					
PARREG	0.11	0.24	1				
POLCOMP	0.97	0.98	0.15	1			
XRCOMP	0.91	0.86	0.09	0.88	1		
XCONST	0.95	0.89	0.14	0.91	0.92	1	
XROPEN	0.39	0.39	−0.05	0.40	0.63	0.53	1
XRREG	0.64	0.68	0.13	0.67	0.77	0.68	0.37

Table 4

TABLE OF *OLS* REGRESSIONS[f]

	EXPEN	REVEN	SSW	DEF	GINI	MIDDLE	CABCH	REVCOUP
XCONST	0.62 (1.62)	1.21 (1.48)	0.23 (0.54)	0.48 (0.94)	–2.22 (1.15)*	0.76 (0.51)	0.04 (0.06)	0.03 (0.06)
XRCOMP	–11.92 (4.60)**	–9.67 (4.20)**	–1.11 (1.53)	1.65 (2.67)	–1.45 (2.67)	–0.56 (1.19)	–0.15 (0.14)	0.06 (0.15)
XROPEN	2.64 (1.27)**	1.27 (1.16)	0.18 (0.41)	–1.41 (0.71)*	2.17 (0.94)**	–0.10 (0.42)	0.06 (0.05)	0.03 (0.06)
XRREG	7.58 (4.06)*	9.54 (3.70)**	–0.86 (1.47)	2.78 (2.52)	0.71 (2.44)	0.76 (1.08)	0.14 (0.13)	–0.06 (0.14)
PARCOMP	2.49 (2.07)	–0.77 (1.89)	0.18 (0.72)	2.95 (1.23)**	2.80 (1.81)	–0.06 (0.80)*	–0.11 (0.12)	–0.10 (0.10)
PARREG	–1.55 (1.89)	–0.66 (1.73)	–0.44 (0.65)	0.96 (1.13)	–1.91 (0.98)*	1.05 (0.44)	0.01 (0.07)	0.01 (0.07)
Obs.	82	82	82	82	54	54	52	53
R^2	0.56	0.62	0.80	0.41	0.88	0.85	0.60	0.38

[f] Standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%.

Set of additional regressors as specified in the text for the various benchmark regressions.

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