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Appendix to the Main Paper:

Jumps into democracy

Integrating the short and long run in the Democratic Transition

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The data-sample is restricted to 1960-2010. All references are reported in the Main Paper.

This appendix contains six extra tables all referred to in the Main Papers:

Table A1	Variables used in the regressions
Table A1b	The three standardized authority scores
Table A2	Some counts of the data
Table A3	The duration of the spells of constant regimes
Table A4	Scrambling tests: pairs in the merged matrix of observations sorted by
Table A5	Table 2 in Main Paper re-estimated by probit regression
Table A6	Table 4 in Main Paper re-estimated for all 6,211 observations

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Notes on table A1

All variables used are calculated from the Polity index, *P*, and the *gdp* (GDP per capita).

The Polity index, *P*, is from the Polity IV Project. It scores political regimes as an integer from −10 (strict absolutism) to +10 (consolidated) democracy. It uses three *standardized authority scores* that are the only difference between the Polity and Polity2 version of the index. The scoring in the two versions of the index and our choices are given in Table A1b.

The first difference ΔP to the index is used to calculate events, *E*, and jumps, *J*. *Events* are coded as a binary variable that is 1 if $\Delta P \neq 0$ and 0 otherwise. *Triggering events* disregard changes in the index to and from a value of 0 (or blank). *Jumps* are defined as ΔP when at the triggering event. A sequence of changes in the Polity index in the same direction over consecutive years is counted as a single jump in the year the change starts.

The *gdp* data are from the Maddison Project. In a few cases the values for 2009 and 2010 are missing. They are assessed from the closest corresponding data in the World Development Indicators (IBRD). The *gdp* is used to calculate income, $y = ln(y)$, which is the natural logarithm to *gdp*, the annual (g) and the 5-year averaged ($g5$) growth rates. Table A1b summarizes the definitions of our variables.

Table A1

Variables used in the regressions

Variable	Definition, where *i* is country and *t* time
Polity2 index	P_{it} [−10,10]
Event	$E_{it} = 1$ if P_{it} differs from P_{it-1} ; otherwise $E_{it} = 0$
Triggering event	Excludes events where either P_{it} or P_{it-1} is zero or a missing value
Jump	$J_{it} = P_{it} - P_{it-j}$, where $j > 1$ if a sequence of jumps occurs in the same direction
Income	y_{it}, the natural logarithm to gdp, in 1990 international Geary-Khamis dollars
Annual growth rate	g_{it}, average annual growth rate of y
5-year growth rate	$g5_{it}$, 5-year averaged growth rate of y
Transition curve	Π, estimated by kernel regression $P_{it} = f(y_{it})$
Tension	$T_{it} = \Pi(y_{it}) - P_{it-j}$, where j > 1 if $P_{it-1}, \ldots P_{it-j-1} = 0$

Table A1b

The three standardized authority scores

Type of problem	*Polity*	*Polity2*	*Our choice*
Foreign interventions	−66	blank	deleted
Anarchy	−77	0	deleted
Regime transition	−88	interpolated	Polity2

Notes on table A2

Table A2 reports some counts of the data. There are 6997 −237=6760 observations for countries and years with a non-zero Polity score and there are 155 countries in total. With an average growth rate of 1.85%, *income* increases by a factor of $1.0185^{51} = 2.51$, so the *gdp* increases 2.55 times, in the average country, which is an increase of ln(2.55) = 0.93 log points.

As explained in section 3 of the Main Paper and Table A2 we distinguish between the *Main* sample and the *Full* sample. The data contains 571 events of which 555 are triggering events. Of these triggering events 515 are in the Main sample. The resulting jumps have the average 1.10 with the standard deviation 6.55. Thus, there is an upward trend in the *P*-index, but the jumps are highly variable.

We distinguish between discrete changes in the Polity index, which are counted as individual jumps, and sequences of changes. In 76 cases, a change in the Polity score is followed by a change in the same direction the next year and sometimes even in three or four years in an uninterrupted sequence. The sum of a sequence of changes is registered as a single jump in the year where it starts. Jumps, calculated from sequences are more likely to be positive than discrete jumps (see Paldam and Gundlach 2018).

Table A2

Some counts of the data

Countries		Observations	Triggering events			GDP per capita	Average number	
Sample	Number	*N*	Discrete	Sequences	All jumps	growth rate	Countrie	Years
Main	141 (7)[a)]	6,211	445	70	515	1.93%	121.8	44.0
OPEC	14	561	34	6	40	0.91%	11.0	40.1
$P = 0$[b)]	-	237						
Full	155	6,997	479	76	555	1.85%	137.2	45.1

Notes: The data cover the 51 years from 1960 to 2010. a) Seven OPEC countries join or leave the organization during the period. b) Includes observations coded as foreign intervention. The averages in the two rightmost columns, are reached by dividing *N* by the number of countries and 51 years respectively.

Notes on table A3

Table A3 reports the distribution of the spells of constant regimes, i.e. spells with no change in the Polity index.

It is a problem that the interval considered *truncates* many spells, i.e., when the period starts in 1960 the first value of the *P*-index is likely to be part of a spell that started before 1960, and likewise for the last value in 2010. The standard method to treat truncated spells is to multiply the spell by two. That is, if the first spell lasts five years, it is likely to have lasted five more years before that. Thus, the *adjusted spell* is 10 years. We can check this method by looking at countries where the *P*-observation go back so long before 1960 that we can see how long the spell that include 1960 lasted. The check show that the method works very well in average (the error is less than 2 years). We also use the method for the spells that reaches 2010. If the spell is incomplete to both sides of our sample (1960-2010), it is multiplied by three.

Another problem is that some spells are interrupted by a zero. Here the reader may think of 'false springs' such as in Czechoslovakia in 1968. We give spells that disregard such zeroes in 'no zeroes' and by taking zeroes as an interrupted spell in 'all spells'.

Note finally that 366 spells are rather short (1 to 3 years). In such cases it is unlikely that a status quo equilibrium has developed. However, most spells are larger than 3 years.

The distribution is upward skewed, so that the median is much smaller than the mean. The average spell is about 14 years, as reported in the column with the means adjusted for truncation.

Table A3

The duration of the spells of constant regimes

	Number		Unadjusted				Adjusted for truncations			
	Countries	Spells	Mean	Median	1 to 3	longer	Mean	Median	1 to 3	> 3
All spells	155	877	7.98	4	366	511	13.65	5	339	538
No zeroes	155	818	8.27	5	326	492	14.27	5	292	526
Zeroes	59	59	4.02	2	40	19	5.02	2	38	21

Notes on table A4

Table A4 shows how well the data are scrambled when they are merged and sorted. We start be the stacked (6,997, 4)-matrix $D_{j,4}$, where the first column $D_{j,1}$ is the country, the second column $D_{j,2}$ is the year, the third column $D_{j,3}$ is the Polity score, and the forth column $D_{j,4}$ is income. This matrix is sorted by income giving the M-matrix that still has the dimension (6,997, 4). Table A4 is calculated by searching the ($M_{j,k}$)-matrix, to find the following frequencies:

(i) Equal country pair: They are found by going through the $M_{j,1}$ country column to finds the frequency (in %) of cases where $M_{j,1}(j) = M_{j,1}(j+k)$, for $k = 1, 2, 3$. As there are only 155 countries equal pairs should occur randomly by the probability 100/155 = 0.65%. The entries in the table shows the frequency in per cent minus 0.65.

(ii) Equal year pair: They are found by going through the $M_{j,2}$ country column to finds the frequency (in %) of cases where $M_{j,2}(j) = M_{j,2}(j+k)$, for $k = 1, 2, 3$. As there are only 51 countries equal pairs should occur randomly by the probability 100/52 = 1.96%. The entries in the table shows the frequency in per cent minus 1.96.

The table show that the sorting works rather well, except at the low end. This makes the kernel regressions reported section 3 of the paper a good approximation of the long run relation between income and democracy.

Table A4

Scrambling tests: Equal pairs in the merged matrix of observations sorted by income

Frequency in percent of all 6,997	*Equal country pairs* $M_{j,1}(j) = M_{j,1}(j+k)$ Frequency – 0.65			*Equal year pairs* $M_{j,2}(j) = M_{j,2}(j+k)$ Frequency – 1.96		
	$k = 1$	$k = 2$	$k = 3$	$k = 1$	$k = 2$	$k = 3$
All observations	3.4	3.5	3.1	0.9	0.4	−0.1
For 500 smallest	10.3	9.3	6.9	1.6	2.4	1.2
For 500 largest	5.3	3.7	5.1	4.0	1.0	−0.7
The 5,760 in between	2.7	3.0	2.6	2.1	1.7	1.5

Notes on table A*5*

Table A5 reports the results of probit regressions that correspond to the OLS regressions reported in table 2 of the paper. While it is perhaps statistically more satisfactory, it is less easy to compare with the estimates in Table 4. Fortunately, the two tables tell the same story. Most notably, the tension (*T*) again does not contribute to an explanation of variation of the events.

Table A5.

The probit regressions explaining the 675 events, *E*, in the *Main* sample

N = 6,211	(1)	(2)	(3)	(4)	(5)
Initial tension, $T_{(-)}$	0.000 [0.1]	−0.001 [−0.2]	**0.010** [1.8]		0.002 [0.4]
Initial income, $y_{(-)}$	**−0.204** [−9.2]	**−0.165** [−2.3]	**−0.449** [−4.7]	**−0.204** [−9.2]	
Growth, g	**−0.014** [−3.4]	**−0.016** [−3.7]	**−0.017** [−3.6]	**−0.014** [−3.4]	
Growth last 5 years, $g5$	**−0.024** [−3.5]	**−0.027** [−3.5]	**−0.018** [−2.2]	**−0.023** [−3.5]	
Constant	**0.364** [2.1]	−0.023 [0.0]	−1.581 [0.0]	**0.365** [2.2]	**−1.286** [−59.2]
Country dummies	No	Yes	Yes	No	No
Year dummies	No	No	Yes	No	No
Pseudo R^2 net	0.039	0.013	0.013	0.039	0.000
Pseudo R^2 of dummies		0.077	0.077		
N	6,211	5,230	5,149	6,211	6,211

Note: see Table 2 in the paper; z-statistic in brackets.

Notes on table A*6*

Table A6 is a re-estimation of Table 4 for all N = 6,211 observations. This assumes that all observations where P does not jump should be treated as a jump of size zero. This is a break with the logic of the model, so it is less satisfactory than the estimates in Table 4 in the Main Paper. The pattern in the table is the same, but the coefficients are smaller.

Table A6

Table 4 in Main Paper re-estimated for all 6,211 observations

N = 6,211	(1)	(2)	(3)	(4)	(5)
Initial tension, $T_{(-)}$	**0.050** (12.7)	**0.095** (17.2)	**0.133** (21.3)		**0.049** (12.5)
Initial income, $y_{(-)}$	0.025 (1.1)	0.030 (0.4)	**−0.822** (−8.5)	−0.002 (−0.1)	
Growth, g	−0.002 (−0.5)	0.001 (0.2)	−0.001 (−0.3)	−0.004 (−0.9)	
Growth last 5 years, $g5$	**−0.018** (−2.5)	**−0.019** (−2.4)	0.009 (1.1)	−0.009 (−1.2)	
Constant	−0.072 (−0.4)	−0.107 (−0.1)	**7.546** (3.3)	0.135 (0.8)	**0.091** (3.8)
Country dummies	No	Yes	Yes	No	No
Year dummies	No	No	Yes	No	No
R^2 net of dummies	0.026	0.047	0.069	0.001	0.025
R^2 of dummies		0.009	0.026		
N	6,211	6,208	6,208	6,211	6,211