

Ethnicity Meets Politics: One Hundred Years of Road Building in Kenya

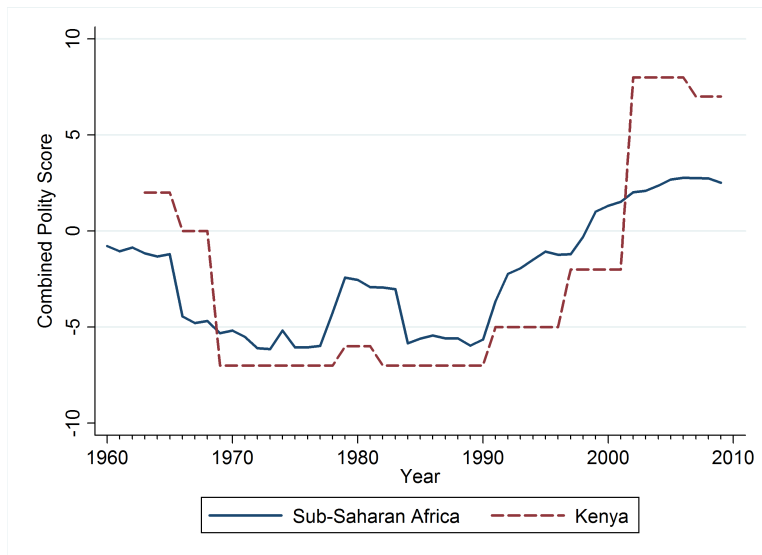
Remi Jedwab
PSE (& LSE)

Robin Burgess (LSE), Edward Miguel (UC-Berkeley),
Ameet Morjaria (HKS)

NAMUR, CRED Workshop

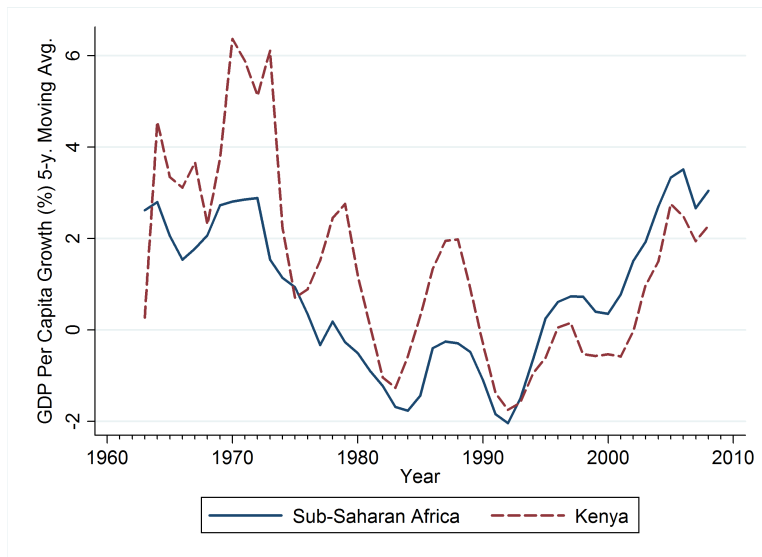
14 June 2011

Democracy in Africa



PolityIV regime categorizations: *autocracy* (-10 to -6), *anocracy* (-5 to +5) and *democracy* (+6 to +10).

Economic Growth in Africa



5-year moving average to smooth fluctuations.

Research Question

- ▶ Do African leaders disproportionately favor people who share their ethnicity?
- ▶ Has democratic transitions constrained distributive politics in Africa?

⇒ Case study on Kenya, 1901-2011.

Motivation

- ▶ Anecdotal evidence on patronage in Africa. Magnitude?

"Once Nairobi and the tourist hub represented by the Maasai Mara were excluded, [road] allocations to the home constituencies of vocal government critics were nearly 320 times less generous than those to constituencies of trusted presidential aides."

It's Our Turn to Eat., Michela Wrong, 2009.

- ▶ Bad geography and poor transportation infrastructure → lack of trade and growth in Africa.

This Paper's Approach

- ▶ We take an empirical approach within one country, Kenya.
- ▶ We assemble a data set on road investments. We combine this with a data set on the ethnicity of leaders.
⇒ Panel data: 41 districts tracked over 110 years (1901-2011).
- ▶ We test whether: (i) districts which share ethnicity with leaders receive greater road investments, and (ii) democratic transitions constrain this effect.
- ▶ Identification strategy: use exogenous political changes within regimes and across regimes.

Preview of Findings

- ▶ Evidence for distributive politics in single-party autocracy.
- ▶ Districts that share the ethnicity of the president receive 2.7 times more road expenditure and 4.7 times more paved roads than their population share.
- ▶ Effect strongly reduced in multi-party democracy \Rightarrow balanced distribution of investments across ethnic groups (universalism).
- ▶ This effect goes through democracy shaping incentives.

Road map

- ▶ Conceptual framework
- ▶ Background and data (Ethnicity / Politics / Roads)
- ▶ Empirical strategy (Graphical / Regressions)
- ▶ Channels
- ▶ Concluding comments

Conceptual Framework

- ▶ Intuition from Morrow, De Mesquita, Siverson, and Smith (2003) and Besley and Kudamatsu (2007).
- ▶ A country with citizens from various ethnic groups. Leader maximizes the utility of co-ethnics (*patronage*) under the constraint that he remains in power (*support-buying*).
- ▶ *Selectorate/Franchise*: people taking part in choosing the leader.
 - ▶ Democracy: voters.
 - ▶ Single-party autocracy: party stalwarts.
- ▶ The leader always has to build coalitions to remain in power. *Distributive politics*: the leader favors his own group and/or another group. *General interest policy*: no group is favored.

Conceptual Framework

- ▶ Patronage in democracy/autocracy: Posner 2005, Bates 2008.
- ▶ Vote-buying in democracy:
 - ▶ *Core supporters*:
Cox & McCubbins 1986, Dixit & Londregan 1996
 - ▶ *Swing voters*:
Lindbeck & Weibull 1987, Dixit & Londregan 1996
- ▶ Support-buying in autocracy:
 - ▶ Repress selectors: Acemoglu, Robinson & Verdier 2004
 - ▶ Bribe key selectors: Acemoglu, Egorov & Sonin 2008
 - ▶ Be a good leader: McGuire & Olson 1996

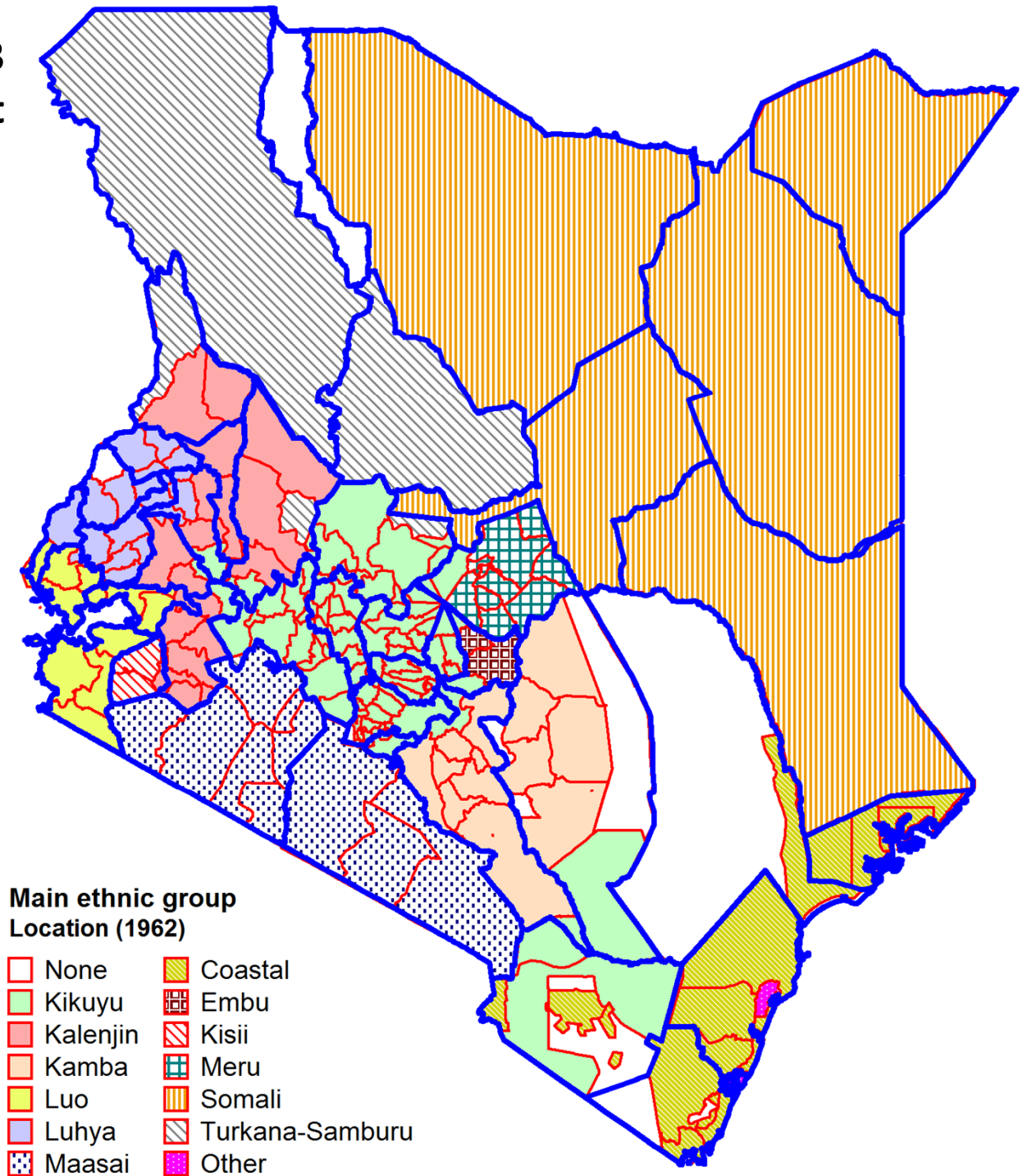
ETHNICITY

- ▶ We use district boundaries in 1963 (independence).
- ▶ Setting of internal boundaries guided by desire of various tribal groups to remain separate (Boundary Commission Reports).
- ▶ District boundaries in 1963 largely reflect tribal boundaries → key to our analysis. Highly segregated country.
- ▶ 12 ethnic groups. 5 ethnic groups $\geq 10\%$ of the population.
- ▶ Shares in the overall Kenya population have remained constant over time (as did locations).

District Boundaries in 1963 and Main Ethnic Group at the Location Level in 1962

— District Boundaries (41) in 1963

— Location Boundaries (168) in 1962



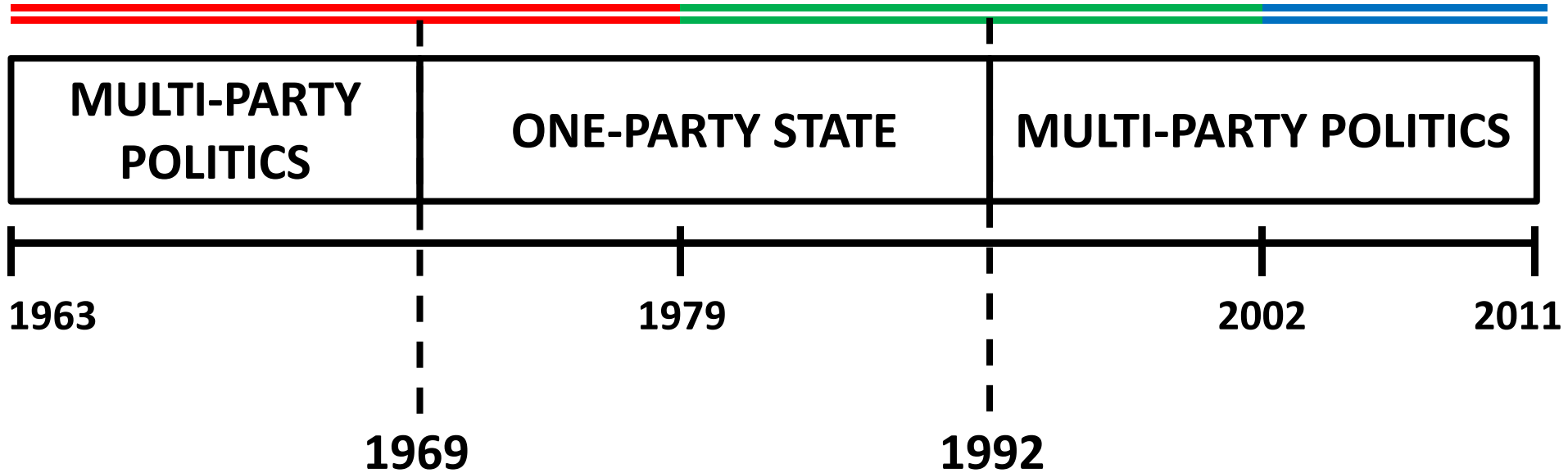
POLITICS

- ▶ British colony till 1963. Presidential system after 1963.
- ▶ We exploit changes in the identity of the leader.
- ▶ But also regime changes *within* the same leader.
- ▶ Form of autocracy: the president is the head of the ruling party.
- ▶ Data on position and ethnicity of each cabinet member. Track ethnic composition of cabinets (13 between 1963 and 2011).

KENYATTA
(Kikuyu)

MOI
(Kalenjin)

KIBAKI
(Kikuyu)



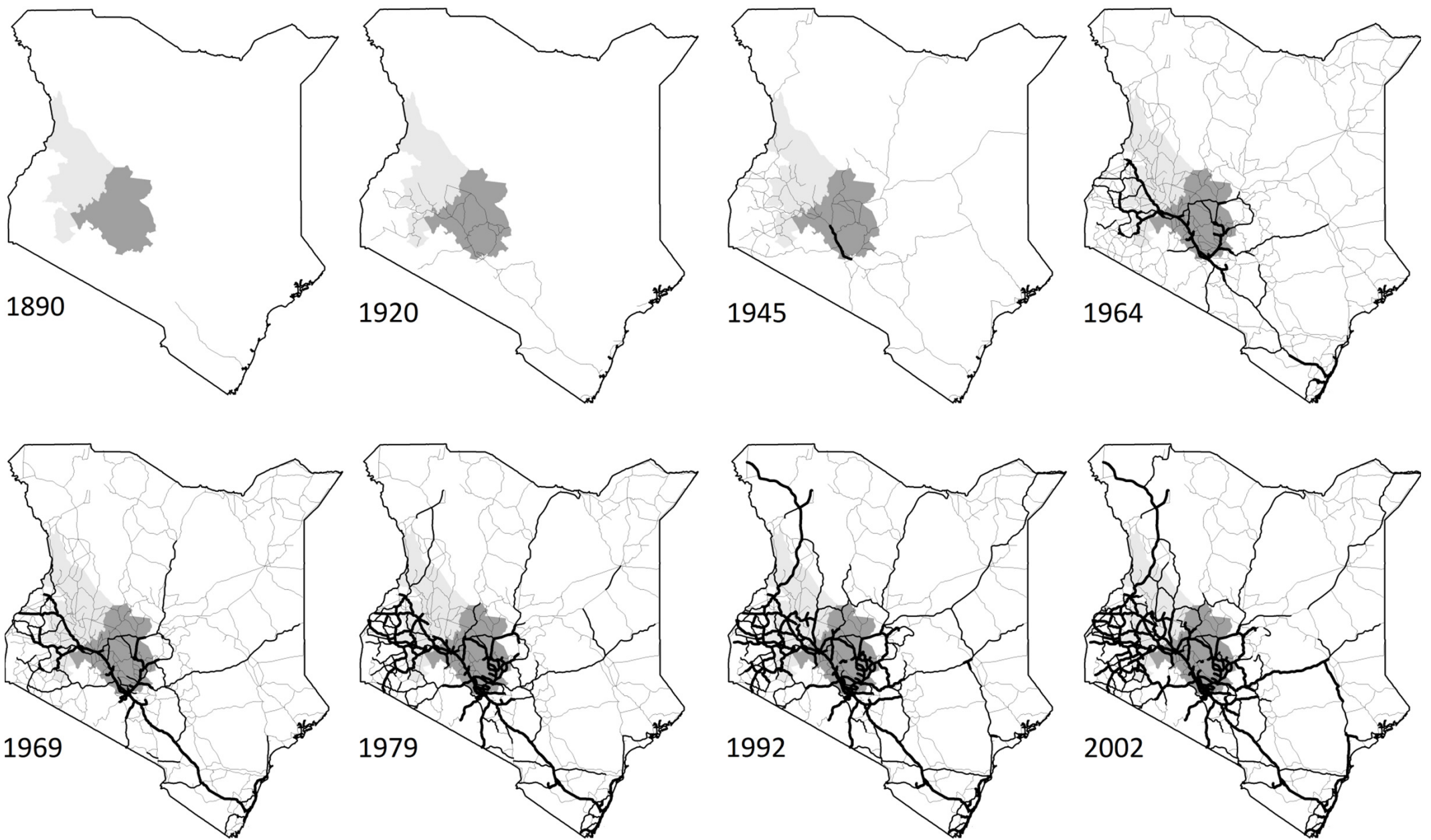
ROADS

- ▶ Panel database on new road investments: road development expenditure for each *district-year* in 1901-2011 ($D = 41$, $T = 110$, $N = 4510$).
- ▶ Sources: *Annual Development Estimates* + other administrative records (e.g., road from A to B through C) \Rightarrow GIS
- ▶ Facts:
 - ▶ The Government decides the roads to be built.
 - ▶ Single largest item in investment budget (15.2% in 1963-2010).
 - ▶ Road budget: investment (65.3% in 1963-2010), maintenance.

Background & Data

ROADS

- ▶ Complementary panel database on investments: length (km) of paved, improved and dirt roads for each *district-year* in 1890-2002. Unbalanced in time ($D = 41$, $T = 82$, $N = 3362$).
- ▶ Data was recreated using GIS and annual reports listing individual road projects and historical paper maps (Michelin, Survey of Kenya). No updated map exists after 2002.
- ▶ Facts on paved roads:
 - ▶ First paved road in 1945.
 - ▶ 54% of 1964-2002 network expansion driven by paved roads.
 - ▶ 6.7/20 times more expensive than improved/dirt roads.



1890

1920

1945




1964



1969

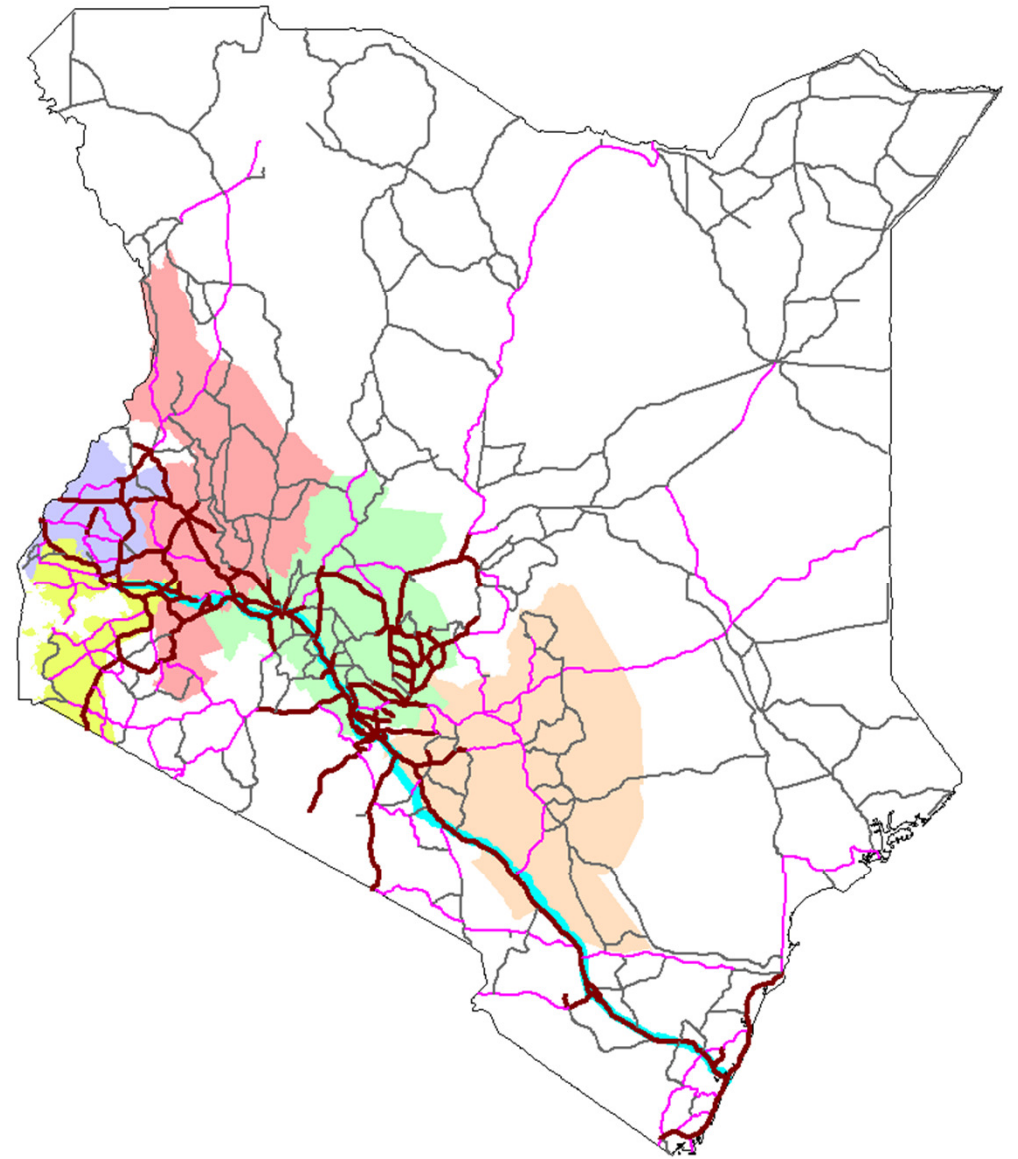
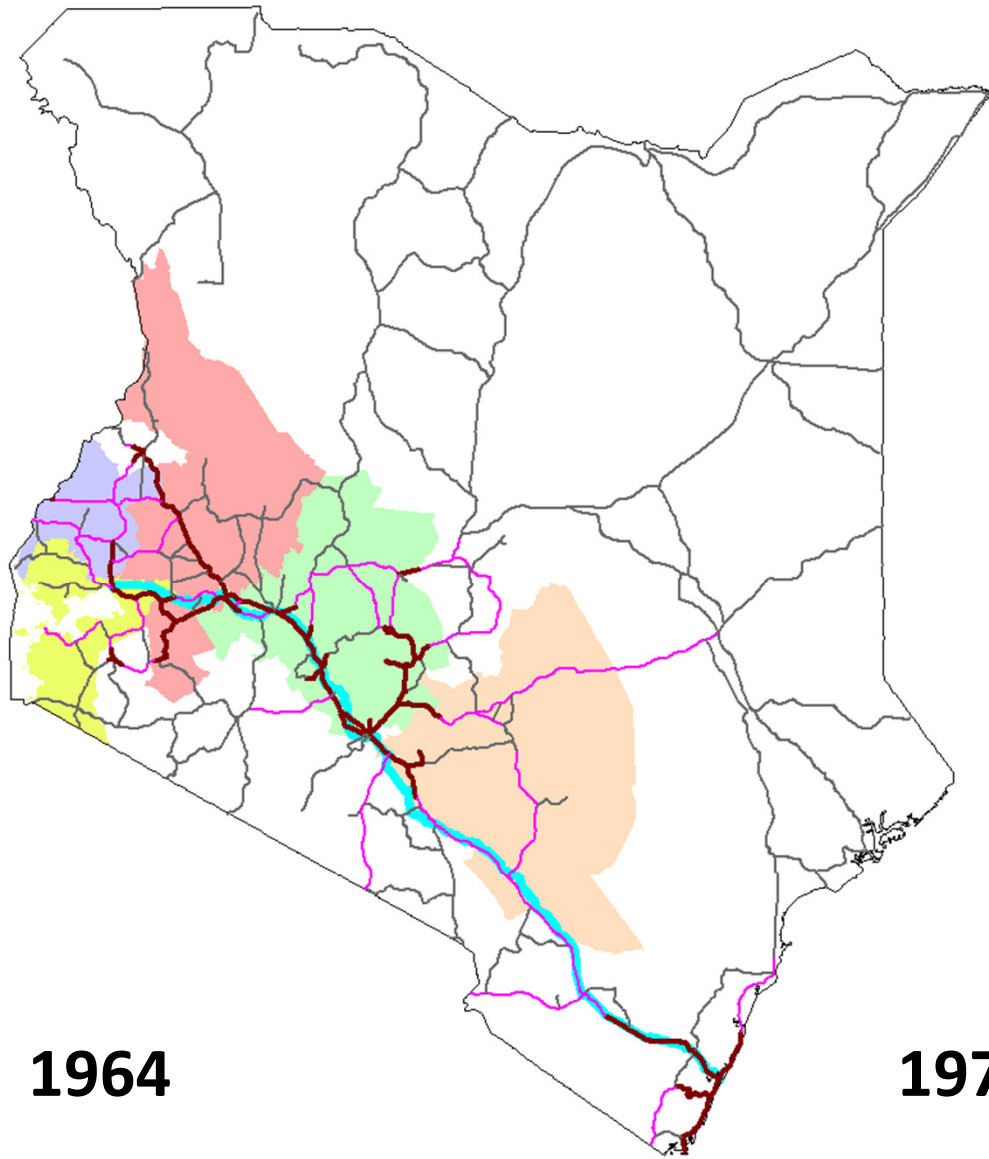
1979

1992

2002

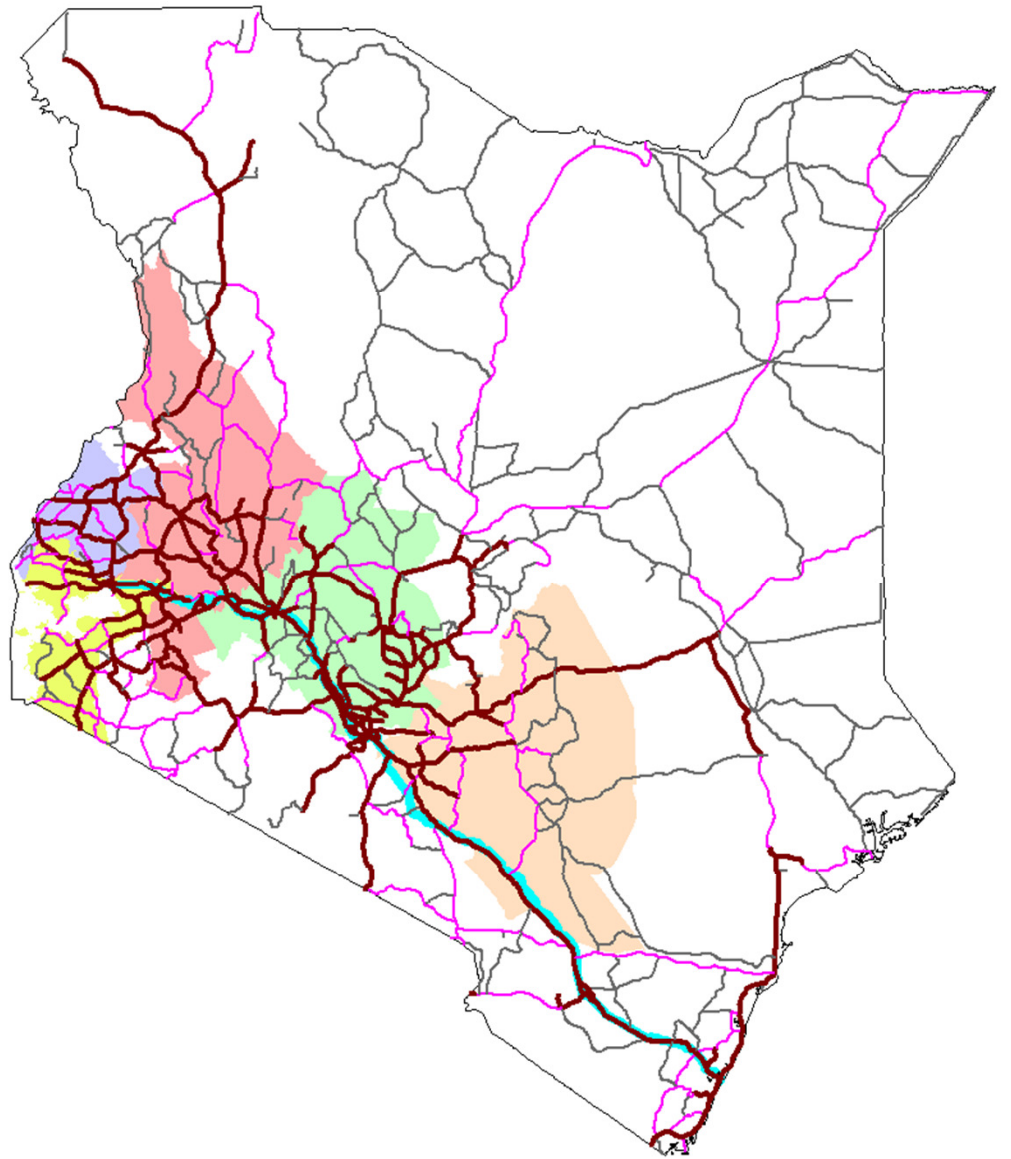
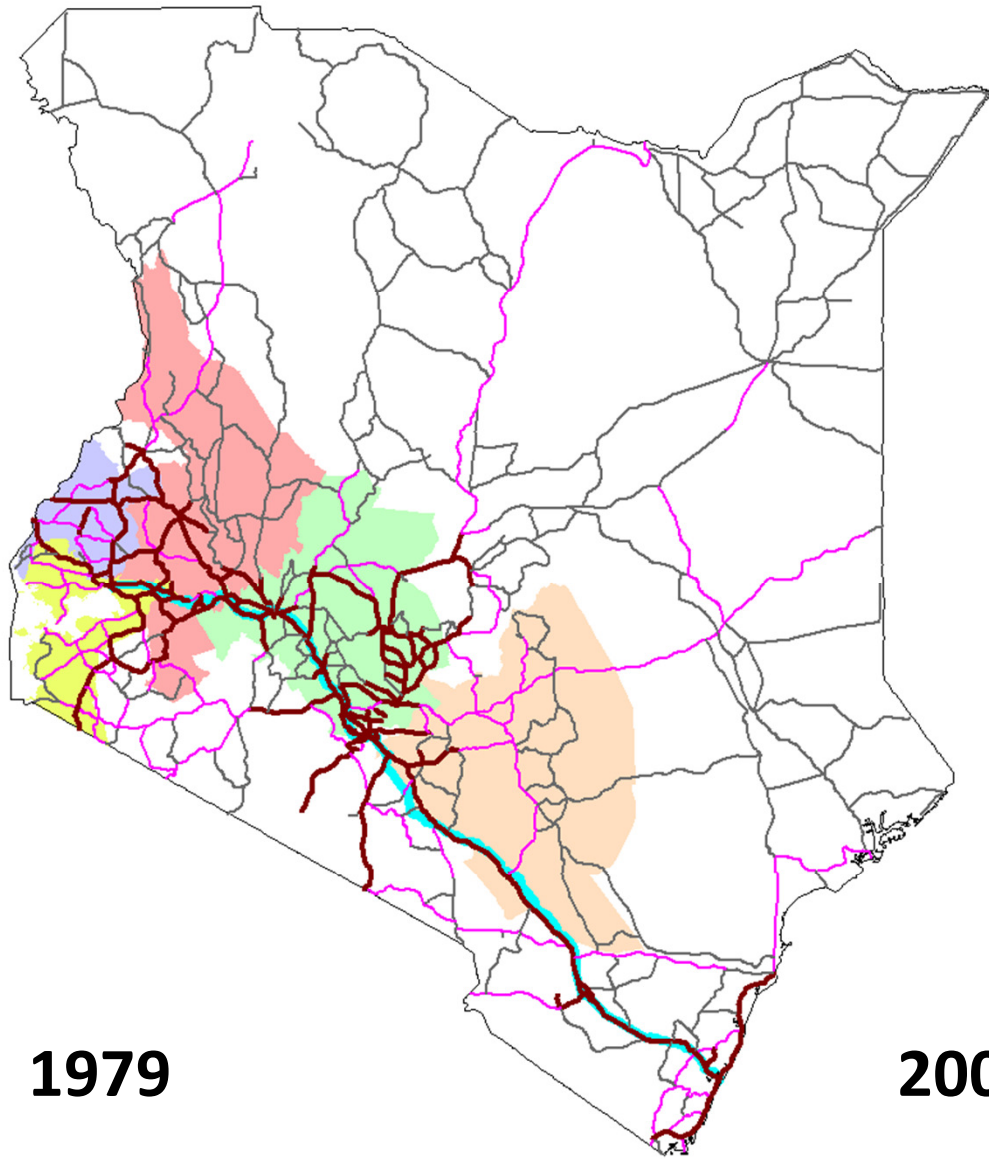
 Paved road
 Improved road
 Dirt road

 Kikuyu Districts
 Kalenjin Districts



 Kikuyu  Kalenjin  Luo  Luhya  Kamba





 Paved Road  Improved Road  Tracks  Railway



1979

2002

 Kikuyu  Kalenjin  Luo  Luhya  Kamba

 Paved Road  Improved Road  Tracks  Railway

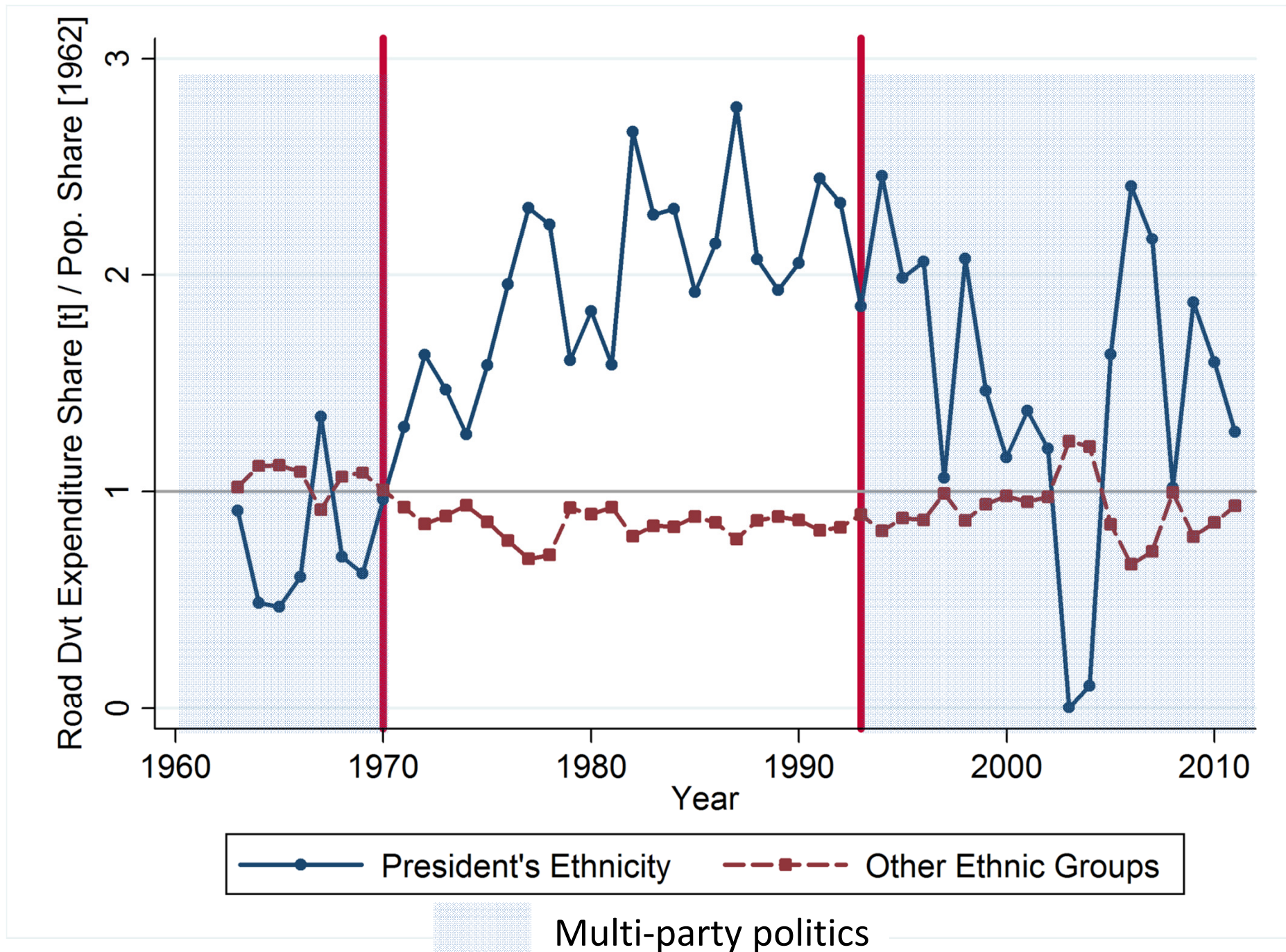
Empirical Strategy

- ▶ Construct a measure of whether the share of spending on roads in a district is in line with the population share of that district:

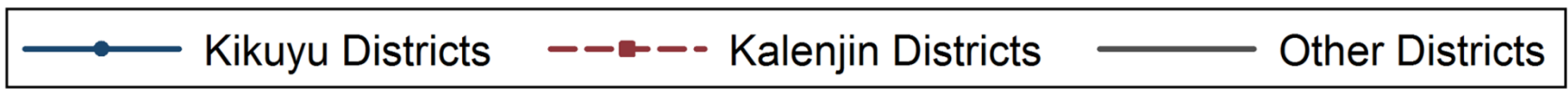
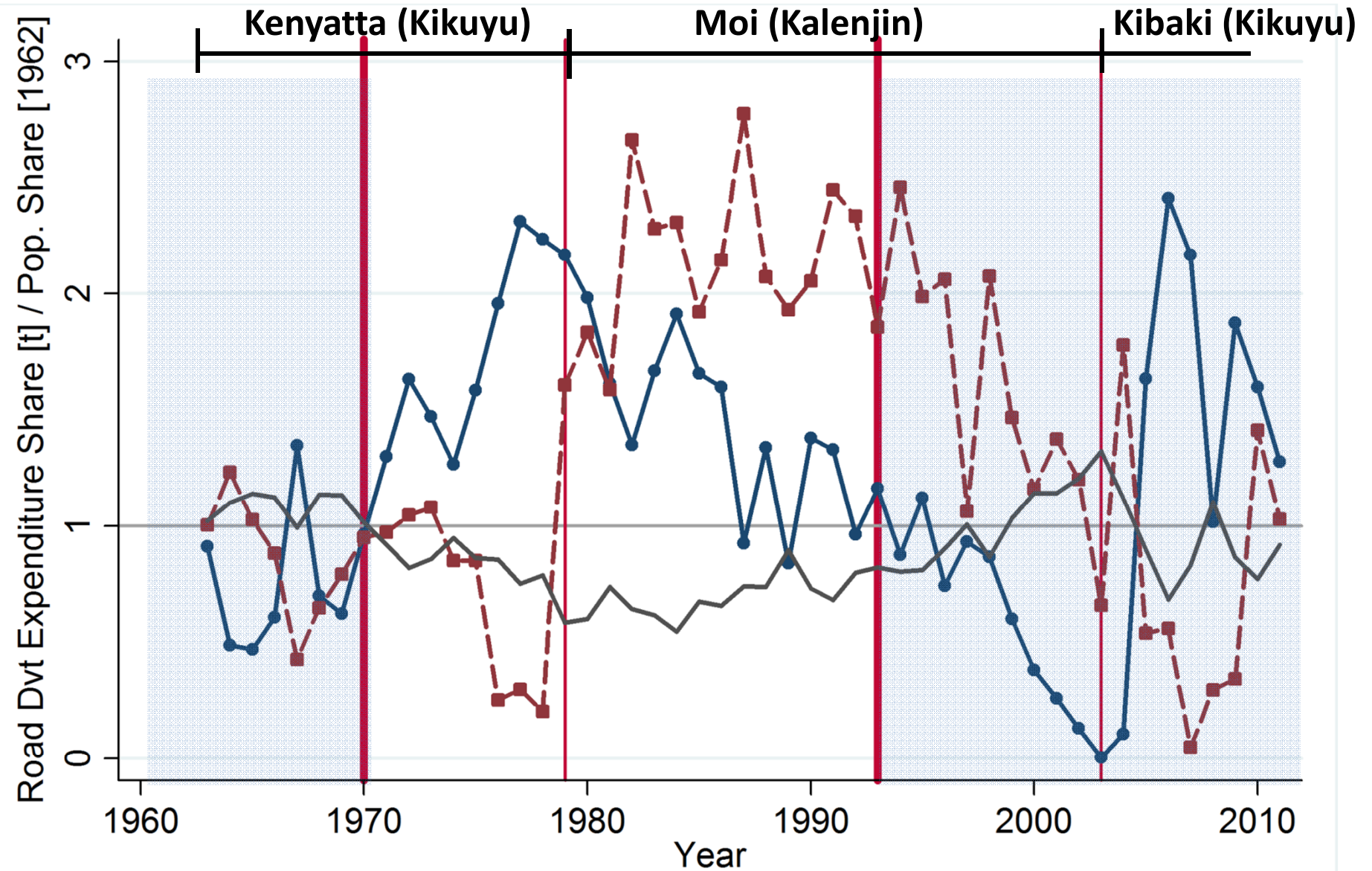
$$Rpop_{d,t} = \frac{\text{Share of road investments}_{d,t}}{\text{Population share}_{d,1962}}$$

- ▶ A value above 1 denotes that a district is getting more of national road investments than its population share. Can also be computed for groupings of districts: Kikuyu, Kalenjin, etc.
- ▶ Examine whether greater political representation leads to districts receiving a disproportionate share of road investments.

Multi-party, Road Investments and President's Ethnic Districts



Multi-party, Road Investments and Presidential Groups



Multi-party politics

Empirical Strategy

- ▶ The graphical analysis suggests the following simple regression analysis for districts d and years t :

$$Rpop_{d,t} = \gamma_d + \alpha_t + \beta Presdist_{d,t} + \delta Presdist_{d,t} \times Multiparty_t + \epsilon_{d,t}$$

- ▶ where:
 - ▶ $Rpop_{d,t}$ is the share of road investments going to district d at time t divided by the 1962 population share of that district
 - ▶ $Presdist_{d,t}$ is a dummy equal to one if more than 50% of the district population comes from the ethnicity of the president.
 - ▶ $Multiparty_t$ is dummy equal to one when it is multi-party era.
- ▶ Hypotheses: $\beta > 0$, $\beta + \delta = 0$?

Table 1: Road Investments and President's Ethnic Districts (1963-2011).

<i>Dependent Variable: Share of road expenditure [d,t] / Population share [d,1962]</i>					
	(1)	(2)	(3)	(4)	(5)
Presidential District Dummy [d,t]	0.97*** (0.36)	0.96*** (0.35)	0.96*** (0.35)	1.02*** (0.35)	0.97** (0.38)
Observations	2009	2009	2009	2009	2009
R-squared	0.14	0.15	0.15	0.15	0.22
District and year fixed effects	Y	Y	Y	Y	Y
(population, area, urbanization rate)*year	N	Y	Y	Y	N
(earnings, employment, cash crops)*year	N	N	Y	Y	N
(main highway, border, dist.Nairobi)*year	N	N	N	Y	N
District time trends	N	N	N	N	Y
No. of districts	41	41	41	41	41

Notes: Standard errors corrected for clustering at the district level are reported in parentheses; * p<0.10, ** p<0.05, *** p<0.01. There are 41 districts and 49 years, hence 2009 observations. We include various baseline controls interacted with a time trend. Demography: district population (1962), area (sq km), urbanization rate (1962). Economic activity: district total earnings (1966) and employment (1963) in the formal sector, value of cash crop exports (1965). Economic geography: dummy equal to one if the district is on the main corridor Mombasa-Nairobi-Kampala, dummy equal to one if the district borders Uganda or Tanzania, Euclidean distance (km) to Nairobi.

Table 2: Road Investments, President's Ethnic Districts and Democracy (1963-2011).

<i>Dependent Variable: Share of road expenditure [d,t] / Population share [d,1962]</i>					
	(1)	(2)	(3)	(4)	(5)
Presidential District Dummy [d,t]	1.57*** (0.49)	1.62*** (0.49)	1.64*** (0.49)	1.74*** (0.49)	1.56*** (0.51)
Presidential District Dummy [d,t] x Multi-Party Dummy [t]	-1.11* (0.61)	-1.24* (0.63)	-1.27** (0.63)	-1.32** (0.63)	-1.08* (0.59)
Observations	2009	2009	2009	2009	2009
R-squared	0.15	0.16	0.16	0.16	0.22
District and year fixed effects	Y	Y	Y	Y	Y
(population, area, urbanization rate)*year	N	Y	Y	Y	N
(earnings, employment, cash crops)*year	N	N	Y	Y	N
(main highway, border, dist.Nairobi)*year	N	N	N	Y	N
District time trends	N	N	N	N	Y
No. of districts	41	41	41	41	41
F-test [<i>p-value</i>]	1.07	0.76	0.73	0.90	1.22
Presidential [d,t] + Presidential [d,t] x Multi-Party [t] = 0	[0.31]	[0.39]	[0.40]	[0.35]	[0.28]

Notes: Standard errors corrected for clustering at the district level are reported in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. There are 41 districts and 49 years, hence 2009 observations. We include various baseline controls interacted with a time trend. Demography: district population (1962), area (sq km), urbanization rate (1962). Economic activity: district total earnings (1966) and employment (1963) in the formal sector, value of cash crop exports (1965). Economic geography: dummy equal to one if the district is on the main corridor Mombasa-Nairobi-Kampala, dummy equal to one if the district borders Uganda or Tanzania, Euclidean distance (km) to Nairobi.

Table 3: Road Investments and Presidential Groups (1963-2011).

<i>Dependent Variable: Share of road expenditure [d,t] / Population share [d,1962]</i>						
	(1)	(2.a)	(2.b)	(3.a)	(3.b)	(4)
Leader:	COLONIAL	KENYATTA		MOI		KIBAKI
Regime:		Multi-Party	Single-Party	Single-Party	Multi-Party	Multi-Party
Kikuyu District Dummy [d,1962]	0.74 (0.52)	-0.44 (0.39)	0.96** (0.39)	0.66 (0.49)	-0.88 (0.57)	0.00 (0.63)
Kalenjin District Dummy [d,1962]	1.83** (0.90)	-0.57 (0.41)	-0.17 (0.32)	1.88*** (0.66)	0.70 (1.11)	-0.60 (0.57)
Observations	2419	287	369	574	410	369
R-squared	0.03	0.03	0.06	0.08	0.02	0.01
Year fixed effects	Y	Y	Y	Y	Y	Y
District fixed effects	-	-	-	-	-	-
Controls	N	N	N	N	N	N
District time trends	N	N	N	N	N	N
No. of districts	41	41	41	41	41	41
F-test [<i>p-value</i>]	1.14	0.15	6.92**	3.13*	2.26	0.99
Kikuyu District [d,1962] - Kalenjin District [d,1962] = 0	[0.29]	[0.70]	[0.01]	[0.08]	[0.14]	[0.33]

Notes: Standard errors corrected for clustering at the district level are reported in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. A district is defined as g if more than 50% of its population comes from ethnicity g .

Empirical Strategy: Robustness & Additional Results

- ▶ Standardization of road expenditure by area.
- ▶ Using the district share of the presidential group.
- ▶ Same effect for White Highlands and non-White Highlands districts. Not due to colonization.
- ▶ Larger but non-significant effect for president's district of birth.
- ▶ Smaller and less robust effect for 2nd group in the cabinet.
- ▶ Results robust to using paved road construction.
- ▶ Presidents discriminate using transfers, not taxes.

Table 4: Road Investments, President's Ethnic Districts and Democracy (1963-2011).

<i>Dependent Variable: Share of road expenditure [d,t] / Population (Area) share [d,1962]</i>						
Standardization:	(1) Pop.	(2) Area	(3) Pop.	(4) Pop.	(5) Pop.	(6) Pop.
Presidential District Dummy [d,t]	1.74*** (0.49)	3.05*** (0.99)		2.10*** (0.77)	1.60*** (0.50)	2.34*** (0.58)
Presidential District Dummy [d,t] x Multi-Party Dummy [t]	-1.32** (0.63)	-2.22* (1.29)		-1.73* (0.86)	-1.13 (0.69)	-1.45** (0.64)
Presidential Share [d,t]			2.30*** (0.56)			
Presidential Share [d,t] x Multi-Party Dummy [t]			-1.90*** (0.66)			
Presidential District Dummy [d,t] x White Highlands [d]				-0.74 (0.90)		
Presidential District Dummy [d,t] x White Highlands [d] x Multi-Party Dummy [t]				0.8 (1.07)		
President District of Birth [d,t]					0.9 (1.22)	
President District of Birth [d,t] x Multi-Party Dummy [t]					-1.3 (1.05)	
2nd Cabinet Group [d,t]						1.71*** (0.55)
2nd Cabinet Group [d,t] x Multi-Party Dummy [t]						-1.92** (0.82)
Observations	2009	2009	2009	2009	2009	2009
R-squared	0.16	0.42	0.16	0.16	0.16	0.17
District and year fixed effects	Y	Y	Y	Y	Y	Y
(population, area, urbanization rate)*year	Y	Y	Y	Y	Y	Y
(earnings, employment, cash crops)*year	Y	Y	Y	Y	Y	Y
(main highway, border, dist.Nairobi)*year	Y	Y	Y	Y	Y	Y
District time trends	N	N	N	N	N	N
No. of districts	41	41	41	41	41	41
F-test [<i>p-value</i>]	0.90	0.52	0.97	1.53	0.90	4.06*
President + President * Multi-Party = 0	[0.35]	[0.48]	[0.33]	[0.22]	[0.35]	[0.05]

Notes: Standard errors corrected for clustering at the district level are reported in parentheses; * p<0.10, ** p<0.05, *** p<0.01. There are 41 districts and 49 years, hence 2009 observations. We include various baseline controls interacted with a time trend. Demography: district population (1962), area (sq km), urbanization rate (1962). Economic activity: district total earnings (1966) and employment (1963) in the formal sector, value of cash crop exports (1965). Economic geography: dummy equal to one if the district is on the main corridor Mombasa-Nairobi-Kampala, dummy equal to one if the district borders Uganda or Tanzania, Euclidean distance (km) to Nairobi.

Table 5: Road Investments, President's Ethnic Districts and Democracy (1964-2002).

<i>Dependent Variable: Share of paved road construction [d,t] / Population (Area) share [d,1962]</i>						
	(1)	(2)	(3)	(4)	(5)	(6)
Standardization:	Pop.	Area	Pop.	Pop.	Pop.	Pop.
Presidential District Dummy [d,t]	3.71** (1.70)	5.19*** (1.62)		5.80** (2.52)	3.09 (1.85)	4.43** (2.16)
Presidential District Dummy [d,t] x Multi-Party Dummy [t]	-2.28* (1.29)	-4.10* (2.24)		-3.68* (2.00)	-1.92 (1.36)	-2.29* (1.31)
Presidential Share [d,t]			5.04** (2.03)			
Presidential Share [d,t] x Multi-Party Dummy [t]			-2.70 (1.63)			
Presidential District Dummy [d,t] x White Highlands [d]				-4.16 (2.64)		
Presidential District Dummy [d,t] x White Highlands [d] x Multi-Party Dummy [t]				2.48 (2.09)		
President District of Birth [d,t]					3.86 (3.92)	
President District of Birth [d,t] x Multi-Party Dummy [t]					-2.23 (2.87)	
2nd Cabinet Group [d,t]						1.72 (1.37)
2nd Cabinet Group [d,t] x Multi-Party Dummy [t]						-1.97 (1.87)
Observations	451	451	451	451	451	451
R-squared	0.14	0.25	0.14	0.15	0.14	0.14
District and year fixed effects	Y	Y	Y	Y	Y	Y
(population, area, urbanization rate)*year	Y	Y	Y	Y	Y	Y
(earnings, employment, cash crops)*year	Y	Y	Y	Y	Y	Y
(main highway, border, dist.Nairobi)*year	Y	Y	Y	Y	Y	Y
District time trends	N	N	N	N	N	N
No. of districts	41	41	41	41	41	41
F-test [<i>p-value</i>]	0.57	0.23	1.16	1.52	0.32	0.86
President + President * Multi-Party = 0	[0.45]	[0.63]	[0.29]	[0.22]	[0.57]	[0.36]

Notes: Standard errors corrected for clustering at the district level are reported in parentheses; * p<0.10, ** p<0.05, *** p<0.01. There are 41 districts and 12 years, hence 492 observations. Since we look at the flow of road building, we drop one round and obtain 451 observations. We include various baseline controls interacted with a time trend. Demography: district population (1962), area (sq km), urbanization rate (1962). Economic activity: district total earnings (1966) and employment (1963) in the formal sector, value of cash crop exports (1965). Economic geography: dummy equal to one if the district is on the main corridor Mombasa-Nairobi-Kampala, dummy equal to one if the district borders Uganda or Tanzania, Euclidean distance (km) to Nairobi.

Channels

- ▶ Construct a measure of whether the cabinet share of group g is in line with its population share. Regress it on the presidential dummy and its interaction with the multi-party dummy:

$$Cpop_{g,t} = \gamma_g + \alpha_t + \beta Presdist_{g,t} + \delta Presdist_{g,t} \times Multiparty_t + \epsilon_{g,t}$$

- ▶ A value above 1 denotes that a group is getting more cabinet positions than its population share. Also restrict cabinet sample to top fiscal and hierarchical positions.
- ▶ The president gives the best positions to his group, but no change in democracy. Besides, no effect of cabinet share on road investments once we control for president/2nd group.

Web Appendix B Table 3: President Ethnicity and Cabinet Ethnic Shares (1963-2011).

<i>Dependent Variable: Cabinet share [g,t] / Population share [g,1962]</i>						
Cabinet sample:	All (1)	Fiscal (2)	Hierarchy (3)	All (4)	Fiscal (5)	Hierarchy (6)
Presidential District Dummy [d,t]	0.64*** [0.13]	1.18** [0.54]	0.82** [0.27]	0.63*** [0.17]	1.12* [0.57]	0.83** [0.36]
Presidential District Dummy [d,t] x Multi-Party Dummy [t]	0.02 [0.28]	-0.10 [0.51]	-0.24 [0.47]	0.03 [0.33]	0.01 [0.66]	-0.25 [0.62]
Swing Tribe Dummy [d] x Multi-Party Dummy [t]				0.04 [0.26]	0.42 [0.62]	-0.06 [0.60]
Observations	169	169	169	169	169	169
R-squared	0.66	0.38	0.40	0.66	0.38	0.40
Ethnic group and year fixed effects	Y	Y	Y	Y	Y	Y
Group time trends	Y	Y	Y	Y	Y	Y
No. of ethnic groups	13	13	13	13	13	13
F-test [<i>p-value</i>]	5.9**	11.6***	9.1**	5.6**	10.5***	5.0**
President + President * Multi-Party = 0	[0.03]	[0.00]	[0.01]	[0.04]	[0.01]	[0.05]

Notes: Standard errors corrected for clustering at the ethnic group level are reported in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. There are twelve African ethnic groups and one group with the rest of the population: Asians, Arabs and Non-Kenyans.

Channels

- ▶ Leaders behave differently when facing a multi-party system. Democracy effect not just about the selection of good leaders.
- ▶ Same cabinet structure (president, second group, other groups) in democracy and no independent effect of cabinet share. Democracy constrains the power associated with top cabinet positions.
- ▶ Even imperfect democracies (anocracies) offer effective checks and balances against ethnic discrimination.

Concluding Comments

- ▶ Evidence for distributive politics in single-party autocracy.
- ▶ Presidential districts obtain 2.7 times more road expenditure and 4.7 more paved roads than their population share. The 2nd group also receives some roads.
- ▶ No distributive politics in multi-party democracy. Each group receives as much as population share (universalism).
- ▶ This effect goes through democracy shaping incentives. Even imperfect democracies offer effective checks and balances.

APPENDIX

Web Appendix A Table 1: Ethnic Distribution of Kenya's Cabinet.

Cabinet Share (%) of Main Ethnic Groups													
Cabinet Year	Kikuyu	Luo	Luhya	Kalenjin	Kamba	Kisii	Coastal	Meru	Somali	Turkana-Samburu	Embu	Masai	Cabinet Size
1963	35.3	23.5	5.9	0.0	5.9	5.9	5.9	5.9	0.0	0.0	0.0	2.9	17
1964	31.6	21.1	5.3	5.3	10.5	5.3	5.3	5.3	0.0	0.0	0.0	5.3	19
1966	27.3	13.6	9.1	4.6	9.1	9.1	9.1	4.5	0.0	0.0	4.5	4.6	22
1969	31.8	9.1	9.1	9.1	9.1	13.6	9.1	4.5	0.0	0.0	4.5	0.0	22
1974	31.8	9.1	9.1	9.1	9.1	9.1	9.1	4.5	0.0	0.0	4.5	4.6	22
1979	29.6	7.4	11.1	14.8	7.4	11.1	7.4	3.7	0.0	0.0	3.7	3.7	27
1983	20.8	12.5	12.5	16.7	8.3	4.2	8.3	4.2	4.2	0.0	4.2	4.2	24
1988	25.0	14.7	11.8	11.8	11.8	5.9	5.9	2.9	2.9	0.0	2.9	4.4	34
1993	6.0	4.0	16.0	20.0	16.0	8.0	8.0	8.0	4.0	0.0	4.0	6.0	25
1998	5.4	0.0	17.9	25.0	14.3	7.1	10.7	3.6	7.1	0.0	3.6	5.4	28
2003	21.2	15.4	19.2	7.7	7.7	0.0	11.5	7.7	0.0	0.0	3.8	5.8	26
2005	22.8	3.0	24.2	6.1	9.1	6.1	12.1	3.0	3.0	3.0	3.0	4.5	33
2008	17.4	11.6	18.6	13.9	7.0	4.7	9.3	2.3	7.0	2.3	2.3	3.5	43

Notes: using data on the ethnicity of each cabinet member (president, vice-president, prime minister from 2008, and ministers), we recreate the cabinet share of each ethnic group for selected years. Those years correspond to presidential and/or general elections (to renew MPs of the National Assembly). There were general elections even in single-party autocracy. However, all candidates belonged to and were selected by the ruling party.

Web Appendix A Table 2: Ethnic Distribution of Kenya's Population.

Population Share (%) of Main Ethnic Groups													
Census Year	Kikuyu	Luo	Luhya	Kalenjin	Kamba	Kisii	Coastal	Meru	Somali	Turkana-Samburu	Embu	Masai	Total Population
1962	18.8	13.4	12.7	10.8	10.5	7.0	6.7	5.7	4.3	4.0	1.9	1.8	8,636,263
1969	20.1	13.9	13.3	10.9	10.9	7.0	6.5	5.5	3.0	3.6	1.5	1.4	10,956,501
1979	20.9	13.2	13.8	10.8	11.3	6.7	6.4	5.5	3.4	2.9	1.6	1.6	15,327,061
1989	20.8	12.4	14.4	11.5	11.4	6.7	6.9	5.5	2.9	2.7	1.7	1.8	21,448,774
2003(DHS)	22.9	12.0	14.9	10.6	11.5	6.3	5.9	5.6	3.5	1.4	1.6	2.3	31,987,000
2009	17.2	10.8	13.8	12.9	10.1	6.4	6.1	4.8	7.0	4.2	1.3	2.2	38,610,097

Notes: Except for 2003, we use the *Kenya Population and Housing Census* to estimate the shares of each ethnic group. The ethnic data for the 1999 census was never made public, and we use the nationally representative *Kenya Demographic and Health Survey 2003* instead. The Luo are the Luo and Basuba tribes. Prior to the 1979 population census, the Kalenjin category did not exist. The Kalenjins are the Nandi, Kipsigis, Elgeyo, Marakwet, Pokot, Sabaot and Tugen tribes. The Kisii are the Kisii and the Kuria tribes. The Coastal are the Mijikenda, Pokomo/Riverine, Taveta, Taita, Swahili/Shirazi, Bajun and Boni/Sanye tribes. The Meru are the Meru and Tharaka tribes. The Somali are the Boran, Gabbra, Sakuye, Orma, Gosha, Ogaden, Ajuran, Gurreh and Other Somalis. The Turkana-Samburu tribes are the Samburu, Turkana, Teso, Nderobo, Njemps, Rendille and El Molo tribes. The Embu are the Embu and Mbeere tribes.

Empirical Strategy: Robustness & Additional Results

- ▶ Regression to the mean.
- ▶ Spatial dependence: cluster covariance matrix (CCE) approach vs. plug-in HAC covariance matrix approach.
- ▶ Swing vs. non-swing tribes.
- ▶ Alternative definition for the 2nd group: (i) vice-president, (ii) top fiscal positions, and (iii) top hierarchical positions.
- ▶ No cabinet share effects if we control for president/2nd group.
- ▶ No road minister effects.

Web Appendix B Table 1: Robustness Checks.

<i>Dependent Variable: Share of road expenditure [d,t] / Population share [d,1962]</i>						
	(1)	(2)	(3)	(4)	(5)	(6)
Presidential District Dummy [d,t]	1.74*** (0.49)	1.78*** (0.47)	1.87* (0.95)	1.74*** (0.35)	1.74*** (0.19)	1.74*** (0.48)
Presidential District Dummy [d,t] x Multi-Party Dummy [t]	-1.32** (0.63)	-1.15 (0.75)	-1.25** (0.50)	-1.32*** (0.35)	-1.32*** (0.28)	-1.32** (0.62)
Observations	2009	2009	2009	2009	2009	2009
R-squared	0.16	0.16	0.16	0.16	0.16	0.16
District and year fixed effects	Y	Y	Y	Y	Y	Y
Baseline controls*year	Y	Y	Y	Y	Y	Y
Baseline controls*year ²	N	Y	N	N	N	N
Number of years presidential district	N	N	Y	N	N	N
Clustering / Conley standard errors	District	District	District	Ethnic Group	Province	200 km
District time trends	N	N	N	N	N	N
No. of districts	41	41	41	41	41	41
F-test [<i>p-value</i>]	0.90	1.16	0.48	1.44	4.16*	0.95
President + President * Multi-Party = 0	[0.35]	[0.29]	[0.49]	[0.25]	[0.08]	[0.34]

Notes: Standard errors corrected for clustering at various spatial levels are reported in parentheses; * p<0.10, ** p<0.05, *** p<0.01. There are 41 districts and 49 years, hence 2009 observations. We include various baseline controls interacted with a time trend (and its square in column 2). Demography: district population (1962), area (sq km), urbanization rate (1962). Economic activity: district total earnings (1966) and employment (1963) in the formal sector, value of cash crop exports (1965). Economic geography: dummy equal to one if the district is on the main corridor Mombasa-Nairobi-Kampala, dummy equal to one if the district borders Uganda or Tanzania, Euclidean distance (km) to Nairobi.

Web Appendix B Table 2: Additional Results.

<i>Dependent Variable: Share of road expenditure [d,t] / Population share [d,1962]</i>						
	(1)	(2)	(3)	(4)	(5)	(6)
Presidential District Dummy [d,t]	1.74*** (0.49)	1.71*** (0.50)	2.62*** (0.71)	1.89*** (0.50)	2.13*** (0.56)	2.30** (0.85)
Presidential District Dummy [d,t] x Multi-Party Dummy [t]	-1.32** (0.63)	-1.28* (0.67)	-1.63** (0.69)	-1.43** (0.64)	-1.43** (0.64)	-2.27* (1.17)
Swing Tribe Dummy [d] x Multi-Party Dummy [t]		0.21 (0.44)				
Vice-Presidential District Dummy [d,t]			1.46** (0.56)			
Vice-Presidential District Dummy [d,t] x Multi-Party Dummy [t]			-1.42** (0.61)			
Coalition Dist. Dummy [d,t], <i>Fiscal</i>				1.01* (0.52)		
Coalition Dist. Dummy [d,t], <i>Fiscal</i> x Multi-Party Dummy [t]				-1.20** (0.59)		
Coalition Dist. Dummy [d,t], <i>Hierarchy</i>					1.09** (0.42)	
Coalition Dist. Dummy [d,t], <i>Hierarchy</i> x Multi-Party Dummy [t]					-0.98* (0.55)	
Coalition Dist. Dummy [d,t], <i>All Positions</i>						1.66** (0.73)
Coalition Dist. Dummy [d,t], <i>All Positions</i> x Multi-Party Dummy [t]						-2.50** (1.19)
Cabinet Share of Maj. Ethnic Group [d,t]						0.02 (0.04)
Cabinet Share of Maj. Ethnic Group [d,t] x Multi-Party Dummy [t]						0.04 (0.05)
Observations	2009	2009	2009	2009	2009	2009
R-squared	0.16	0.16	0.17	0.17	0.17	0.17
District and year fixed effects	Y	Y	Y	Y	Y	Y
Baseline controls*year	Y	Y	Y	Y	Y	Y
District time trends	N	N	N	N	N	N
No. of districts	41	41	41	41	41	41
F-test [<i>p-value</i>]	0.90	0.93	2.64	1.12	2.50	0.00
President + President * Multi-Party = 0	[0.35]	[0.34]	[0.11]	[0.30]	[0.12]	[0.97]

Notes: Standard errors corrected for clustering at the district level are reported in parentheses; * p<0.10, ** p<0.05, *** p<0.01. There are 41 districts and 49 years, hence 2009 observations. We include various baseline controls interacted with a time trend. Demography: district population (1962), area (sq km), urbanization rate (1962). Economic activity: district total earnings (1966) and employment (1963) in the formal sector, value of cash crop exports (1965). Economic geography: dummy equal to one if the district is on the main corridor Mombasa-Nairobi-Kampala, dummy equal to one if the district borders Uganda or Tanzania, Euclidean distance (km) to Nairobi.

Multi-party, Road Investments and Non-Presidential Groups

