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A note:

Do relatively democratic countries grow faster?

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Abstract:

A previous paper in this journal shows that the effect of democracy on economic growth is largely spurious. This note adds an analysis of the relation between *relative* democracy and growth. The democratic transition is the underlying path of the democracy index in the representative country as a function of income. Relative democracy – termed tension – is the deviation between the actual value of the democracy index and the democratic transition at the same income. The possible causal effect of democracy on growth is calculated as the effect of the tension. It is very small and unstable – even the sign is dubious. Thus, the spurious part is by far the largest part of the small correlation between democracy and growth.

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1. Introduction

Paldam (2024) showed that the small but significant correlation between democracy and growth is mainly spurious as both democracy and the growth rate have transitions as functions of income. The present paper adds an analysis of the effect of relative democracy on growth, i.e., the excess democracy over the path of the democratic transition, $\Theta^V(y)$, see Figure 1a below. The democratic tension is $T^V = V(y) - \Theta^V(y)$. If $T^V > 0$, the country is relatively democratic, and if $T^V < 0$, it is relatively authoritarian.

More than 200 papers analyze the relation between democracy and growth.[2] The democracy index, V, and the real growth rate, g, typically have a small positive correlation in large data samples as seen on Figure 2a below. This has often been interpreted as a causal effect of democracy on growth, so that democratization comes with a growth premium. This is a nice message, but a dubious one. The effect has a spurious part, as the two variables V and g both have transitions, $\Theta^V(y)$ and $\Theta^g(y)$, which are functions of income.[3] The orders of magnitude suggest that the spurious part is a large part of the small correlation, *ibid*.

All figures in this paper are kernel regressions estimated on unified data for the samples indicated. On the use of kernel techniques in comparative macro analysis, see *ibid*. The figures include the coefficient of correlation, r, and as most of the data analyzed are far from normal Spearman's rank correlation, ρ. Significant correlations are provided with a *.

2. Data

Two primary data are used: V is the polyarchy democracy index from the V-Dem project, and *gdp* is real GDP per capita from the Maddison Project, see references for sources. Income is $y = \ln(gdp)$ and growth $g = 100(gdp/gdp_{-1} - 1) \approx \Delta y$. The series overlap from 1800 to 2022 for 173 countries. 18 OPEC countries are deleted, *ibid*, so 145 countries are included.

The data is the panel $(V, y, g)_{it}$, where i is countries, and t is time. The democratic transition is found by two steps: (i) The panel is unified to give the $(V, y, g)_j$ vector, where j covers both i and t. The elements of the vector are sorted by the explanatory variable in the kernel. (ii) The transition path is estimated as the kernel regression $\Theta^V(y) = K^V(y, bw)$, where bw is the bandwidth. Potentially, the vector has $\check{N} = 145 \times 222 = 32{,}190$ elements, but $N = 13{,}391$ only, so 58% are missing, mainly because

[2] *Ibid* refers to Paldam (2021, 2024, 2025a and b). It analyzes the transitions in the institutional variables, discusses the kernel methodology, and surveys the literature.

[3] A transition is the change in the level of a variable when a country develops from the traditional to the modern steady state, a process that normally takes 1-2 centuries; see Figure 1 below for a fine specimen.

many countries do not exist for the full period. The data includes 1,296 observations for countries under colonial rule. Thus, the (small) liberation wave in V is included. Figure 1a shows that the results are slightly better if data for colonies are deleted.[4] The average $T^V(y)$ for all y should be zero, see row (5) in Table 1. The question posed in the headline can now be analyzed as the (T^V, g)-relation.

Table 1. Descriptive statistics for the full data set, and four subsets divided by income, y

Sample is in order by y		All	Subset 1	Subset 2	Subset 3	Subset 4
1	N, number of obs	13,391	3,347	3.348	3,348	3.348
2	Income from	5.934	5.934	7.444	8.199	9.109
3	Income to	11.389	7.444	8.199	9.109	11.389
	Part A: Averages for the four variables					
4	V, polyarchy	0.396	0.202	0.271	0.414	0.697
5	T^V, tension	0.001	-0.010	-0.002	0.005	0.011
6	y, income	8.334	7.028	7.813	8.635	9.859
7	g, growth	1.939	1.071	1.677	2.421	2.588

3. The two transitions, $\Theta^V(y)$ and $\Theta^g(y)$, making the (V, g)-relation spurious

The paths of the two transitions are robust to the time-period when it exceeds 25 years, *ibid*. At present they are estimated on as many observations as possible. The polyarchy index has spells of constancy that last 18.5 years on average, *ibid.* Thus, long series are necessary. The transitions are explained in more detail and with many references, *ibid*.

Figure 1. The two transitions giving spuriousness

Figure 1a. The democratic transition $\Theta^V(y)$

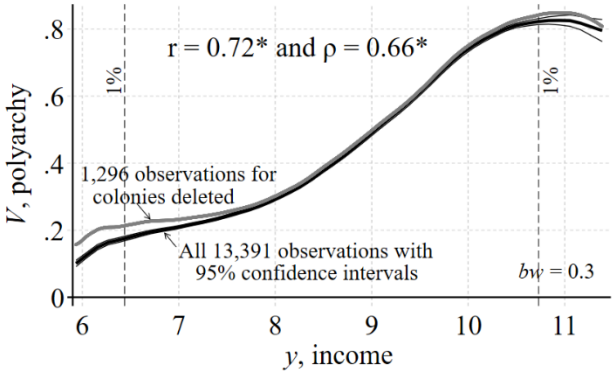
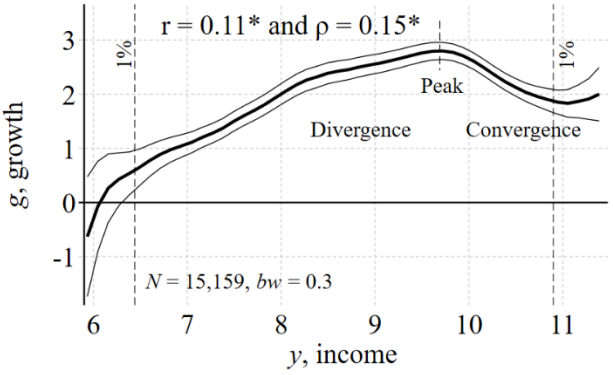


Figure 1b. The transition in the growth rate $\Theta^g(y)$



[4] Kernels give outputs for an equidistant explanatory variable, and the program has estimated so many points that all observations for y have been matched up with an $y(V)$, where the error on the y's is within $\pm$0.001, which is 0.012%.

Figure 1a shows the democratic transition. It is a perfect transition curve with narrow 95% confidence intervals, which are hard to see except at the end where data are thin. The curve is shown with and without observations for colonies. The correlations are substantial. The transition has two explanations. Very briefly they are: The underlying long-run transition path is explained by the agricultural and the religious transitions. They undermine two of the *three pillars* in the traditional power structure of king, feudal aristocracy, and church. The short to median run is explained by the *jumps model* where stochastic triggering events cause the system to jump in the direction of the transition path, see Paldam (2021 and 2025a).

Figure 1b shows the transition curve for the growth rate.[5] Here the correlations are much smaller. It shows the well-known picture where poor to middle-income countries diverge while high income countries converge. The confidence intervals are wider than for the democratic transition, but still narrow. The curve is explained by the (old) two-sector model of development, see Paldam (2021).

4. The full dataset: $g(V)$ and $g(T^V)$ curves

The next five figures are in pairs where the left-hand figures are for growth and democracy, $g(V)$, while the right-hand figures are for growth and relative democracy, $g(T^V)$. The vertical g-axis shows g minus its average for each data sample. Kernels estimate the average for a fixed bandwidth; thus, parts of the curve may be supported by few observations only. This is reflected in the confidence intervals, and in the vertical dashed lines. The two transition relations in section 3 predicted that the (g, V) relation has a positive slope for most of the range but bends down at high values of V precisely as Figure 2a.

Figure 2. For all data from y = 5.934 to 11.389. Growth net of average 1.939

Figure 2a. $g(V)$ growth and democracy

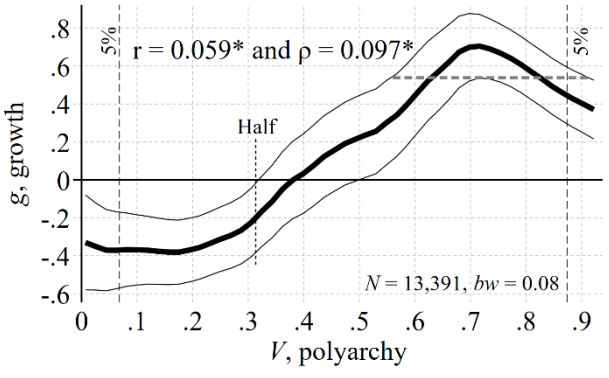
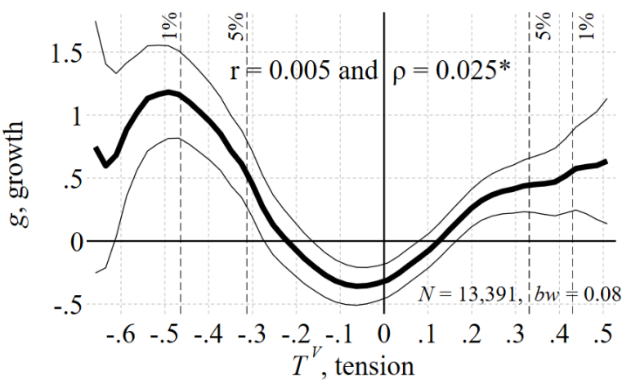


Figure 2b. $g(T^V)$ growth and relative democracy



[5] Figure 1b uses all available growth rates in the dataset from the Maddison-project. If the data is restricted to the ones used for Figure 1a, the kernel-curve is the same.

Thus, Figure 2a looks as predicted. It has wider confidence intervals than the curves on Figure 1 and much smaller, but still significant, correlations. This tallies with the idea that it is a spurious relation. The V-data are right skewed, but not strongly so.

Figure 2b has very small correlations, and a form that differs from Figure 2a although V and T^V have a correlation of about 0.8. This means that when the spurious part of the relation is taken out, very little remains. The form of the curve will be discussed as we proceed.

The next four sections deal with the four subsets of the data. The figures are constructed as Figure 2. The only pair looking a bit like Figure 2 is Figure 6 for the fourth subset.

5. Subset 1 low-income data: $g(V)$ and $g(T^V)$ curves

The two curves for the first subset look alike, and they both have a part to the right that is significant, but none of the four correlations are significant. The data for the figure is right skewed. Most of the significant parts of the kernels are in the thin top end of the data. The low correlations in Figure 3a are even lower in Figure 3b.

Figure 3. For low-income quarter: y = 5.934 to 7.444. Growth net of average 1.071

Figure 3a. $g(V)$ growth and democracy

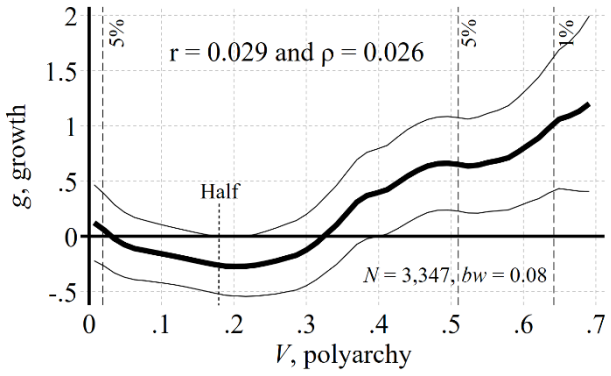
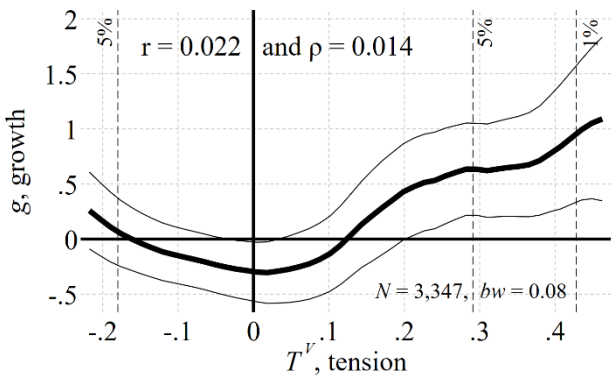


Figure 3b. $g(T^V)$ growth and relative democracy



6. Subset 2 low middle income data: $g(V)$ and $g(T^V)$ curves

The two kernel curves for the second subset look a great deal like the ones for the first subset. Once again, the significant part of the picture above V = 0.5 is supported by the thin end of the data only. The normal correlation is lower than for Figure 3, but strangely the rank correlation ρ is significant on both figures. The rise to the right of the T^V-axis in Figure 2b is due to subsets 1 and 2. However, as will appear in the next two sections, it does not generalize.

Figure 4 Low middle-income quarter: y = 7.444 to 8.199. Growth net of average 1.677

Figure 4a. $g(V)$ growth and democracy

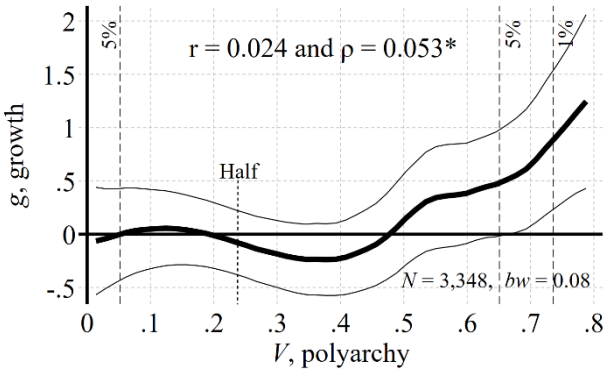
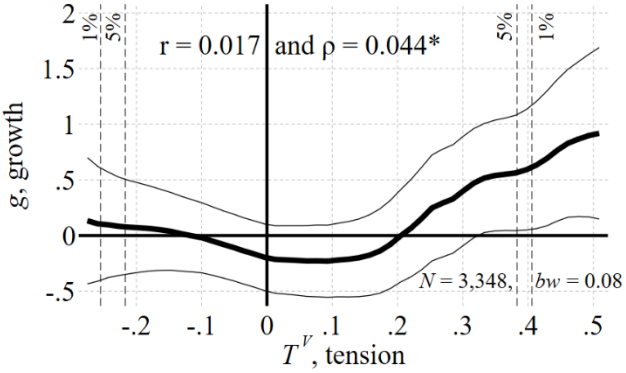


Figure 4b. $g(T^V)$ growth and relative democracy



7. Subset 3 high middle-income data: $g(V)$ and $g(T^V)$ curves

The third subset gives the clearest picture. There are no signs of a relation. The correlations are insignificant and the (wide) confidence intervals include zero throughout their range. In addition, the two curves do not look alike, and have little skewness.

Figure 5 Low middle-income quarter: y = 8.199 to 9.109. Growth net of average 2.421

Figure 5a. $g(V)$ growth and democracy

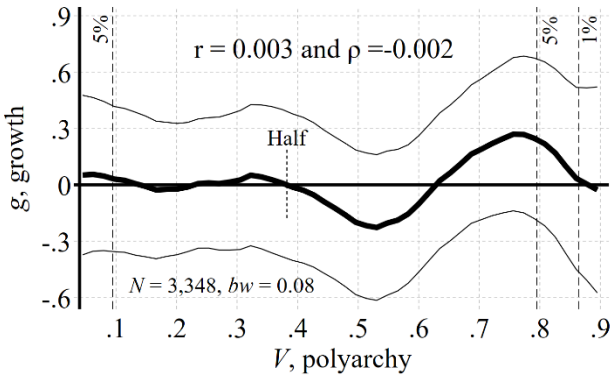
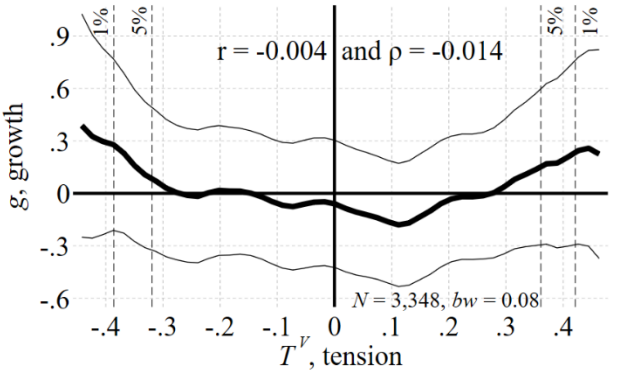


Figure 5b. $g(T^V)$ growth and relative democracy.



8. Subset 4 high-income data: $g(V)$ and $g(T^V)$ curves

The fourth subset gives kernels that look a bit like Figure 2, and three of the four correlations are significant. However, it is interesting to note that the two graphs for subset 4 look different from the graphs for the other subsets.

Figure 6. High-income quarter: y = 9.109 to 11.389. Growth net of average 2.588

Figure 6a. $g(V)$ growth and democracy

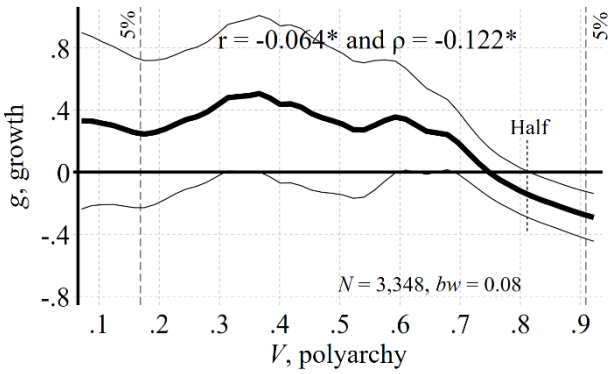
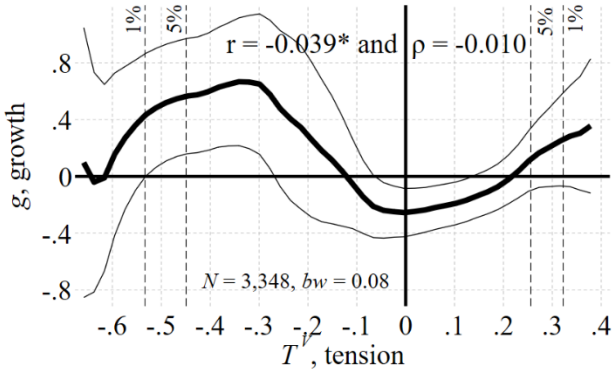


Figure 6b. $g(T^V)$ growth and relative democracy



The data for Figure 6a are strongly left skewed. The right-hand negative slope is the political and economic convergence within the group of old wealthy countries, while the unclear left-hand part of the graph is supported by few data of the countries converging to the high-income group. These countries have very diverse regimes, of which some are authoritarian and others not. This has no effect on the growth rate.

Finally, Figure 6b shows a confusing picture like Figure 2b. The correlations also give a mixed picture. The only significant part of the kernel-curve is the higher growth in relatively authoritarian regimes like in Figure 2b. However, this is not a general result as it does not appear in the other subsamples.

9. Conclusions

Elsewhere it is demonstrated that the democratic transition and the transition of the growth rate both have the main causal direction from income to the two transitioning variables democracy and growth, *ibid*. It follows that the relation between democracy and growth is largely spurious.

This note considers the part of the democracy series that cannot be spurious – i.e. the relative level of democracy – and finds that it gives a weak and unclear picture.

References

A: Variable definitions and sources

gdp, real GDP per capita. Source: Maddison project. https://www ggdc.net/maddison/maddison-project/home.htm

y, g, income, $y = \ln(gdp)$ and growth, $g = 100(gdp/gdp_{-1} - 1)$

V, polyarchy index. Source: V-Dem project. https://www.v-dem.net/en/login

V^T, transition path for $V^T = K^V(y, bw)$, estimated by kernel regression, with bandwidth bw

$T^V = V - V^T$, tension measuring democracy relative to the transition path

B: References to authors project referred to by *ibid.* The closest paper is MP(2024)

MP, 2021. *The Grand Pattern of Development and the Transition of Institutions*. Cambridge UP, NY

MP, 2024. Income, growth, and democracy. Looking for the main causal directions in the nexus. *EJPE* 83, 102532

MP, 2025a. Explaining the path of the democratic transition. *Kyklos* 78(3), 1142-57

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MP, 2025c. Do relatively democratic countries grow faster? Working paper, basis for this short version

MP, 2026. Constancy spells for the polyarchy democracy index. Posted on: http://martin.paldam.dk/GT-Main2.php