Online Appendix

A Data Appendix

A.1 Sources and Sample Makeup

Our choice of data sources (Maddison, TRADHIST) enables analysis from 1950-2014, but excludes a number of countries which are available in ERT from inclusion in the treatment or control groups: ten small treated economies (Bhutan, Fiji, Guyana, Kosovo, Maldives, PNG, Solomon Islands, Suriname, Timor-Leste, Vanuatu); five small (historical) economies with failed episodes: Zanzibar, Somaliland, Somalia, Republic of (South) Vietnam, GDR; and three autocratic economies with no episodes: South Yemen, Gaza/Palestine, Eritrea.

Our 1950-2014 sample covers 62 'treated' countries which experienced episodes and regime change (n=3,724 observations — see for Table A-3 sample makeup), 43 autocratic countries which only experienced democratisation episodes (n=2,515; control group 2 — Table A-2), and 15 autocratic countries which never experienced episodes (n=646; control group 1 — Table A-1). Four democracies reverted to autocracy and subsequently had unsuccessful democratisation episodes (n=75 observations); 9 countries had episodes and regime change but no pre-episode data (n=399) — both sets of observations are excluded from the analysis. The balance to arrive at 161 countries in the full available sample (n=8,770) is made up by 28 countries which were democracies throughout the sample period, which are also excluded. In practice the minimum number of time series observations for inclusion in our analysis is n=21. This is in line with the practice in Giavazzi & Tabellini (2005), Persson & Tabellini (2006) and Papaioannou & Siourounis (2008). Of the 62 'treated' countries, 12 reverted to autocracy before the end of the sample period — in additional analysis available on request we confirmed that the growth experience of these 12 countries during democracy closely matches that of the 50 remaining countries which did not revert to autocracy.

Figure A-1 provides an overview of the distribution of episodes and regime changes in our sample. In the top panel the histogram in gray highlights two peaks of democratisation

episodes in the late 1950s/early 1960s, and in the 1990s, coinciding with the second and third waves of democratisation (Huntington 1993). The lowest rate of ongoing democratisation episodes is in the mid-1960s and 1970s. The regime change events, in black, clearly match these patterns for the second peak in the 1990s, but less so for the earlier period. The middle panel supports this notion of differential rates of episodes and their outcomes over time: the share of failed episodes (no transition) is particularly strong in the 1950s and early 1960s, and again in the 1990s. Episodes culminating in regime change (dem transition) are only substantial in the late 1970s to early 1990s and are otherwise dominated by the former group.

The bottom panel in Figure A-1 charts the mean episode length over time and the evolution of each episode in our sample. It shows substantial variation in episode length over time as well as temporal clusters of episodes with and without regime change. The graphs for successful episodes are frequently very steep (implying short episodes), yet it would be misleading to claim that these trajectories *dominate* the treatment sample.

Our analysis includes some data for countries prior to their independence — the data coverage is very good so that sample selection is not a concern. Nevertheless, in a robustness check (available on request) we discarded pre-independence country-years and find the qualitative conclusion from our analysis, that accounting for democratisation episodes yields even higher economic growth in the long-run, is unchanged.

Table A-1: Sample Makeup: Control Group 1 (never experienced a democratisation episode)

Country	ISO	Total obs	Country	ISO	Total obs
United Arab Emirates	ARE	21	North Korea	PRK	35
Azerbaijan	AZE	21	Qatar	QAT	40
China	CHN	64	Saudi Arabia	SAU	64
Cuba	CUB	65	Tajikistan	TJK	21
Djibouti	DJI	64	Turkmenistan	TKM	21
Iran	IRN	64	Uzbekistan	UZB	21
Kazakhstan	KAZ	21	Viet Nam	VNM	60
Mozambique	MOZ	64			

Notes: This table provides details on the sample-makeup of the first control group sample, made up of the 15 countries which never experienced a democratisation episode (and of course also no regime change).

Table A-2: Sample Makeup: Control Group 2 (never democratised)

			Episodes (all failed)									Autocracy	
Country	ISO	Total obs	Years in ep	Share	Avg length	Count	1st	2nd	3rd	4th	5th	Years in auto	Share
Afghanistan	AFG	59	5	8%	5.0	1	2002					54	92%
Angola	AGO	39	4	10%	4.0	1	2008					35	90%
Burundi	BDI	55	17	31%	5.7	3	1982	1992	1999			38	69%
Bahrain	BHR	44	6	14%	3.0	2	1972	2000				38	86%
Central African Republic	CAF	64	21	33%	5.3	4	1956	1987	2005	2014		43	67%
Cameroon	CMR	52	4	8%	4.0	1	1990					48	92%
DR of Congo	COD	64	18	28%	9.0	2	1955	1998				46	72%
Congo	COG	64	11	17%	3.7	3	1957	1990	2002			53	83%
Algeria	DZA	44	6	14%	2.0	3	1977	1990	1995			38	86%
Egypt	EGY	64	10	16%	10.0	1	1956					54	84%
Ethiopia	ETH	64	6	9%	6.0	1	1987					58	91%
Gabon	GAB	64	13	20%	6.5	2	1957	1987				51	80%
Guinea	GIN	64	24	38%	8.0	3	1957	1985	2010			40	63%
Gambia	GMB	64	13	20%	3.3	4	1960	1966	1996	2014		51	80%
Guinea-Bissau	GNB	64	21	33%	5.3	4	1973	1990	2005	2014		43	67%
Equatorial Guinea	GNQ	55	15	27%	7.5	2	1968	1982				40	73%
China, Hong Kong	HKG	64	8	13%	8.0	1	1985					56	88%
Haiti	HTI	65	12	18%	2.4	5	1951	1987	1991	1993	2006	53	82%
Iraq	IRQ	64	8	13%	8.0	1	2004					56	88%
Jordan	JOR	64	6	9%	6.0	1	1989					58	91%
Kenya	KEN	64	29	45%	9.7	3	1956	1990	2010			35	55%
Kyrgyzstan	KGZ	23	11	48%	11.0	1	2003					12	52%
Cambodia	KHM	60	11	18%	11.0	1	1990					49	82%
Kuwait	KWT	40	16	40%	8.0	2	1981	1991				24	60%
Lao PDR	LAO	60	4	7%	4.0	1	1955					56	93%
Lebanon	LBN	64	15	23%	15.0	1	1996					49	77%
Libya	LBY	62	3	5%	3.0	1	2011					59	95%
Morocco	MAR	64	15	23%	7.5	2	1963	1993				49	77%
Myanmar	MMR	64	8	13%	8.0	1	2010					56	88%
Mauritania	MRT	55	10	18%	3.3	3	1987	2007	2010			45	82%
Malaysia	MYS	65	27	42%	13.5	2	1972	1999				38	58%
Oman	OMN	57	4	7%	4.0	1	2000					53	93%
Pakistan	PAK	64	32	50%	10.7	3	1962	1985	2002			32	50%
Rwanda	RWA	55	21	38%	7.0	3	1979	1991	2003			34	62%
Sudan	SDN	64	23	36%	7.7	3	1965	1986	1996			41	64%
Singapore	SGP	55	1	2%	1.0	1	1960					54	98%
Swaziland	SWZ	55	6	11%	6.0	1	1964					49	89%
Seychelles	SYC	55	29	53%	9.7	3	1963	1979	1991			26	47%
Syrian Arab Rep.	SYR	64	5	8%	2.5	2	1953	1961				59	92%
Chad	TCD	64	8	13%	8.0	1	1990					56	88%
Uganda	UGA	64	16	25%	5.3	3	1953	1981	1989			48	75%
Yemen	YEM	52	6	12%	6.0	1	1988					46	88%
Zimbabwe	ZWE	64	3	5%	3.0	1	1979					61	95%

Notes: This table provides details on the sample-makeup of the second control group sample, made up of the 43 countries which experienced at least one democratisation episode but never realised democratic regime change.

Table A-3: Sample Makeup: Treated Countries

			Episodes (successful or failed)											Regime change to democracy							Autocracy	
Country	ISO	Total obs	Years in ep	Share	Avg length	Count	1st	2nd	3rd	4th	5th	Count Failed	Avg length Failed	Years in dem	Share	Count	1st	Ep Length	2nd	Ep Length	Years in auto	Share
Albania	ALB	60	10	17%	3.3	3	1991	1998	2005			2	5.0	10	17%	1	2005	0			40	67%
Argentina	ARG	65	10	15%	2.5	4	1957	1963	1972	1983		2	4.0	33	51%	2	1964	1	1984	1	22	34%
Armenia	ARM†	21	8	38%	4.0	2	1998	2010				2	4.0	2	10%	0					11	52%
Benin	BEN	64	15	23%	7.5	2	1952	1990				1	13.0	23	36%	1	1992	2			26	41%
Burkina Faso	BFA	55	14	25%	4.7	3	1960	1978	1990			2	2.0	15	27%	1	2000	10			26	47%
Bangladesh	BGD	42	17	40%	4.3	4	1973	1977	1984	2009		3	3.0	10	24%	1	1992	8			15	36%
Bulgaria	BGR	64	1	2%	1.0	1	1990					0		24	38%	1	1991	1			39	61%
Bosnia & Herzeg.	BIH[a]	19	1	5%	1.0	1	1996					0		18	95%	1	1997	1			0	0%
Belarus	BLR†	21	0	0%		0						0		3	14%	0					18	86%
Bolivia	BOL	65	13	20%	6.5	2	1952	1983				1	11.0	30	46%	1	1985	2			22	34%
Brazil	BRA	65	12	18%	12.0	1	1975					0		28	43%	1	1987	12			25	38%
Barbados	BRB[b]	64	9	14%	9.0	1	1951					0		55	86%	1	1960	9			0	0%
Botswana	BWA[c]	55	7	13%	7.0	1	1960					0		48	87%	1	1967	7			0	0%
Chile	CHL	65	3	5%	1.5	2	1958	1988				0		39	60%	2	1959	1	1990	2	23	35%
Côte d'Ivoire	CIV	64	17	27%	4.3	4	1990	1995	2001			3	3.3	2	3%	1	2008	7			45	70%
Colombia	COL	65	25	38%	8.3	3	1958	1972	1982			2	8.0	24	37%	1	1991	9			16	25%
Comoros	COM	55	7	13%	2.3	3	1990	1997	2002			2	1.5	9	16%	1	2006	4			39	71%
Cabo Verde	CPV	57	7	12%	2.3	3	1972	1980	1990			2	3.0	24	42%	1	1991	1			26	46%
Cyprus	CYP	64	2	3%	2.0	1	1960					0		45	70%	1	1960	0			17	27%
Dominican Rep.	DOM	64	13	20%	3.3	4	1961	1966	1978	1995		2	4.0	27	42%	2	1982	4	1996	1	24	38%
Ecuador	ECU	65	9	14%	3.0	3	1950	1967	1978			2	3.5	35	54%	1	1980	2			21	32%
Spain	ESP	65	2	3%	2.0	1	1976					0		37	57%	1	1978	2			26	40%
Georgia	GEO[b]	21	10	48%	10.0	1	1994					0		11	52%	1	2004	10			0	0%
Ghana	GHA	64	7	11%	1.8	4	1951	1969	1979	1993		3	2.0	21	33%	1	1994	1			36	56%
Greece	GRC	65	5	8%	2.5	2	1950	1974				1	4.0	40	62%	1	1975	1			20	31%
Guatemala	GTM	65	16	25%	16.0	1	1984					0		15	23%	1	2000	16			34	52%
Honduras	HND	65	13	20%	4.3	3	1950	1971	1980			2	1.5	18	28%	1	1990	10			34	52%
Croatia	HRV[d]	22	7	32%	7.0	1	1993					0		15	68%	1	2000	7			0	0%
Hungary	HUN	65	2	3%	2.0	1	1988					0		25	38%	1	1990	2			38	58%
Indonesia	IDN	65	10	15%	5.0	2	1950	1997				1	7.0	15	23%	1	2000	3			40	62%

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Table A-3: Sample Makeup: Treated Countries (continued)

			Episodes (successful or failed)											Regime change to democracy							Autocracy	
Country	ISO	Total obs	Years in ep	Share	Avg length	Count	1st	2nd	3rd	4th	5th	Count Failed	Avg length Failed	Years in dem	Share	Count	1st	Ep Length	2nd	Ep Length	Years in auto	Share
India	IND[e]	65	2	3%	2.0	1	1950					0		63	97%	1	1952	2			0	0%
Jamaica	JAM	64	2	3%	2.0	1	1953					0		56	88%	1	1955	2			6	9%
Japan	JPN[e]	65	2	3%	2.0	1	1950					0		63	97%	1	1952	2			0	0%
South Korea	KOR	64	13	20%	6.5	2	1964	1976				1	1.0	27	42%	1	1988	12			24	38%
Liberia	LBR	64	7	11%	2.3	3	1985	1997	2005			2	3.0	9	14%	1	2006	1			48	75%
Sri Lanka	LKA	65	8	12%	4.0	2	1983	2011				1	4.0	51	78%	1	1987	4			6	9%
Lesotho	LSO	55	12	22%	4.0	3	1960	1992	2002			2	5.5	12	22%	1	2003	1			31	56%
Moldova	MDA	23	4	17%	4.0	1	2006					0		16	70%	1	2010	4			3	13%
Madagascar	MDG	64	20	31%	5.0	4	1956	1985	2003	2013		2	4.0	10	16%	2	1994	9	2006	3	34	53%
Mexico	MEX	65	18	28%	18.0	1	1977					0		20	31%	1	1995	18			27	42%
Macedonia	MKD	22	6	27%	6.0	1	1993					0		14	64%	1	1999	6			2	9%
Mali	MLI	55	3	5%	1.5	2	1960	1992				1	2.0	20	36%	1	1993	1			32	58%
Malta	MLT	57	1	2%	1.0	1	1962					0		52	91%	1	1963	1			4	7%
Montenegro	MNE†	10	0	0%		0						0		3	30%	0					7	70%
Mongolia	MNG[a]	24	1	4%	1.0	1	1990					0		23	96%	1	1992	2			0	0%
Mauritius	MUS	64	3	5%	1.5	2	1959	1968				1	3.0	47	73%	1	1968	0			14	22%
Malawi	MWI	58	13	22%	6.5	2	1992	2005				1	9.0	6	10%	1	2009	4			39	67%
Namibia	NAM	35	3	9%	1.5	2	1989	1995				1	3.0	20	57%	1	1995	0			12	34%
Niger	NER	64	12	19%	3.0	4	1957	1988	1993	1997		3	3.7	15	23%	1	1994	1			37	58%
Nigeria	NGA	64	11	17%	3.7	3	1976	1998	2010			2	4.0	2	3%	1	2013	3			51	80%
Nicaragua	NIC	65	10	15%	10.0	1	1980					0		17	26%	1	1990	10			38	58%
Nepal	NPL	52	5	10%	2.5	2	1990	2006				1	3.0	5	10%	1	2008	2			42	81%
Panama	PAN	65	6	9%	2.0	3	1950	1953	1990			2	2.5	24	37%	1	1991	1			35	54%
Peru	PER	65	17	26%	4.3	4	1950	1964	1976	1994		3	4.0	25	38%	1	1981	5			23	35%
Philippines	PHL	65	9	14%	4.5	2	1982	2007				0		21	32%	2	1988	6	2010	3	35	54%
Poland	POL	64	10	16%	10.0	1	1980					0		25	39%	1	1990	10			29	45%
Portugal	PRT	65	6	9%	6.0	1	1970					0		39	60%	1	1976	6			20	31%
Paraguay	PRY	65	4	6%	4.0	1	1990					0		21	32%	1	1994	4			40	62%
Romania	ROU	60	1	2%	1.0	1	1990					0		24	40%	1	1991	1			35	58%
Russia	RUS†	23	0	0%		0						0		2	9%	0					21	91%

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Table A-3: Sample Makeup: Treated Countries (continued)

			Episodes (successful or failed)											Regime change to democracy							Autocracy	
Country	ISO	Total obs	Years in ep	Share	Avg length	Count	1st	2nd	3rd	4th	5th	Count Failed	Avg length Failed	Years in dem	Share	Count	1st	Ep Length	2nd	Ep Length	Years in auto	Share
Senegal	SEN	64	7	11%	2.3	3	1960	1978	1990			1	7.0	25	39%	2	1960	0	1990	0	32	50%
Sierra Leone	SLE	64	13	20%	3.3	4	1958	1994	2002	2013		3	4.0	9	14%	1	2003	1			42	66%
El Salvador	SLV	65	12	18%	6.0	2	1982	1991				1	4.0	16	25%	1	1999	8			37	57%
São Tomé & Principe	STP	55	9	16%	4.5	2	1972	1987				1	4.0	23	42%	1	1992	5			23	42%
Togo	TGO	64	21	33%	5.3	4	1956	1991	2005	2012		3	6.3	1	2%	1	2014	2			42	66%
Thailand	THA	64	22	34%	4.4	5	1974	1978	1992	2008	2010	4	4.0	8	13%	1	1998	6			34	53%
Trinidad & Tobago	TTO[f]	64	9	14%	9.0	1	1951					0		55	86%	1	1960	9			0	0%
Tunisia	TUN	64	6	9%	3.0	2	1956	2011				1	5.0	3	5%	1	2012	1			55	86%
Turkey	TUR	65	13	20%	4.3	3	1950	1962	1983			1	2.0	38	58%	2	1966	4	1990	7	14	22%
Tanzania	TZA	64	17	27%	8.5	2	1958	1986				1	7.0	13	20%	1	1996	10			34	53%
Ukraine	UKR	21	1	5%	1.0	1	2005					0		10	48%	1	2006	1			10	48%
Uruguay	URY	65	4	6%	4.0	1	1981					0		53	82%	1	1985	4			8	12%
Venezuela	VEN	65	5	8%	5.0	1	1958					0		40	62%	1	1963	5			20	31%
South Africa	ZAF	64	5	8%	5.0	1	1990					0		20	31%	1	1995	5			39	61%
Zambia	ZMB	58	8	14%	2.7	3	1961	1990	2000			1	8.0	14	24%	2	1961	0	2000	0	36	62%

Notes: This table provides details on the sample-makeup of the 'treated' sample, i.e. the set of countries which experienced at least one democratisation episode followed by a regime change. There are 75 countries in this table, but only 62 of them have estimates for both the episode dummy and the democratic regime change dummy — these countries have their country names highlighted in bold. The remaining 13 countries have the following characteristics: four countries (marked in the 'ISO' column with †) only experienced a reversal to autocracy, in one case followed by an unsuccessful democratisation episode. Nine countries (marked in the 'ISO' column with superscripts a-f) do not have any pre-episode data (and in some cases additionally experienced episodes lasting only one or two years), hence the regime change or the episode dummy is unidentified. In some more detail:

a) No pre-episode data, one-year episode before democratic regime change (BIH,MNG)

b) No pre-episode data, ten-year episode before democratic regime change, no regime change estimate (BRB, GEO)

c) No pre-episode data, seven-year episode before democratic regime change, no episode estimate (BWA)

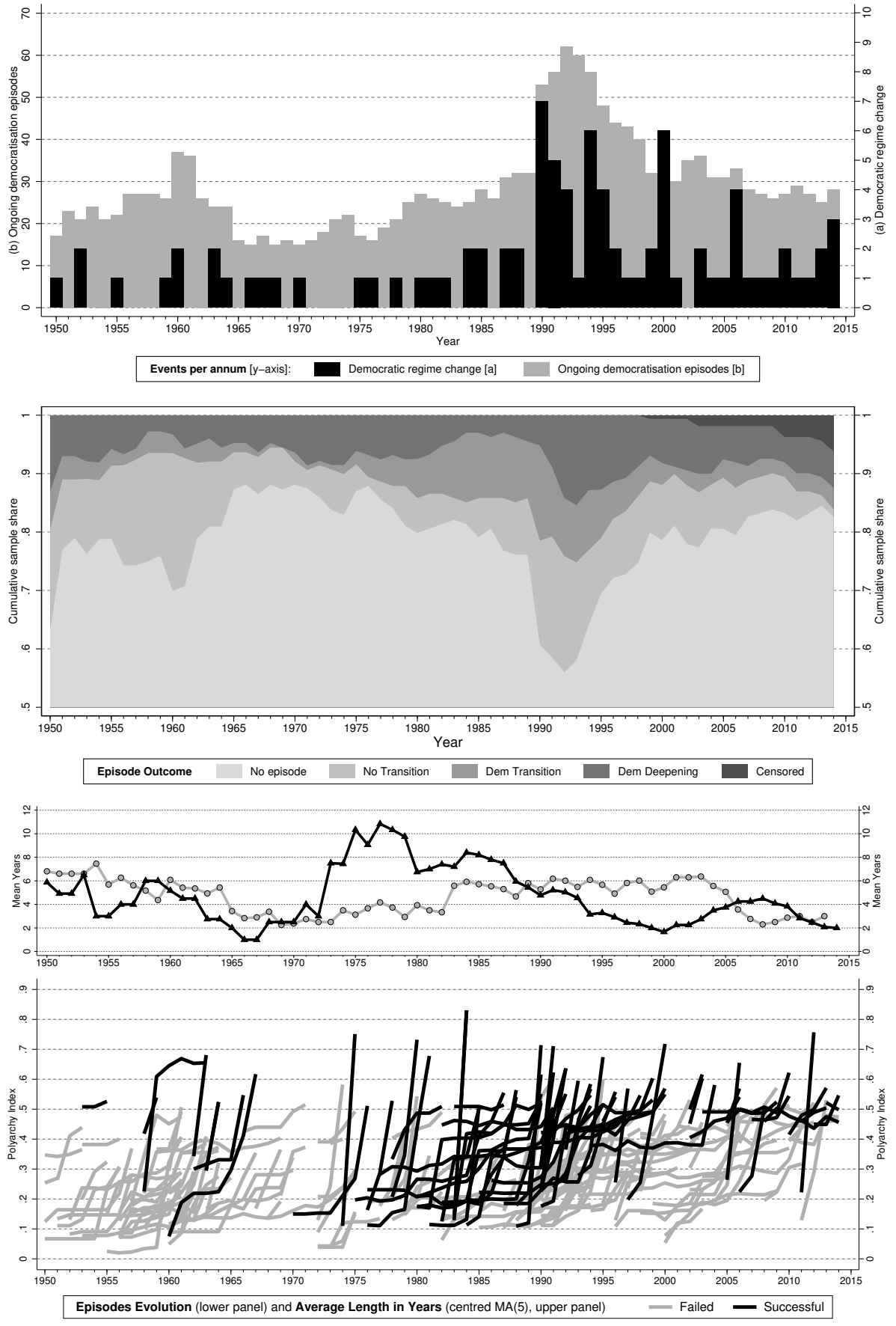
d) No pre-episode data, seven-year episode before democratic regime change, no regime change estimate (HRV)

e) No pre-episode data, two-year episode before democratic regime change, no regime change estimate (IND, JPN)

f) No pre-episode data, nine-year episode before democratic regime change, no regime change estimate (TTO)

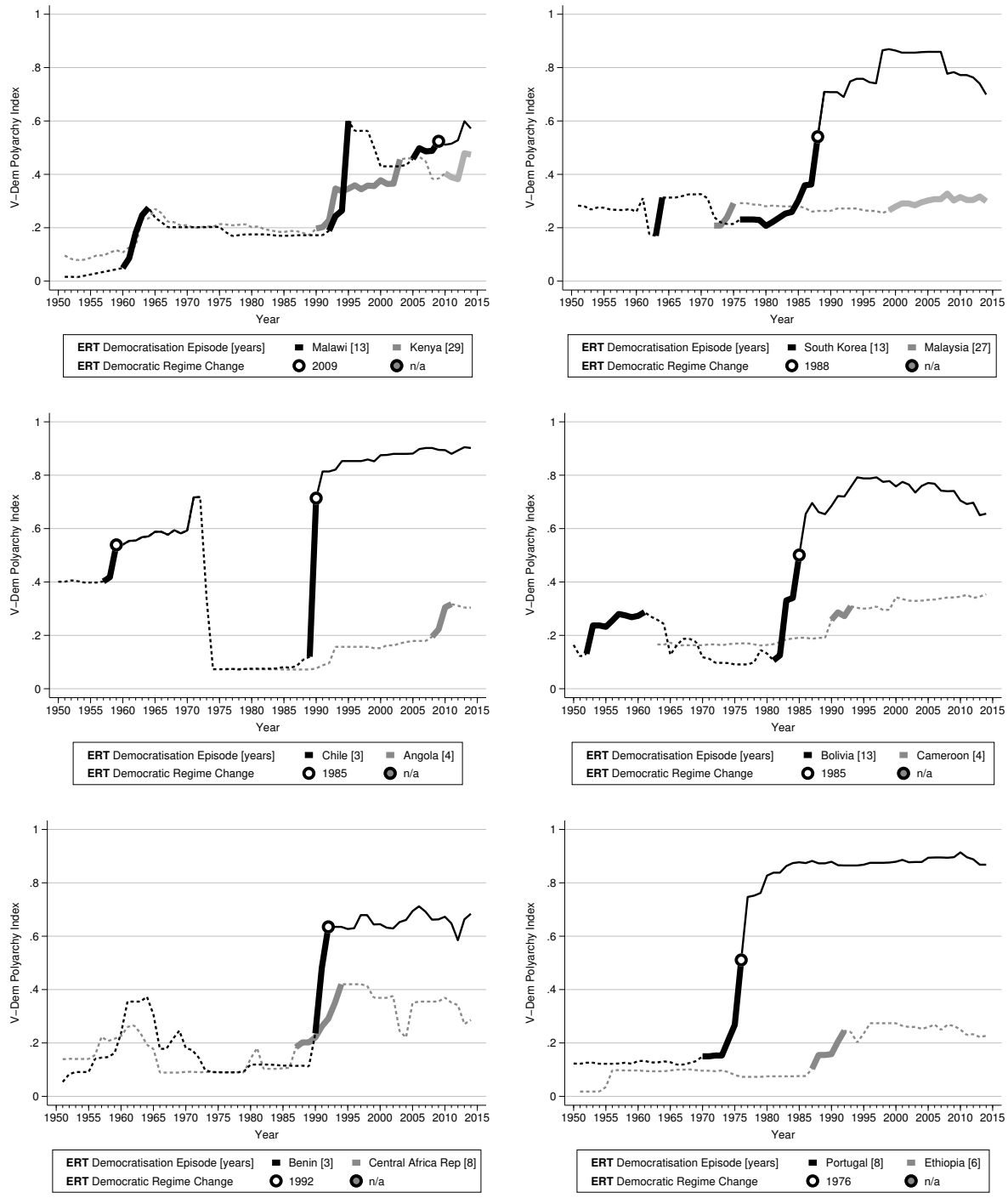
The first set of columns after the country name, ISO code and total observation count refers to information on the total number of episodes, their average length, and timing as well as the count and average length for failed episodes. The next set of columns refers to successful regime changes, how long countries spent in democracy (the 'years of treatment') and the length of the associated democratisation episodes (in years). The final two columns report the information on the pre-episode data. For years in episodes, democracy, and autocracy we report the share of total years, which adds up to 100% (even though of course episodes are *nominally* within the autocratic regime but we separate them out here).

Figure A-1: Episodes and Regime Change (1950-2014)



Notes: We present the distribution of democratisation episodes and regime changes in the top panel, the share of episode type in the middle panel, and the individual evolution of each episode in the lower plot along with the smoothed annual mean episode length (computed for episode start years).

Figure A-2: More Examples of Episodes and Democratic Regime Change



Notes: We present the V-Dem polyarchy index evolution for country pairs, where the country in black experienced regime change and the country in gray did not. The period highlighted by the thick line represents the democratisation episode, following ERT (the length of each episodes in years is indicated in the legend). The 'Eastern' end of the thick black lines always coincides with the year of democratic regime change. A dashed (solid) thin line indicates the country regime is in autocracy (democracy) following the ERT definition. The circular marker indicates the year of democratic regime change (if applicable), which is required to include a 'founding election'.

B Additional Figures and Tables

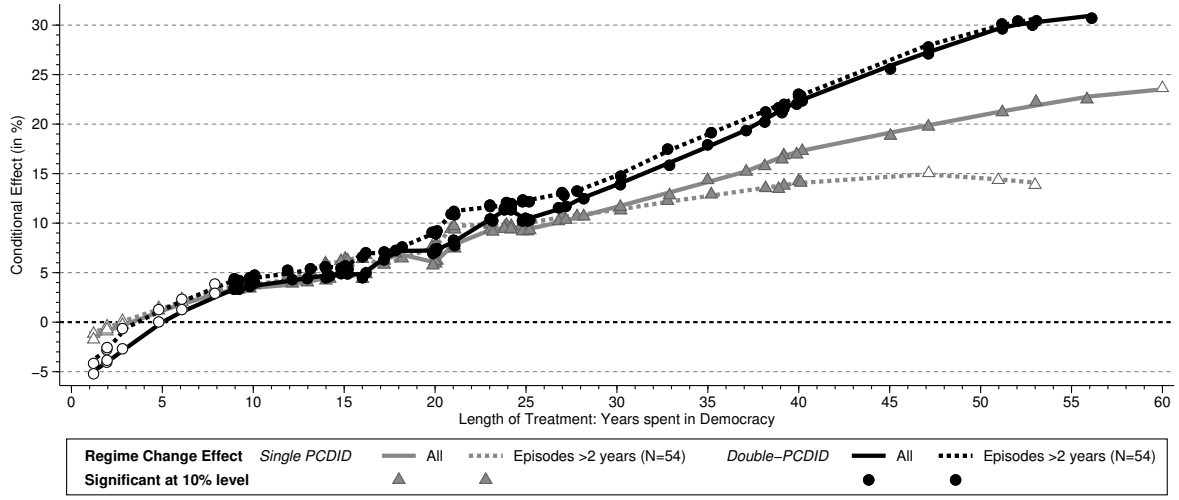
Table B-1: ATET Estimates: Single and Double PCDID

Panel (a) Double PCDID Results	(1)	(2)	(3)	(4)	(5)	(6)
Factors included	1×2	2×2	3×2	4×2	5×2	6×2
Democratic Episode	-2.832	-1.170	0.959	0.351	0.548	-0.310
	[2.582]	[2.003]	[2.077]	[2.136]	[1.977]	[1.992]
Democratic Regime Change	3.157	5.497*	10.165***	6.845**	6.645**	6.785**
	[3.952]	[3.341]	[3.927]	[3.321]	[3.359]	[3.311]
Export/Trade Ratio	-0.212	-0.213	-0.172	-0.224**	-0.166**	-0.180**
(in percent)	[0.147]	[0.134]	[0.116]	[0.091]	[0.084]	[0.088]
Population Growth Rate	-5.000**	-7.775***	-7.540***	-6.206***	-7.054***	-7.844***
(in percent)	[1.991]	[2.100]	[1.883]	[1.593]	[1.694]	[1.994]
Treated Countries	62	62	62	62	62	62
Observations	3660	3660	3660	3660	3660	3660
Control Countries 1	15	15	15	15	15	15
Observations	631	631	631	631	631	631
Control Countries 2	43	43	43	43	43	43
Observations	2472	2472	2472	2472	2472	2472

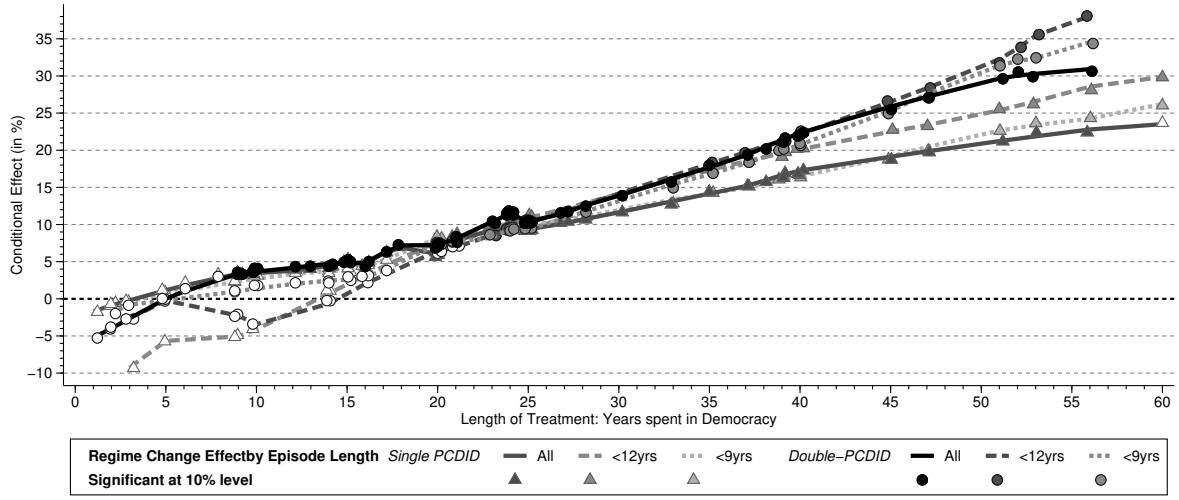
Panel (b) Single PCDID Results	(1)	(2)	(3)	(4)	(5)	(6)
Factors included	1	2	3	4	5	6
Democratic Regime Change	5.914*	3.877	8.601***	6.247***	6.710**	7.738***
(ERT definition)	[3.595]	[3.455]	[2.816]	[2.286]	[2.744]	[2.769]
Export/Trade Ratio	-0.304*	-0.369**	-0.363**	-0.179	-0.076	-0.092
(in percent)	[0.175]	[0.150]	[0.157]	[0.121]	[0.107]	[0.101]
Population Growth Rate	-6.721**	-6.709***	-7.059***	-5.564***	-6.445***	-6.200***
(in percent)	[2.891]	[2.584]	[2.661]	[2.025]	[2.083]	[2.090]
Treated Countries	62	62	62	62	62	62
Observations	3724	3724	3724	3724	3724	3724
Control Countries	58	58	58	58	58	58
Observations	3161	3161	3161	3161	3161	3161

Notes: The table presents the Mean Group estimates from the Double and Single PCDID treatment regressions in Panels (a) and (b), respectively. The regime change effects can be interpreted as ATET. There are six different models for augmentation with 1 to 6 common factors — for the Double PCDID in Panel (a) there are separate factors from each of the two control samples, hence the number of factors is double that included in the Single PCDID models in Panel (b). Statistical significance is indicated using * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Figure B-1: Episodes and their Implications for the Regime Change Effect



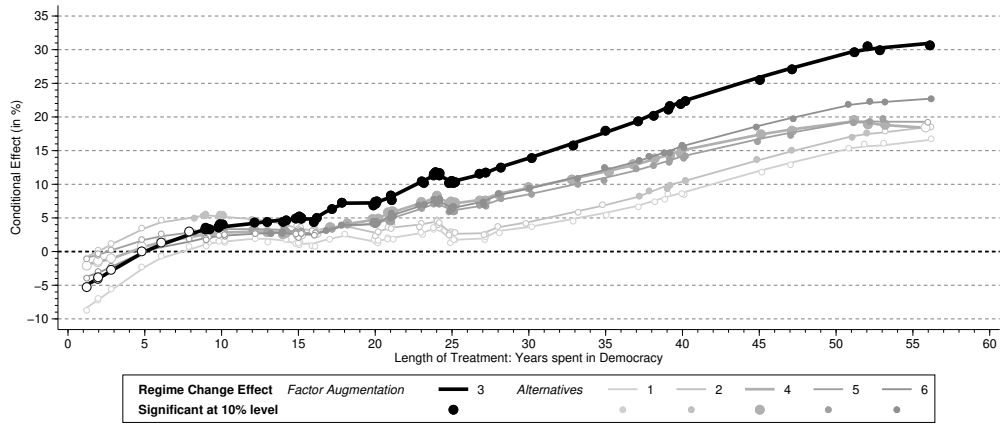
(a) Robustness: Exclude 'short' episodes ($\leq$2yrs)



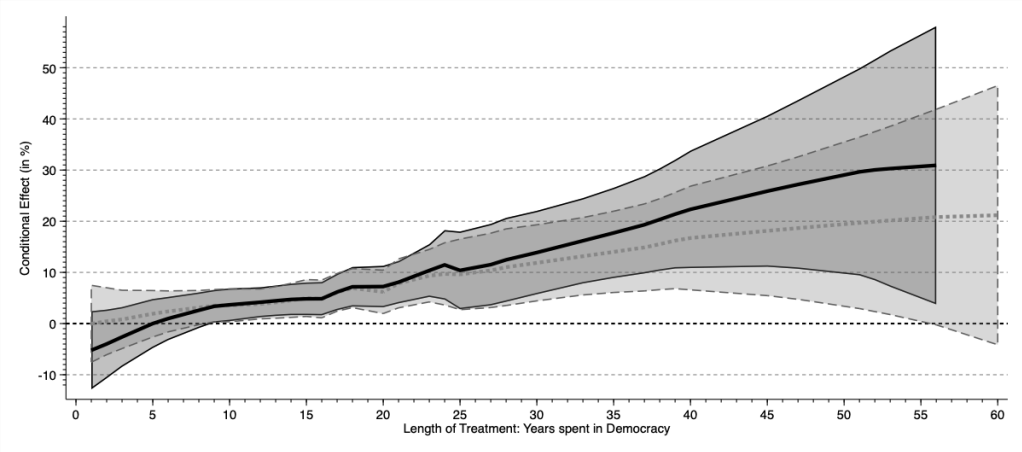
(b) Robustness: Exclude 'longer' episodes ($>$9 or $>$12yrs)

Notes: These plots present the results from running line regressions of country-specific coefficients on the democracy (ERT) dummy, derived from Single and Double PCDID estimates. In Panel (a) we compare Single (gray lines) and Double PCDID results (black lines) for ERT in the full sample with those where countries with just one or two years spent in episodes are dropped. In Panel (b) we distinguish countries which had episodes lasting up to 9 years ($N = 33$) or up to 12 years ($N = 43$), respectively the median and 70th percentile, and find qualitatively no difference to the full sample ($N = 62$) results.

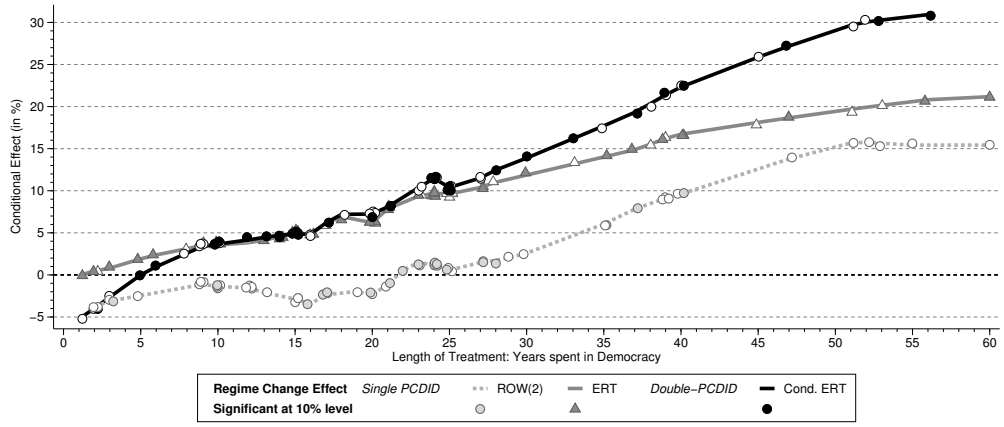
Figure B-2: Alternative Factor Augmentations, Confidence Intervals and Bootstrapped CI



(a) Alternative Factor Augmentations



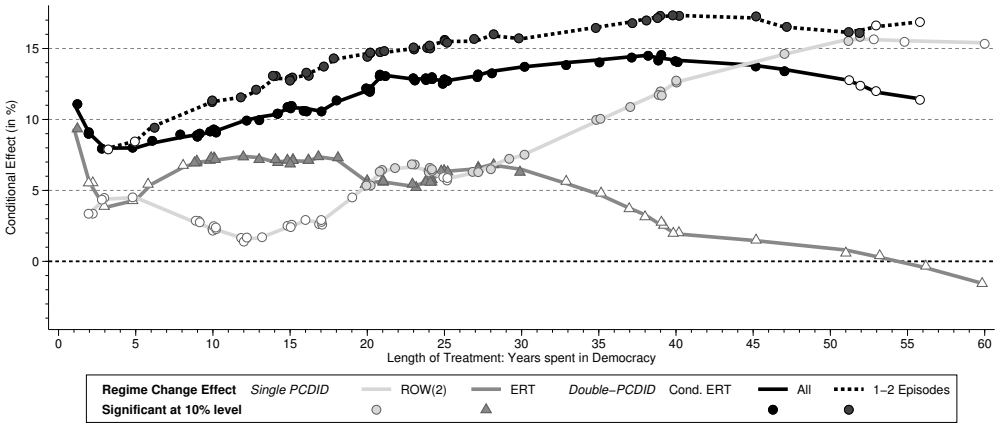
(b) Comparison Single and Double PCDID (with 90% CI)



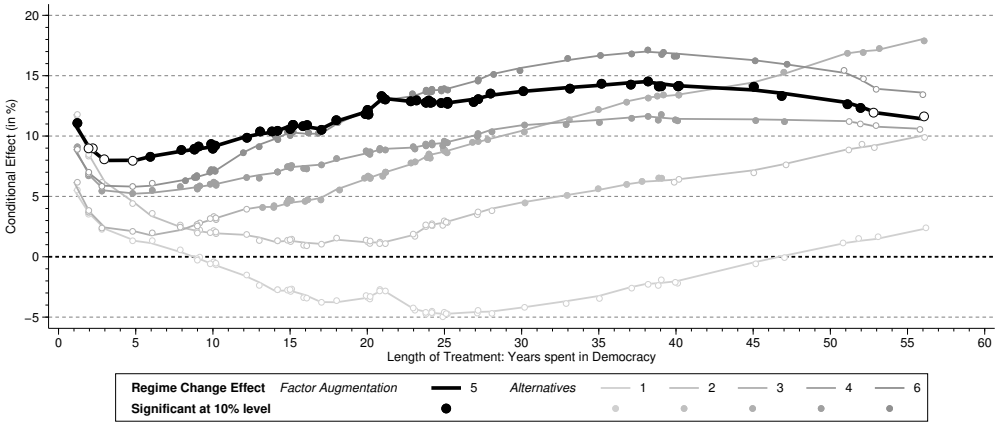
(c) Statistical Significance Based on Bootstrap

Notes: These plots presents the results from running line regressions of country-specific coefficients on the democracy (ERT) dummy, derived from Single and Double PCDID estimates. In Panel (a) we present the conditional ERT results from Double PCDID models augmented with 1 to 6 factors from each of the respective control groups: the black line is for the model augmented with 3 estimated factors (from each respective control sample), grey lines present alternative augmentations using one to six factors (dto.). In Panel (b) we report the full sample results for ERT (Single and Double PCDID) but plot the 90% confidence intervals for each running line regression. In Panel (c) we signal statistically significant difference from zero in the running line regression adopting the bootstrap 90% confidence interval (250 replications). A hollow (filled) marker indicates that the bootstrapped 90% confidence interval does (not) include zero.

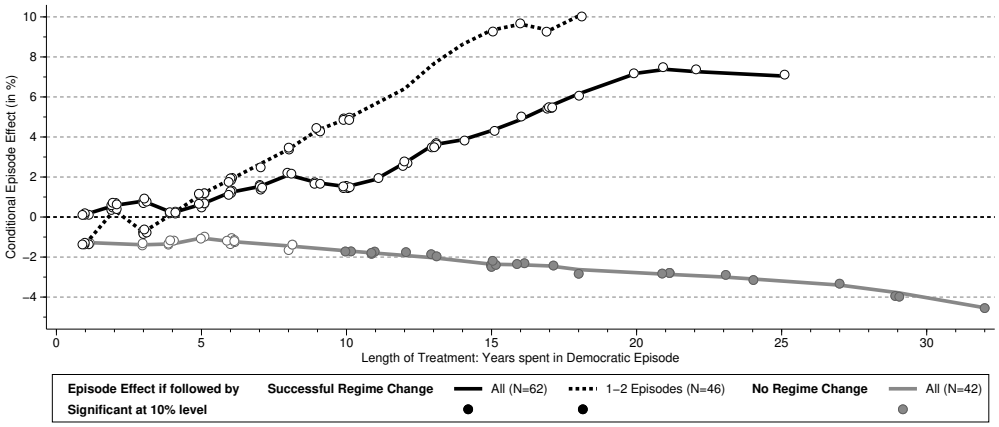
Figure B-3: Single and Double PCDID — Excluding Covariates



(a) Comparison of Single and Double PCDID Results



(b) Alternative Factor Augmentations: Conditional ERT



(c) Episodes effect in the Double PCDID

Notes: The results presented in this figure do not include any controls in the PCDID regressions. We present results from running line regressions of country-specific democracy coefficients on years spent in democracy or years spent in episodes, respectively. Additional controls in the running line regressions are the same as those in the analysis in the main text. The full sample matches that of the Double PCDID estimates for ERT (62 treated countries unless indicated), and with the exception of Panel (b) all results are for PCDID models augmented with 5 common factors for each control group — this is the preferred model on the basis of Chan & Kwok (2022) Alpha tests. Panel (a) presents the results for Single PCDID alongside those for Double PCDID estimates — for the latter we contrast results for all countries with those which experienced only 1 or 2 liberalisation episodes (solid and dashed black lines, respectively). Panel (b) presents results for the Double PCDID for 1-6 factors per control sample. Panel (c) focuses on the Episode effect, distinguishing countries which eventually experienced regime change (in black) from those which did not (in gray).

C Event Analysis

In this section we study the potential for idiosyncratic events, such as natural resource discoveries, natural disasters, or financial crises, exerting undue influence/bias on our PCDID estimates. Adopting dummies for each of the aforementioned events we employ event analysis to investigate the evolution of GDP per capita growth and the change in the V-Dem Polyarchy measure (the index underlying our episode and regime change data) up to five years before and after the event/crisis: we estimate country fixed effects models separately for each variable k (growth, polyarchy) and event type:

$$y_{it}^{k} = \alpha_{i}^{k} + \sum_{s=-5}^{5} \beta_{\tau+s}^{k} \mathbf{1}_{\{i,\tau+s\}} + \varepsilon_{it}^{k}, \tag{8}$$

where $\mathbf{1}_{\{i,\tau+s\}}$ is a dummy equal to one if country i is s years away from the event at time τ, t indexes the years between 1950 and 2014, α_i is the country fixed effect and ε is the error term. s varies from -5 to $+5$, such that we evaluate each variable in the lead-up and aftermath of the event *relative to* the observations outside this 11-year window, with the latter interpreted as 'normal' times. Importantly, we compare the sample of countries which experienced regime change with the sample which experienced liberalisation episodes but no regime change, presenting results separately. Finally, we do not study crises/events at just any point in time, but focus on those which occur during democratisation episodes: if individual liberalising countries get bumped into or are prevented from realising democracy by a natural resource find, a financial crisis or a natural disaster, then this amounts to the type of idiosyncratic shock which threatens our identification strategy. The number of events in treated and control groups during episodes are tabulated in Table C-1 below. Since the event analysis includes a country fixed effects only countries which experienced a crisis/shock during a democratisation episode are included in the sample.

Although there are ample reasons for spillovers across countries for each event type, our primary reason for selecting these economic events/crises is that they are typically regarded as *country-specific* events, with the respective literatures (at least for the economic crises) seeking to explain their prevalence largely with country-specific determinants.

We adopt data on new oil discoveries from Cotet & Tsui (2013): we define a boom as the point in time when either (i) the 3-year moving average of the growth rate of new oil discoveries (in billion barrels) is at least 100% and the magnitude of the discovery is at least half a billion barrels; or (ii) when the 3-year moving average of the growth rate of new oil discoveries (in billion barrels *per capita*) is at least 100% and the magnitude of the discovery is at least half a million barrels *per 1,000 population*.

Table C-1: Sample Makeup: Event Analysis samples

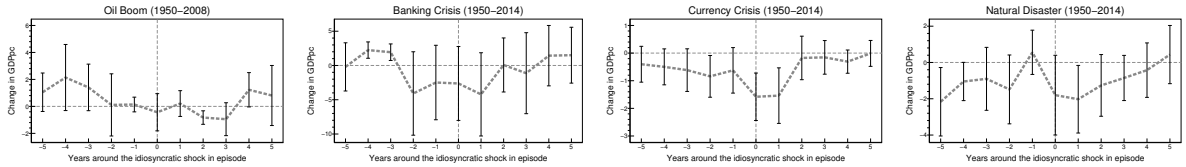
	Oil boom	Banking Crisis	Currency Crisis	Natural Disaster	Full Sample
Treated N	16	18	27	10	62
observations	947	1104	1674	551	3660
Control N	19	19	18	10	43
observations	1080	602	1085	606	2472

Notes: This table provides details on the crisis/event count in the treated and control groups for the episode-regime change event analysis. The full treated (control) sample (analysed in Figure 2 of the maintext) contains 62 (43) countries and 3,660 (2,472) observations.

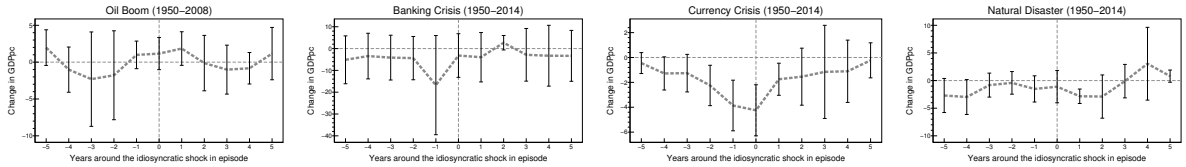
For financial crises we augment the data collated by Carmen Reinhart — the expanded Reinhart & Rogoff (2009, RR) database — with information from Laeven & Valencia (2020, LL) — additional search established no further crises in the 1950s and 1960s (LL only starts in 1970). In all cases we mark the crisis start year; for banking crises we do not exclude 'ongoing crisis years' from the event analysis sample, in line with existing practice in the literature. For natural disasters we use the EM-DAT database: EM-DAT, CRED/UCLouvain, Brussels, Belgium – www.emdat.be which covers primarily 'natural' disasters like earth quakes, floods or epidemics, but also large-scale industrial accidents and air/rail/road disasters. We construct a dummy for large-scale disasters by combining the EM-DAT information on associated deaths with Maddison (Bolt & van Zanden 2020) population data and select events with a death rate of 1 in 10,000 population.

The event analysis plots for per capita GDP growth and the annual change in polyarchy are presented in Figure C-1. Timings differ at times minimally, but the patterns of sign and statistical significance of the effects on growth and change in polyarchy between the treated and control samples are in general closely matched.

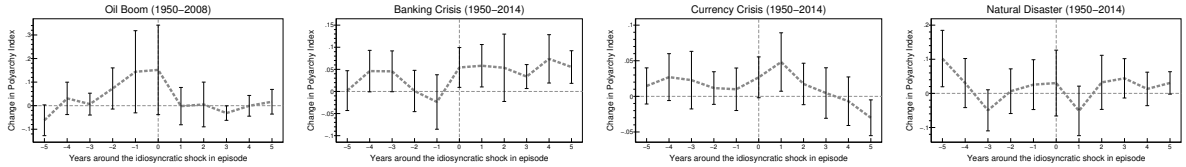
Figure C-1: Idiosyncratic Shocks in their Effect on Growth (a,b) and Polyarchy (c,d)



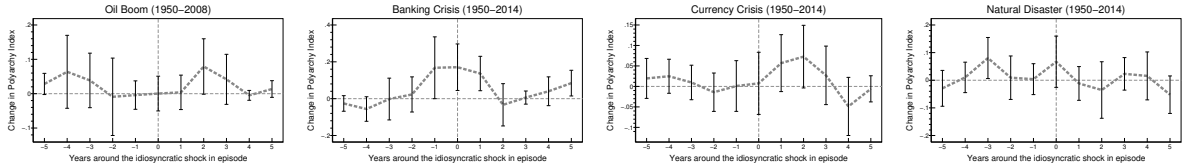
(a) Effect of Shock on *per capita Growth*: Treated Sample



(b) Effect of Shock on *per capita Growth*: Control Sample



(c) Effect of Shock on *Polyarchy*: Treated Sample



(d) Effect of Shock on *Polyarchy*: Control Sample

Notes: We present the results from event analyses for the GDP pc growth or polyarchy variables and the event as indicated. Event plots for growth are presented in panels (a) and (b), those for polyarchy in panels (c) and (d). In each case the first panel is for the treated sample, the second for the control sample. All of these are within-country estimates with standard errors clustered at the country-level. The vertical bars are the 90% confidence intervals.

D Alpha Test of the Weak Parallel Trend Assumption

We carry out tests for the weak parallel trend assumption in the Double PCDID models. The Alpha test is introduced in Chan and Kwok (2022), section 4.4, and works with the residuals from the auxiliary regression in the control sample. In the standard PCDID we estimate the treatment sample regression with factors estimated from $\hat{e}_{it}$ via PCA. In the Alpha Test, we compute the cross-section average of the $\hat{e}_{it}$, say $\bar{\hat{e}}_t$ and enter this term in the PCDID regression *instead of* the estimated factors: $y_{it} = b_{0i} + d_i \mathbf{1}_{\{t>T_{0i}\}} + a_i' \bar{\hat{e}}_t + b_{1i}' x_{it} + u_{it}$. We adjust this test to our new empirical setup with two control samples and estimate instead

$$y_{it} = b_{0i} + d_i^A \mathbf{1}^A_{\{t>T_0\}} + d_i^B \mathbf{1}^B_{\{t>T_1>T_0\}} + a_{1i}^{\mathsf{A}} \bar{\hat{e}}_t^{\mathsf{A}} + a_{2i}^{\mathsf{AB}} \bar{\hat{e}}_t^{\mathsf{AB}} + b_{1i}' x_{it} + e_{it},$$

where $\bar{\hat{e}}_t^{\mathsf{A}}$ and $\bar{\hat{e}}_t^{\mathsf{AB}}$ are the cross-section averages of the residuals from the auxiliary regressions in the control samples (a) for countries which never experienced an episode and (b) for countries which experienced episodes but not regime change, respectively. The null hypothesis is that the respective Mean Group estimates of a_{1i}^{A} (for episodes) and a_{2i}^{AB} (for regime change) are equal to 1, which would constitute 'weak parallel trends'. Considering these hypotheses jointly (Chow test) acts as a test for our Double PCDID. Results suggest that this assumption is satisfied for models up to three factors in the full treated country sample and for all models in the sample of treated countries with only 1 or 2 episodes.

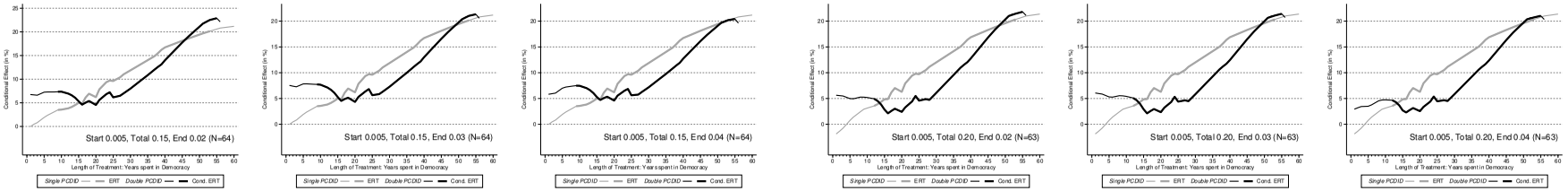
Table D-1: Alpha test for the weak parallel trends assumption

	(A) All Countries			**(B) 1 or 2 episodes**		
Factors	Episode	Regime	Joint	Episode	Regime	Joint
1	0.07	0.41	0.18	0.65	0.58	0.53
2	0.77	0.53	0.43	0.44	0.09	0.19
3	0.61	0.45	0.24	0.54	0.07	0.12
4	0.01	0.10	0.03	0.20	0.78	0.37
5	0.01	0.21	0.02	0.19	0.87	0.25
6	0.00	0.00	0.00	0.07	0.25	0.19

Notes: We report the p values for the Alpha test for weak parallel trends. Panel (A) uses the full treated sample (N=62), Panel (B) the reduced sample for countries which experienced only one or two democratisation episodes (N=46). Factor augmentation for $m = 1, \ldots, 6$ is meant to imply 'm' factors constructed from the episode control sample regressions and an additional 'm' from the regime change control sample regressions.

E Alternative Definitions for Episodes

Figure E-1: Alternative Episode Definition



(a) Trigger ≥0.005, Total Change ≥0.15 (C 1/2: N=20/38)

(b) Trigger ≥0.005, Total Change ≥0.20 (C 1/2: N=31/27)

(c) Trigger ≥0.010, Total Change ≥0.15 (C 1/2: N=22/36)

(d) Trigger ≥0.010, Total Change ≥0.20 (C 1/2: N=33/25)

(e) Trigger ≥0.015, Total Change ≥0.15 (C 1/2: N=22/36)

(f) Trigger ≥0.015, Total Change ≥0.20 (C 1/2: N=35/23)

Notes: We present predictions from running line regression results for Single and Double PCDID estimates using different definitions for episodes. Each graph indicates the number of treated countries, each panel header (a) to (f) the number of countries in the two control samples ('C' 1/2). 'Trigger' is for minimal annual change to start an episode (0.02-0.04), 'Total Change' is 0.15 or 0.20. Each panel has three plots for annual change to 'terminate' an episode: 0.02, 0.03, and 0.04 (from left to right). The ERT default parameters were developed by the data authors to best capture actual episodes of political change. Alternative episode definitions consequently deviate from this first best with implications for the validity of the democracy-growth nexus represented in these figures.

F Estimated Evolution of Income Effects

In our analysis in the main text we link each country's regime change estimate (from a Single or Double PCDID regression) to years spent in democracy, adopting running line regressions. This 'ex-post' approach makes no allowances for the *evolution* of the democracy effect over years in treatment *in the estimation equation*. Since PCDID employs country-regressions, we cannot include a dummy for each year in treatment $k = t - T_{1i}$, since this would amount to 56 *additional* regressors (the average country only has 60 observations). Instead, below we include dummies for years $k = 2, \ldots, 15$ ($k = 1$ is set to 0) alongside the regime change dummy to capture the immediate post-regime change effects, while at the same time conditioning on these early years in the estimation of the 'long-term' ($k > 15$) effect:

$$y_{it} = b_{0i} + d_i^A \mathbf{1}^A_{\{t > T_{0i}\}} + d_i^B \mathbf{1}^B_{\{t > T_{1i} > T_{0i}\}} + \sum_{k=2}^{15} d_{ik}^{B\prime} \mathbf{1}^{B\prime}_{\{k = t - T_{1i}\}} + a_{1i}^{\mathsf{A}\prime} \hat{f}_t^{\mathsf{A}} + a_{2i}^{\mathsf{AB}\prime} \hat{f}_t^{\mathsf{AB}} + b_{1i}' x_{it} + e_{it}, \quad (9)$$

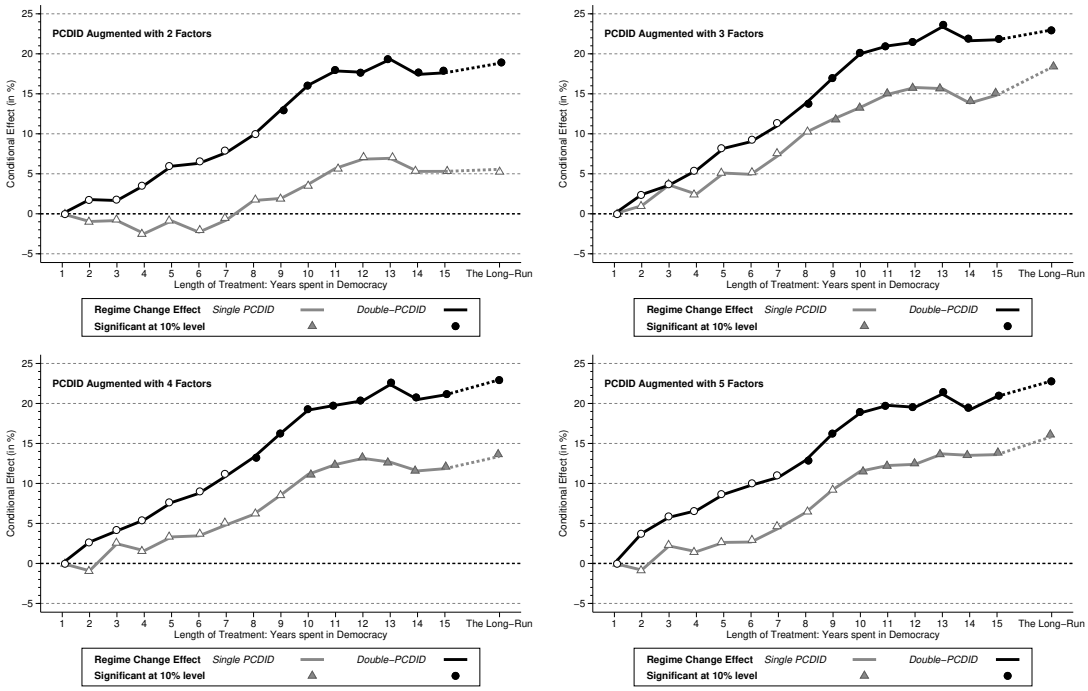
for episode (A) and regime change (B) effects along with the early year effects (B'). Table F-1 reports the p-values for the related weak parallel trend tests, which indicate that the models augmented with 2 and 3 factors are sound when we consider all countries (Panel A). Figure F-1 presents our findings, which are qualitatively identical to those using our alternative methodology. These results, including Alpha tests, are qualitatively unchanged if we use year dummies only up to $k = 10$ to conserve degrees of freedom (available on request).

Table F-1: Alpha test for the weak parallel trends assumption

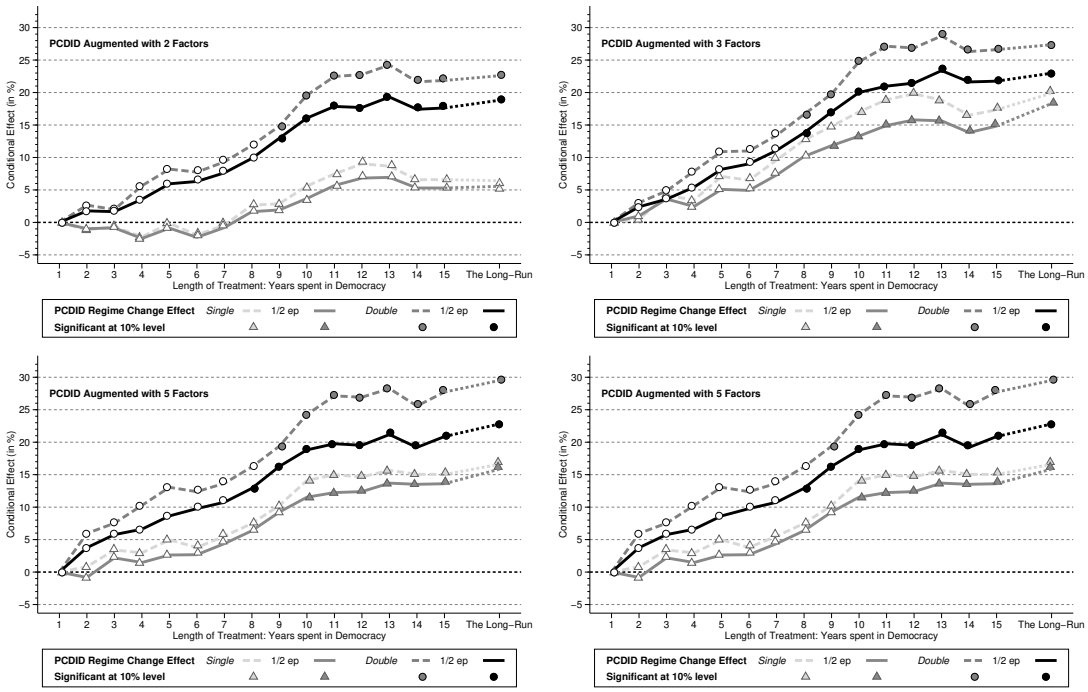
	(A) All countries			**(B) 1 or 2 episodes**		
Factors	Episode	Regime	Joint	Episode	Regime	Joint
1	0.014	0.004	0.016	0.387	0.234	0.490
2	0.298	0.336	0.572	0.763	0.775	0.953
3	0.236	0.498	0.441	0.812	0.525	0.783
4	0.013	0.011	0.029	0.346	0.283	0.551
5	0.004	0.008	0.012	0.208	0.377	0.452
6	0.000	0.002	0.001	0.064	0.289	0.171

Notes: We report the p-values for the Alpha test for weak parallel trends in the full treated sample (N=62) for the model including a dynamic evolution in equation (9) above with year dummies up to $k = 15$. See Appendix Section D for details on the construction of the test. Factor augmentation for $m = 1, \ldots, 6$ is meant to imply 'm' factors constructed from the episode control sample regressions and *an additional* 'm' from the regime change control sample regressions.

Figure F-1: Single and Double PCDID



(a) Estimated Evolution with $k = 2, \ldots, 15$ years in democracy ($k = 1$ set to 0)



(b) dto. highlighting countries with $\leq$2 episodes (lighter shading)

Notes: We present Single and Double PCDID results for specifications including the ERT regime change dummy as well as dummies for each of 2 to 15 years in democracy: in panel (a) for all countries, and in panel (b) additionally for countries with only 1 or 2 episodes (ligher shading). These are not predictions based on running line regressions like in the main text, but the averaged (Mean Group) estimates of $\hat{d}_i^B$ (Long-Run) and $\sum_i \hat{d}_i^B + \sum_i \hat{d}_{ik}^{B'}$ (for years $k = 2, \ldots, 15$ with $k = 1$ set to 0) from equation (9). A hollow (filled) marker indicates that the 90% confidence interval of the average estimate does (not) include zero. Inference is based on the standard errors of the Mean Group estimate of $\hat{d}_i^B$ (following Chan & Kwok 2022), while for the year estimates 2 to 15 it is based on Wald tests for each sum of averaged estimates (i.e. $\sum_i \hat{d}_i^B + \sum_i \hat{d}_{ik}^{B'} = 0$ for $k = 2, \ldots, 15$). Single (Double) PCDID specifications include between 20 and 23 (23 and 29) regressors for models augmented with 2 to 5 factors; average T is 60.