Gerrymandering – Vietnamese Style:

Escaping the Partial Reform Equilibrium in a Non-Democratic Regime

Online Appendices

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Appendix 1: Summary Statistics and Sources of Key Variables

Linear Probability Cox Non-Proportional Hazard Models					
Variable Label	**Mean**	**Std. Dev.**	**Min.**	**Max.**	**Source (Notes)**
_t	6.76	4.07	1	15	Dependent variable in hazard analysis measuring time of entry to time of failure (separation). New provinces enter at t+1, where is equal to the year after separation.
Split	0.03	0.16	0	1	1 if Province *(i)* separated in year *(t)*
Province the Result of Previous Split (Dummy)	0.57	0.50	0	1	1 if Province the creation of previous separation
Province Already at 1965 Borders (Dummy)	0.60	0.49	0	1	Law, Gwillim. 1995-2005. Administrative Subdivisions of Countries. North Carolina: McFarland & Company, Jefferson.
Area in 1,000s of Square Kilometers	5.49	4.14	0.75	22.38	Data available at www.statoids.com.
Lagged Party Congress (Dummy)	0.20	0.40	0	1	Year after Party Congresses in 1991, 1996, 2001, and 2006
South (Dummy)	0.54	0.50	0	1	Province below 17th Parallel
International Border (Dummy)	0.44	0.50	0	1	Province shares a border with China, Cambodia, or Laos.
Population in 10,000s	133.86	83.24	26.21	573.07	
Natural Log of GDP per Capita	0.98	0.63	-0.60	4.28	General Statistical Office (GSO). 1995-2005. *Statistical Handbook.* Hanoi: Statistical Publishing House. Data online at www.gso.gov.vn.
% of Population in Urban Areas	20.26	14.80	1.58	93.06	
Agriculture Output as a Percentage of GDP	41.90	24.49	1.31	377.00	
SOE Share of Provincial Industrial Output	47.61	21.24	0.00	99.33	
SOE Share of Industrial Output above 50% (Dummy)	0.46	0.50	0	1	Share of State Sector/Industrial Output above 49.6
% of Minorities in Province	1.86	1.30	1	5	1. No minorities at all; 2. 1-25%; 3. 25-50%; 4. 50-75%; and 5. 75-100%.
Number of Compatriots in Cabinet	0.64	1.11	0	7	Nien Giam To Chuc Hanh Chinh Vietnam (NGTCHCV). 1997-2005. [Compendium of Administration in Vietnam]. Hanoi: Statistical Publishing House.
Party Rank of People's Committee Chair	1.14	0.39	1	4	Author's coding based on Sheng (2005) and Huang (2003): (4. The Provincial Party Secretary holds a concurrent central position; 3. A Central Minister or Vice Minister was transferred to lead the province; 2. A Provincial Party Secretary from another locality was transferred to lead the province; 1. The Party Secretary has never held a government position outside of his province). Data not available for 1990.
Local Representative Status in Central Committee					
Distance from Major Cities	197.31	200.52	0	835	Distance in kilometers between provincial capital and Ho Chi Minh City or Hanoi.
Status of Local Representative on Central Committee	1.88	1.06	1	4	Author's Database based on media coverage of Central Committee (1. Solely Party Secretariat Member; 2. Concurrent Party & Local Government Leadership; 3. Head of Local Government Agency and Party Secretariat Member; 4. People's Committee Chairman)
Revenue and Private Sector Business Environment					
Province receives majority of 2004 revenue from Non-State Sector	0.61	0.49	0	1	Ministry of Finance. 2004. "State Budget-Final Accounts and Plan." Hanoi: Financial Publishing House. Province with majority of revenue from non-state sector receive a 1, other receive a 0.
Attitude	48.96	8.86	30.21	71.56	Obtained from Vietnam *Provincial Competitiveness Index* (Vietnam Competitiveness Initiative 2006). Data and survey available at www.vnci.org. Attitude (Question H1): What do you think is the attitude of provincial government officials toward private business? (Percentage of private firms answering (4) Somewhat Positive or (5) Positive on 5-Point Scale); Obstacle (Question H6_12): Favoritism toward the state sector is an obstacle to my business (Percentage of private firms answering (3) Agree or (4) Strongly Agree). Property Rights (Question B4_1a): Percentage of firms with official Land Use Rights Certificate granting long-term sale, mortgage, and exchange rights over land. Land Wait: Residual of regressing question (B4_3_3 - median wait for land introduction) on average plot price and land availability.
Obstacle	45.39	7.13	31.00	63.59	
Property Rights	66.15	23.37	11.30	96.50	
Land Wait	0.00	46.42	-52.66	218.96	
Profit	72.95	55.87	-16.04	244.96	Average profit per enterprise in 2004): Author's calculation from General Statistical Office Enterprise Census. Data available at www.gso.gov.vn.
Central Transfers					
Politburo	0.17	0.38	0	1	Author's Coding based on Central Committee Lists
State Investment Per Capita (Natural Log)	8.04	2.05	0.00	14.13	General Statistical Office. Multiple Years. Statistical Handbook. Hanoi: Statistical Publishing House. State Investment, Telephones, and Secondary School from years 1990-1999. Salary data from 1999-2001. Not that State investment only includes government expenditures and not SOE investment, which is calculated separately.
Annual Change Salary of Government Officials	14.65	13.57	-29.49	70.80	
Telephones per 1,000 Citizens	84.79	11.07	46.26	99.50	
Percentage of Secondary School Graduates	6.32	0.23	5.80	7.03	
Net National Transfers Per Capita (Natural Log)	7.72	1.53	1.41	9.989065	Ministry of Finance. 2000-2006. State Budget-Final Accounts and Plan. Hanoi: Financial Publishing House. www.mof.gov.vn
Net Program Transfers Per Capita (Natural Log)	5.73	3.38	0.00	9.49	

Robustness 1: Determinants of Provincial Separation (PROBIT), 1990 to 2005

Variable Labels	1990	1991	1996	2003	Years	Interact
	(1)	(2)	(3)	(4)	(5)	(6)
SOE Share of Industrial Output above 50% (Dummy)	0.904	-1.920*	1.422*	1.723*	-0.224	-5.688*
	(1.64)	(0.78)	(0.57)	(0.63)	(0.35)	(0.97)
Province the Result of Previous Split (Dummy)					-1.168*	-1.543*
					(0.40)	(0.35)
Province Already at 1965 Borders (Dummy)					-1.534*	-2.395*
					(0.35)	(0.47)
Population in 10,000s	-0.0100	0.0190*	0.00637*	0.0117*	0.00139	0.00369
	(0.0064)	(0.0054)	(0.0035)	(0.0041)	(0.0026)	(0.0030)
Area in 1,000s of Square Kilometers	0.980*	0.380*	0.172*	0.0252	0.104*	0.119*
	(0.33)	(0.12)	(0.069)	(0.061)	(0.050)	(0.060)
International Border (Dummy)	-9.310*	-3.604*	-1.163	-0.0489	-0.712*	-0.517
	(2.82)	(1.24)	(0.72)	(0.51)	(0.36)	(0.41)
Number of Compatriots in Cabinet		-0.250	-0.0997	-0.254	-0.129	-0.214
		(0.35)	(0.28)	(0.20)	(0.18)	(0.17)
% of Minorities in Province					-0.756*	-0.856*
					(0.24)	(0.24)
Natural Log of GDP per Capita	3.639*	-5.623*	0.729	-3.616*	-3.101*	-4.304*
	(1.21)	(2.07)	(0.55)	(1.25)	(0.73)	(0.96)
% if Population in Urban Areas		0.0329	-0.0602*	0.0331	0.0139	0.0224
		(0.055)	(0.024)	(0.025)	(0.019)	(0.021)
South (Dummy)	-1.741*	0.857	0.455	1.968*	-0.0334	0.265
	(0.91)	(0.78)	(0.54)	(0.72)	(0.32)	(0.39)
1990 (Dummy)					0.218	-0.0679
					(0.41)	(0.78)
1991 (Dummy)					1.854*	2.863*
					(0.40)	(0.67)
1996 (Dummy)					2.918*	2.329*
					(0.54)	(0.81)
2003 (Dummy)					4.883*	5.370*
					(0.80)	(1.06)
1990 (Dummy) * SOE Share>50% (Dummy)						5.522*
						(1.32)
1991 (Dummy) * SOE Share>50% (Dummy)						3.813*
						(1.16)
1996 (Dummy) * SOE Share>50% (Dummy)						7.506*
						(1.10)
2003 (Dummy) * SOE Share>50% (Dummy)						7.952
						(4.32)
Constant	0.150	0.0537	0.361*	0.169		
	(0.16)	(0.17)	(0.19)	(0.18)		
Number of Observations	40	44	53	61	830	830
Pseudo R-squared	0.606	0.663	0.364	0.510	0.363	0.372
Log Likelihood	-4.194	-7.502	-14.30	-5.866	-44.81	-34.13

PROBIT Coefficient with robust standard errors (clustered at panel level) in parentheses. * Significant at the .1 level or less.
In yearly models 1-4, previous split, sixty-five, and minorities and number of compatriots in cabinet are dropped, as they perfectly predict failure in 1990 and 1991 respectively.

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Robustness 2 : Cox Non-Proportional Hazard Model of the Determinants of Provincial Separation, 1990 to 2004

Variable Labels	Cox Baseline	Cox Full	Cox Baseline w/lnT Interactions	High SOEs w/lnT Interactions	High SOEs w/lnT Interactions (t<5)	High SOEs w/lnT Interactions (t>5)	Full w/lnT Interactions (t<5)	Full w/lnT Interactions (t<5)	Full w/lnT Interactions (t>5)	Robust to People's Committee Rank	Robust to Dropping Cities
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
SOE Share of Industrial Output above 50% (Dummy)		1.494		0.381	4.481*	0.654	0.388	4.996*	0.683	0.651	0.757
		(0.81)		(0.53)	(2.89)	(0.41)	(0.54)	(3.63)	(0.47)	(0.37)	(0.46)
Province Already at 1965 Borders (Dummy)	0.119*	0.114*	0.106*	0.0888*	0.0982*	0.0982*	0.0812*	0.102*	0.102*	0.0739*	0.0519*
	(0.066)	(0.076)	(0.064)	(0.054)	(0.054)	(0.054)	(0.063)	(0.071)	(0.071)	(0.061)	(0.039)
Lagged Party Congress (Dummy)	1.754	1.734	1.726	1.730	1.978	1.978	1.870	2.109*	2.109*	2.278*	2.903*
	(0.70)	(0.65)	(0.69)	(0.76)	(0.86)	(0.86)	(0.76)	(0.83)	(0.83)	(1.00)	(1.45)
Area in 1,000s of Square Kilometers	1.135*	1.170*	1.140*	1.131*	1.127*	1.127*	1.145*	1.151*	1.151*	1.131*	1.261*
	(0.053)	(0.063)	(0.055)	(0.055)	(0.057)	(0.057)	(0.068)	(0.072)	(0.072)	(0.070)	(0.087)
South (Dummy)	2.044	2.066	2.041	2.482	2.423	2.423	2.071	2.016	2.016	1.702	2.445
	(1.13)	(1.49)	(1.15)	(1.68)	(1.56)	(1.56)	(1.18)	(1.20)	(1.20)	(1.12)	(1.88)
International Border (Dummy)	0.221*	0.198*	0.227*	0.294*	0.326*	0.326*	0.291	0.293*	0.293*	0.384	0.308
	(0.12)	(0.17)	(0.13)	(0.16)	(0.17)	(0.17)	(0.23)	(0.21)	(0.21)	(0.28)	(0.27)
Population in 10,000s	1.007*	1.010*	1.007*	1.007*	1.007*	1.007*	1.010*	1.010*	1.010*	1.014*	1.018*
	(0.0028)	(0.0035)	(0.0028)	(0.0028)	(0.0028)	(0.0028)	(0.0032)	(0.0034)	(0.0034)	(0.0026)	(0.0034)
Natural Log of GDP per Capita	0.0928*	0.0670*	0.283	0.414	0.0695*	0.113*	0.150	0.0551*	0.0657*	0.0593*	0.291
	(0.074)	(0.058)	(0.30)	(0.46)	(0.067)	(0.13)	(0.23)	(0.056)	(0.081)	(0.080)	(0.44)
% if Population in Urban Areas		1.018					1.021	1.024	1.024	1.013	1.033
		(0.018)					(0.015)	(0.017)	(0.017)	(0.019)	(0.025)
% of Minorities in Province		1.008					0.757	0.986	0.954	1.242	1.997
		(0.47)					(0.35)	(0.45)	(0.36)	(0.60)	(1.11)
Number of Compatriots in Cabinet		0.755					0.879	0.781	0.799	0.625	1.410
		(0.16)					(0.30)	(0.13)	(0.22)	(0.19)	(0.46)
Party Rank of People's Committee Chair										0.656	0.631
										(0.30)	(0.25)
Interactions with Natural Log of Time											
SOE Share of Industrial Output above 50% (Dummy)				2.615	0.146*	6.847*	2.833	0.137*	7.319*	6.387*	7.717*
				(1.92)	(0.12)	(5.47)	(2.08)	(0.12)	(6.50)	(5.86)	(7.37)
Natural Log of GDP per Capita			0.557	0.415*	1.625	0.615	0.694	1.193	0.838	1.260	0.253
			(0.26)	(0.19)	(1.94)	(0.73)	(0.47)	(1.40)	(0.98)	(1.56)	(0.41)
% of Minorities in Province							1.239	0.968	1.033	0.948	0.578
							(0.22)	(0.26)	(0.28)	(0.33)	(0.27)
Number of Compatriots in Cabinet							0.885	1.023	0.977	1.048	0.471**
							(0.16)	(0.28)	(0.27)	(0.33)	(0.14)
Number of Observations	830	830	830	830	830	830	830	830	830	790	734
Number of Panels	87	87	87	87	87	87	87	87	87	84	77
Log Likelihood	-69.18	-67.86	-68.88	-67.66	-66.97	-66.97	-66.27	-65.97	-65.97	-55.38	-46.39
χ^2	70.59	89.89	67.81	99.31	115.1	115.1	166.8	139.2	139.2	161.6	274.5
DF	7	11	8	10	10	10	15	15	15	16	16
Prob. > χ^2	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001

Hazard ratios are displayed with robust standard errors, clustered at the provincial, in parentheses. * Significant at the .1 level or less. Dummy signifies dichotomous dependent variables.

Hazard ratios < 1 indicate decrease in risk of separation. Hazard ratios > 1 indicate increase in risk of separation.

Non-proportional Hazard analysis implemented in Stata using the stxcox procedure. For model 3-11, the function tvc was used to allow for interactions with the natural log of time (lnT). Failure set to equal the time (t) province (i) is divided into new provinces.

New provinces enter the model one year after the separation of their mother province. Thus, 40 provinces enter in 1990, 6 new provinces enter in 1991, 12 new provinces enter in 1997, and 6 new provinces enter in 2004. Time is set to 0 upon entry.

Models 5 and 8 interact high SOE share with natural log of time for t<5, while Models 6,9,10, 11 interact high SOE share with natural log of time for t>5 in order to capture the non-proportional effects of SOE share over the time period.

Model 10 uses the Party Rank of the Provincial People's Committee Chairman. Data is not available on this variable in 1990, thereby dropping 40 observations and 3 provinces, which were separated in 1990.

Model 11 drops the national level cities of Ho Chi Minh City, Hanoi, Haiphong, Da Nang (after 1997), and Can Tho after (2003).

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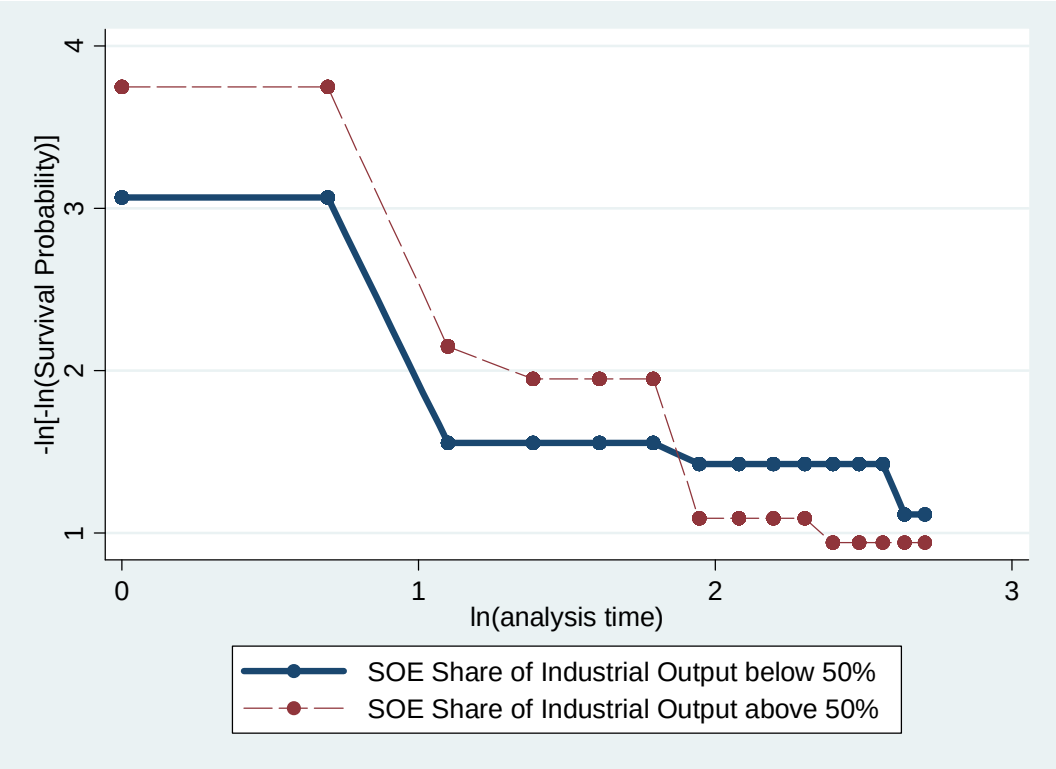
Robustness Test 2B: Survival Probabilities of Non-State and SOE Provinces (1990-2004)
(Derived from Robustness Test 2 – 7)



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Robustness Test 3: Determinants of Central Transfers

Variable Labels	1. State Investment per Capita	2. Total Transfers per Capita	3. Health, Education, & Environment Transfers per Capita	4. Average Salary for Provincial Officials
	(Annual Growth (%), 1997-2004)	(Annual Growth (%), 2000-2004)	(Annual Growth (%), 2000-2004)	(Annual Growth, (%), 1997-2004)
Province Created in 1997	1.463*	0.803*	0.283	1.556
	(0.27)	(0.39)	(0.21)	(1.81)
Provincial Compatriot on Politburo	0.0835	0.201	0.539	-3.279
	(0.29)	(0.50)	(0.58)	(2.26)
Interaction Split97*Politburo	0.971*	2.079*	1.253	6.644*
	(0.54)	(0.85)	(0.77)	(3.55)
SOE Share of Industrial Output above 50% (Du	-0.239*	0.643**	-0.154	1.440
	(0.13)	(0.27)	(0.16)	(1.46)
Secondary School Graduates (%, fd)	0.00702*	0.0380*	0.0179	0.191*
	(0.0030)	(0.021)	(0.015)	(0.063)
Telephone per Capita (%, fd)	0.0254*	-0.103*	-0.0364*	-0.0783*
	(0.0038)	(0.0074)	(0.0049)	(0.029)
GDP per Capita (fd)	0.300*	-0.313	0.115	-1.437*
	(0.059)	(0.32)	(0.16)	(0.32)
% of Population in Urban Areas (fd)	0.0115	0.130	0.0177	-0.281*
	(0.0078)	(0.087)	(0.061)	(0.17)
Distance from major market	0.00170*	0.00273*	0.000386	-0.000948
	(0.00053)	(0.00055)	(0.00029)	(0.0029)
Area (thousands of square kilometers)	0.0110	-0.0392	-0.0244	0.281*
	(0.020)	(0.046)	(0.025)	(0.17)
City Dummy	1.773*	-0.152	0.151	4.290*
	(0.87)	(0.69)	(0.41)	(2.32)
Ba Ria-Vung Tau Dummy	0.305	5.036*	0.197	20.72*
	(0.52)	(2.45)	(1.14)	(4.16)
	7.218***	2.852*	1.703*	15.46*
	(0.17)	(0.37)	(0.22)	(1.33)
Observations	427	244	244	427
R-squared	0.91	0.67	0.75	0.45

OLS Models with Panel Corrected Standard Errors in parentheses; * Significant at the .1 level or less. Dummy denotes dichotomous variable. (Fd) implies first difference taken
Dummies for National-level cities and oil-rich Ba Ria-Vung Tau used due to disprop

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