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FEDERAL INSTITUTIONS AND THE DEMOCRATIC TRANSITION:
LEARNING FROM SOUTH AFRICA

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ABSTRACT

We present a model of a peaceful transition from autocracy to democracy using federal governance as a constitutional means to protect the economic interests of the once ruling elite. Under “democratic federalism” the constitution creates an annual policy game where the new majority and the elite each control one policy instrument of importance to the other. The game has a stable, stationary equilibrium that the elite may prefer to autocratic rule. We apply our analysis to South Africa’s transition from white, elite rule under apartheid to a multi-racial democracy. We calibrate our model to the South African economy at the time of the transition. Stable democratic equilibria exist for plausible estimates of redistributive preferences and rate of time preference (‘impatience’) of the new majority during the early years of the new democracy. The future of the democratic federal bargain is less certain under the new populist presidency of Jacob Zuma.

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“(I)t may not be enough to work purely on one-person one-vote, because every national group would like to see that the people of their flesh and blood are in the government. The ordinary man . . . must look to our structures and see that as a colored man I am represented . . . and an Indian must also be able to say, ‘I am represented’ . . . and the whites must say, ‘I have representation.’ . . . *Especially in the first few years of the democratic government we may have to do something to show that the system has got an inbuilt mechanism which makes it impossible for one group to suppress the other.*” Nelson Mandela, from a speech in Stellenbosch, May, 1991 (As quoted in Waldmeir, pp. 213-214; Italics added.)

1. Introduction

A central challenge for those seeking a peaceful transition from autocracy to democracy is to provide credible protections for the civil and economic rights of the once ruling minority. Setting promises aside, the once oppressed majority will have the political power, and perhaps the inclination, to expropriate elite assets and incomes once the new democracy is in place. The elite understands this possibility and may therefore continue suppression and autocratic rule, despite sizeable costs. The current political economy literature on democratic transitions has suggested three mechanisms for protecting elite interests in a new democracy: 1) Continued elite control of the military (Acemoglu and Robinson, 2001); 2) An upper legislative chamber controlled by the elite with veto powers over redistributive legislation (Lijphart, 1984); and 3) the gradual extension of the franchise timed to match the growth of a propertied middle class (Conley and Temini, 2001; Boix, 2003; Lizzeri and Persico, 2004).

None of these three strategies are likely to be embraced by today’s oppressed majorities, however. Allowing the elite continued control over the military or one legislative chamber favors the status quo distribution of economic resources; both grant the current elite veto power over any re-allocations it does not favor. Limiting the franchise to the middle class requires opening that class to the current poor majority either through affirmative action or education, a path that again depends upon elite (now private sector) decisions and may take generations. South Africa’s successful transition from apartheid to a multi-racial democracy suggests a fourth approach for guaranteeing minority economic rights – a federal constitution with minority

elite control over important redistributive services in at least one politically important province.¹

Sections 2-4 offer a formal, game-theoretic model of how a federal constitution might provide credible protections for elite economic interests. Section 2 details the requirements necessary for democratic federalism to be the mutually preferred constitution by both the new majority and the old ruling minority. Section 3 specifies a political economy model of fiscal redistribution in which taxes on the talented elite and redistributive services and transfers to the poor majority are set by democratic politics. If governed by a unitary constitution, tax rates will be set to fully exploit the elite minority and to maximize redistributive transfers to the poor majority. Under a federal constitution, provincial boundaries can be drawn to create at least one elite-run province responsible for redistributive services and transfers to the province's poor residents. If so structured, federal governance creates a "hostage" game between a majority controlled central government and the elite-run province(s). Section 4 presents our central result; Proposition 1 provides the necessary and sufficient conditions for such a federal constitution to implement an equilibrium level of redistributive taxation that is less than the fully exploitive tax rate observed under unitary governance.

Section 5 then calibrates our model to the political economy of South Africa – preferences, technology, and institutions – at the time of the democratic transition. We find that the federal constitutional contract has provided sufficient protection to sustain a democratic agreement between the new majority and the once ruling elite. Though significant, observed redistribution has been less than maximal redistribution. Section 6 explores the less than certain future for democratic federalism in South Africa.

Section 7 concludes our analysis by considering, first, the potential applicability of the South African

¹ Waldmeir (1997) and Steytler and Mettler (2001) provide detailed accounts of the bargaining positions of the two major parties to South Africa's transition – the African National Congress headed by Nelson Mandela and the National Party led by F. W. de Klerk – as they negotiated the interim and final constitutions. Mandela made it very clear from the beginning of the negotiations that the ANC would control the police and the army in the new democracy, that there will be no upper chamber controlled exclusively by the elite, and that all citizens would be entitled to vote immediately; see Waldmeir (1997, Chapters 10-13). With those options off the table, a new approach was needed. A federal constitution with significant provincial powers and elite control of at least one province was the answer. For the details of the negotiations over provincial powers, see Waldmeir (1997, pp. 193-197 and 241-244). For negotiations over provincial boundaries to ensure elite control of at least one province, see Muthien and Khosa (1998).

“model” to other emerging democracies and then, second, how our analysis of federal governance as a transition institution fits into the new political economy analysis of federalism generally.

2. Federalism and the Democratic Transition: An Overview

Six assumptions specify the underlying political economy at the time of the transition:

1. The oppressed majority does not have sufficient military strength to defeat the current autocratic regime and unilaterally impose a constitution;
2. Once a democratic constitution is in place, the current ruling elite turns over control of its military to the new majority;
3. The oppressed majority will be a demographic and political majority in the new democracy;
4. Elite residents are free to leave the country and/or adopt tax avoidance strategies;
5. Both the majority and the elite understand each others' motives for setting policies and have full information about each others' economic positions; and,
6. Constitutional negotiators for the elite and the majority seek a democratic constitution that protects the long-run welfare of their average constituent.

Assumptions (1) and (2) restrict our analysis to peaceful democratic transitions. Assumption (3) ensures that the new (poor) majority will be decisive over central government economic policy. Assumption (4) makes redistributive taxation less than fully efficient. Assumptions (5) and (6) require the choice of the new democratic constitution to be a rational long-run choice by both the elite and the new majority within a full information, dynamic redistribution game. We will focus our attention on a description of the subgame perfect, Nash equilibrium to this game.

Specifying a successful federal constitution at the time of transition proceeds in two stages. The first stage is the *constitutional stage*. Residents or their representatives must choose either of two democratic constitutions. The first is a *unitary* constitution with all policies decided by a democratically elected central government. The second is a *federal* constitution, where policy responsibilities are shared between the national government and constitutionally created provinces. We assume that simple majority rule determines policies in both cases. Both unitary and federal constitutions allow amendments. In this sense, the

constitutional rules and institutions must be self-enforcing.

Under federalism, the constitution specifies *provincial boundaries* that allocate a share μ of all majority residents to live within elite populated provinces: $0 < \mu \leq 1$. Once provincial boundaries are drawn, all residents are free to move in response to provincial policy choices. The federal constitution also specifies the assignment of redistribution policies. Redistributive taxation of the elite at rate τ per elite taxpayer and the level of lump-sum income transfers b per poor resident are always assigned to the central government. If not, all elite residents would move to elite controlled provinces and set redistributive taxation and income transfers at zero.²

The central government also finances and decides the level of redistributive public services q to be provided to the poor, services such as education, health, care, public housing, or neighborhood environment. Responsibility for the provision of these redistributive services may lie with either the central government or, if there is a federal constitution, with the provinces. Responsibility may lie exclusively with provinces, or more typically, be a “concurrent” responsibility of either the central or provincial governments. Our analysis allows this decision to be endogenous to the majority run central government. We specify the *constitutionally assigned* redistributive services by the utility parameter $\lambda > 0$, reflecting the relative value a typical majority resident places on the assigned services. Important assigned services such as education, health care, and housing will have a high value of λ , while less important services such as street lighting or road paving will have a low value. We assume that elite residents do not receive services from the redistribution budget, though they may consume those services from a separately funded general service budget.

The second stage of the transition game is an *annual policy game*. The central government, whose policies are set by a majority elected national government, chooses a constitutionally allowed redistributive tax rate paid by the elite (τ) to fund redistributive public services (q) and lump-sum transfers (b) for the new

² Indeed, this was the National Party’s original proposal for a federal constitution. It was quickly rejected by the ANC.

majority. The elite do not receive q or b . Under unitary governance the central government provides services and transfers directly. Under federal governance, the central government uses redistributive tax revenues to fund intergovernmental grants for provincially-provided redistributive services and lump-sum transfers. Consistent with the view that provincial governments can reallocate at least some of those central government transfers to their own uses we allow for elite-controlled provinces to reallocate a portion of its transfer revenues to services for elite residents. We call such reallocations “elite capture” or “elite shirking,” as measured by a share φ ($0 \leq \varphi \leq 1$) of lump-sum transfers so allocated.³ Since the elite does not control the national government or majority-run provinces, there is no elite capture in unitary democracies or in majority provinces.

We solve this two-stage game by backward induction. First, at the policy stage (in any year t) for any choice of the democratic constitution there will emerge a set of policy outcomes that define the utilities of the typical majority and elite resident in that stage. For a typical majority resident this will be:

$$\omega_t(\bullet) = W_t + f(q_t, b_t, \varphi_t),$$

and for the typical elite resident:

$$y_t(\bullet) = Y_t + h(\tau_t, b_t, \varphi_t),$$

with W_t and Y_t being the majority and elite residents’ pre-transfer and pre-tax incomes, respectively. The policy outcomes will depend on choices made by the central government, and in the case of a federal constitution, by the provinces. Those choices depend on the constitutional choices of μ and λ and the underlying political economy designated as \wp_t .

Given the outcomes of the annual policy game, the value of any constitution will then be the

³ We constrain elite shirking to taking of the lump-sum transfer. This specification of the capture “technology” assumes that q – which we specify below as redistributive *inputs* – can be easily monitored. Our formal analysis does not depend crucially on this specification, but we do need the possibility of some elite capture. On this more general point, there is an extensive literature for United States local governments estimating capture of intergovernmental transfers intended for lower income recipients; see, for example, Duggan (2000) and Gordon (2004). For evidence on the presence of capture in developing economies, see Reinikka and Svensson (2004) for Uganda and Bardhan and Mookherjee (2006) for India.

discounted present value of all future utilities that follow from the choice of (μ, λ) . For majority residents:

$$V_M(\mu, \lambda) = \sum \delta^t \omega_t(\mu, \lambda | W_t; \rho_t),$$

while for elite residents:

$$V_E(\mu, \lambda) = \sum \delta^t y_t(\mu, \lambda | Y_t; \rho_t),$$

where δ is the discount factor bounded as $0 < \delta \leq 1$ and $t = 0 \dots \infty$. The set of feasible democratic constitutions will be those for which both $V_M(\mu, \lambda)$ and $V_E(\mu, \lambda)$ are greater than or equal to constituent welfare under the autocratic status quo, assumed to be exogenous and denoted by the constants $V_M(\bullet)$ and $V_E(\bullet)$ for the poor majority and the elite, respectively.

3. The Annual Fiscal Policy Game

Redistributive fiscal policies in the new democracy will be decided in the annual fiscal policy stage game specified by the underlying political economy (Section 3.1 below), the chosen constitution (Section 3.2), and majority and elite welfare (Section 3.3). Given the specification of citizen welfare, we model majority and elite choices of fiscal policy in each year (Section 3.4). When the policy game is played only once, the outcome will be maximal redistribution chosen by the majority controlled central government. If there is to be any protection of elite incomes, the policy game will need to be played repeatedly, as specified in Section 4.

3.1 Political Economy: The underlying political economy is assumed to be exogenous and defined by citizen demographics and incomes, public service technologies, and citizen preferences.

Demographics and Incomes: At the date of the transition, there are M oppressed majority adults and N_0 ruling elite adults, where $M > N_0$. Majority residents remain within the country and for simplicity we assume no population growth. Elite residents may exit the country however, or more generally, stay within the country but “drop out” of the taxable economy depending upon the government’s choice of the redistributive tax rate. We assume that $N(\tau) = N_0 - \beta\tau$, where $\beta \geq 0$ measures the exit response of elite residents with respect to redistributive taxation. Redistributive tax revenues are $\tau \cdot N(\tau) = N_0\tau - \beta\tau^2$, and the

redistribution maximizing tax rate is $\tau_U = N_0/2\beta$. τ_U is always chosen under a unitary democracy. Majority adults earn W , while elite adults earn Y , and $Y > W$.

The Cost of Redistributive Public Services: Majority residents will receive lump-sum transfers and redistributive public goods in the new democracy. Redistributive public goods are produced by public employees of varying quality: “Expert” elite providers who have a_e years of training; trained majority providers with a_m years of training, and untrained majority providers with a_u years of training ($a_e > a_m > a_u$). Public employee productivity is directly related to years of training. All public employees are paid a common civil service wage, S .⁴ The cost per majority resident of providing the common bundle of redistributive services is specified as $s_e(q) < s_m(q) < s_u(q)$, using elite, majority trained, and majority untrained providers, respectively.⁵ The elite’s control over the low cost technology for the provision of valued public services provides the elite with a basis for bargaining with the majority for less than a fully exploitative redistributive tax rate.

Preferences: Elite residents care only about their after-redistributive tax incomes, allowing for elite capture in elite run provinces of income transfers to the provinces’ poor residents; the rate of capture is ϕ . Elite residents do not consume redistributive services, though they may consume comparable services out of private income. Each elite resident’s annual welfare is therefore:

$$y(\bullet) = Y - \tau + \phi b.$$

Majority residents care about their private income, W , plus redistributive income transfers after elite capture, $(1 - \phi)b$, plus redistributive services (q). Majority residents do not pay redistributive taxes. Their annual

⁴ The use of a common public employee wage is not crucial to our analysis, though it does reflect the reality in most public bureaucracies. The key assumption here is that public employee wages do not fully reflect the worker’s marginal product. See Dixit (1997; pp. 94-98) on the use for low-power incentives not tied to marginal product in bureaucracies.

⁵ We assume that public services are provided by a common linear technology proportional to the training-adjusted level of public employees: $q = a(X/M)$, where (X/M) is public employees (X) per majority resident (M) and a is employee productivity measured by years of training. For example, if there is one employee for every 25 majority adult residents and that employee has 14 years of training, then $q = 14(1/25) = .56$. The cost of provision is $s(q) = S(X/M)$, so that $s_e(q) = S(q/a_e)$, $s_m(q) = S(q/a_m)$, and $s_u(q) = S(q/a_u)$.

welfare is:

$$\omega(\bullet) = W + (1 - \varphi)b + \lambda v(q),$$

where λ is the majority resident's preference "weight" for assigned redistributive services and where $v'(q) > 0$ and $v''(q) < 0$.

3.2 Constitutions: Both federal and unitary constitutions use simple majority rule to elect governments. Since $M > N_0 \geq N(\tau)$, all policies decided by a unitary democracy will be controlled by the new majority. However, provinces where the elite has a local majority will choose elite favored policies.

Borders (μ): We specify provincial borders by the percent of the majority population (μ) residing in an elite-controlled province(s): $\mu = M_e/M > 0$. In specifying μ we will allow for the fact that the majority can leave elite provinces, and the elite can leave the public sector (and possibly the economy) in response to redistributive service provision and redistributive taxation.

Assignment (λ): With a federal constitution, service responsibilities are allocated between central and provincial levels of government. For the elite to have any influence over the new majority, services assigned to the provinces and under the control of the elite in at least one province must be highly valued by the majority. Constitutional assignment will be specified here by the "utility value" of the assigned services, denoted by the majority's preference parameter, λ . If important redistributive services such as education, health care, and housing are assigned to the provinces, then λ has a relatively high value. Assigned, but unimportant services such as street cleaning, will have a low value for λ .

Enforcement: Only constitutions that are sustainable (i.e., self-enforcing) in the second-stage policy game will be considered by the elite and the majority as credible constitutions when playing the first-stage constitutional game. With the new majority in control of the army, *unitary democracy* is always sustainable.

We focus on finding sustainable constitutions that implement *democratic federalism*. A federal constitution with elite-run provinces is not by itself sufficient to ensure provinces have influence. The majority-run central government can always set a maximal redistributive tax rate, τ_U , while still using

provinces to provide redistributive services. We call this possibility *administrative federalism*; provinces in this case are simply administrative units of the central government. Or, stronger still, the central government can choose maximal redistribution and use a central bureaucracy to provide redistributive services. Here provinces are irrelevant to the policy outcomes, a regime we call *de facto unitary democracy*. Only under *democratic federalism* are elite policy preferences respected.

3.3 Specifying Annual Elite and Majority Welfare: All fiscal policies are decided subject to the aggregate public sector redistributive budget constraint specified generally as:

$$s(q) + b = g(\tau) = [\tau \cdot N(\tau) - Z]/M,$$

where $s(q)$ is the average cost per majority resident of providing redistributive services, b is a lump-sum redistributive transfer per majority resident, $g(\tau)$ is total redistributive spending per majority resident, $\tau \cdot N(\tau)$ is total redistributive revenues from the imposition of a national tax rate, Z allows for payments to (> 0) or from (< 0) parties outside the elite-majority fiscal agreement.

Under unitary governance, the central government sets the redistributive tax rate equal to its maximal rate, τ_U , and then allocates redistributive revenues to the constitutionally specified redistributive services and transfers so as to maximize majority residents welfare. Elite residents pay τ_U in taxes and receive no capture revenues. Majority residents receive redistributive services and $b = g(\tau_U) - s_U(q)$ in lump-sum transfers, where $s_U(q) = m \cdot s_m(q) + (1 - m) \cdot s_u(q)$ is the average cost per majority resident of providing redistributive services under unitary government using m trained and (if necessary) $(1 - m)$ untrained majority employees. For simplicity, we have assumed that all elite public employees exit public service to the private economy under the unitary regime. This assumption is not necessary for our results. All that is required is that there be some shirking or “moonlighting” by elite public employees when the majority controls the provision of redistributive services.⁶

⁶ See, for example, the theoretical work of Akerlof and Kranton (2004) and the extensive empirical work summarized in Williams and O’Reilly (1998), on the adverse consequences for organizational efficiency of racial and/or educational diversity between managers and workers.

Under federalism, the central government again sets the redistributive tax rate as $\tau_F (\leq \tau_U)$. The level of redistributive services is likely to differ under the federal and unitary regimes to the extent that the costs of service provision differ. Majority residents in majority controlled provinces receive a basic grant $b_m = g(\tau_F) - s_m(q)$. Majority residents in elite controlled provinces receive a basic grant net of elite capture of $(1 - \varphi)b_e = (1 - \varphi)[g(\tau_F) - s_e(q)]$. If μ of the majority residents reside in elite-run province(s) and $(1 - \mu)$ residents reside the majority-run provinces, then under federalism, the average cost of redistributive services over all majority residents will be $s_F(q) = \mu \cdot s_e(q) + (1 - \mu) \cdot s_m(q)$. From the fact that $s_e(q) < s_m(q) < s_u(q)$, it follows that $s_u(q) > s_F(q)$ for any value of $\mu > 0$. If it can be sustained, federalism is the low cost institution for providing redistributive public services. This cost advantage is the source of the elite's influence over the majority.

Under federalism, the rate of elite capture will be either of two values: φ^L and φ^H , where $0 < \varphi^L < \varphi^H \leq 1$. The lower bound, φ^L is set by the ability of majority residents to observe capture of the lump-sum grant. The elite-run province will push φ to the point where capture remains just unobserved, φ^L . If $\varphi > \varphi^L$ and capture is observed, then we assume the majority in the elite province organize protests that impose a cost of ρ on each elite resident. Higher values of ρ suggest a more militant and better organized majority. The upper value φ^H is set by the desire of majority residents to exit the elite province for a majority run province. The more attractive is the elite province to majority residents, the higher will be φ^H .⁷ If the majority exits the elite province, then no redistributive transfers will be sent to the elite province. Thus the elite will never choose to capture more than φ^H . We treat φ^L and φ^H as exogenous, and for a fixed cost ρ , the elite will choose either φ^L or φ^H .

By definition, under *democratic federalism* (denoted as regime F) the majority selects a redistributive tax rate less than the maximal rate, $\tau_F < \tau_U$, so that $g(\tau_F) < g(\tau_U)$. For simplicity we denote $g(\tau_F)$ as g_F . The

⁷ A typical majority resident receives $W + (g - s_m(q)) + \lambda \cdot v(q)$ in a majority province and $W + (1 - \varphi)[g - s_e(q)] + \lambda \cdot v(q) + E$ in an elite province, where E is their saved costs of exit, or equivalently, the amenity value of living in the elite province. For common values of q across provinces, the value of φ which leaves the majority resident just indifferent between staying or leaving the elite province defines φ^H : $\varphi \leq \varphi^H = ([E + (s_m(q) - s_e(q))]/[g - s_e(q)]) \leq 1$. Strong majority attachments to elite provinces allow high rates of elite capture.

welfare of a majority resident in an elite province is then:

$$\omega_e = W + (1 - \varphi^{L,H})[g_F - s_e(q)] + \lambda v(q),$$

depending on whether the elite chooses low or high capture. Welfare for majority residents in a majority-controlled province is specified similarly, except that there is no capture:

$$\omega_m = W + [g_F - s_m(q)] + \lambda v(q).$$

The majority's political leadership is assumed to be interested in the welfare of the average majority resident. In equilibrium, majority residents initially allocated to the elite province by the constitution's choice of μ remain in the elite province. They will exit if the elite leadership chooses $\varphi > \varphi^H$. Since this will mean that all majority residents leave the province and the elite province receives no central government financing, there can be no capture. The elite leadership will therefore choose $\varphi \leq \varphi^H$, and the constitutionally assigned value of $\mu = (M_e/M)$ will hold in equilibrium. Average majority resident welfare under democratic federalism is therefore specified as :

$$\omega(F) = \mu\omega_e + (1 - \mu)\omega_m,$$

where μ is the percent of majority residents residing in elite controlled provinces. Upon substitution for ω_e and ω_m :

$$\omega(F; \varphi^{L,H}) = W + g_F[1 - \varphi^{L,H}\cdot\mu] - s_F(q) + \varphi^{L,H}\cdot\mu\cdot s_e(q) + \lambda\cdot v(q). \quad (1L, 1H)$$

The majority will prefer low capture.

Again by definition, under *administrative federalism* (regime A) the central government sets $\tau = \tau_U$ and thus total redistribution spending equals $g(\tau_U)$ or (notationally) g_U . Provinces continue to have responsibility for providing redistributive services, however. Thus elite capture is still possible. The weighted average welfare for the typical majority resident under administrative federalism is therefore:

$$\omega(A; \varphi^{L,H}) = W + g_U[1 - \varphi^{L,H}\cdot\mu] - s_F(q) + \varphi^{L,H}\cdot\mu\cdot s_e(q) + \lambda\cdot v(q). \quad (2L, 2H)$$

Finally, under *unitary*, or equivalently *de facto unitary, democracy* (regime U) the redistributive tax rate is again set at τ_U with $g_U = g(\tau_U)$ and services are now provided directly by the majority-run central

government at a cost of $s_U(q)$. The lump-sum grant paid to each majority resident will be $b = g_U - s_U(q)$. Since elite provinces have no redistributive responsibilities, there is no capture. The average majority resident's welfare is therefore given by:

$$\omega(U) = W + [g_U - s_U(q)] + \lambda v(q). \quad (3)$$

Under *democratic federalism*, elite welfare is:

$$y(F; \varphi^L) = Y - \tau_F + \varphi^L [g_F - s_e(q)] [M_e/N(\tau_F)], \quad (4L)$$

for low capture, and:

$$y(F; \varphi^H) = [Y - \rho] - \tau_F + \varphi^H [g_F - s_e(q)] [M_e/N(\tau_F)], \quad (4H)$$

for high capture, when majority residents in the elite province imposes a penalty in protest costs of ρ . Under *administrative federalism* elite resident welfare is:

$$y(A; \varphi^L) = Y - \tau_U + \varphi^L [g_U - s_e(q)] [M_e/N(\tau_U)], \text{ and,} \quad (5L)$$

$$y(A; \varphi^H) = [Y - \rho] - \tau_U + \varphi^H [g_U - s_e(q)] [M_e/N(\tau_U)], \quad (5H)$$

for low and high capture, respectively. Finally, under a *de facto unitary democracy* the elite resident's welfare is:

$$y(U) = Y - \tau_U. \quad (6)$$

For any rate of capture, elite residents prefer democratic federalism to administrative federalism and administrative federalism to unitary governance.

Table 1 summarizes the pay-offs in any single year of the fiscal policy game for a typical majority and elite residents under each of the three forms of governance and the two levels of capture.

[TABLE 1 HERE.]

3.4 Choice of Redistributive Fiscal Policies: Three important fiscal choices are made in each year of the annual policy game: the redistributive tax rate and the level of redistributive services, and then from the budget constraint, the level of lump-sum transfers. Fiscal policy emerges as an equilibrium from the annual policy game whose payoffs are described by the strategy choices in Table 1. Under unitary

governance, the central government sets the redistributive tax rate at τ_U and provides services and transfers centrally. Under federal governance, the central government can select democratic federalism (Strategy F) setting $\tau = \tau_F < \tau_U$ and use provinces to provide services and transfers, or administrative federalism (Strategy A) setting $\tau = \tau_U$ and again use provinces to provide services and transfers, or finally, *de facto* unitary governance (Strategy U) setting $\tau = \tau_U$ and provide services and transfers centrally. Elite run provinces can adopt either a low (Strategy ϕ^L) or high (Strategy ϕ^H) rate of capture. As both federal and provincial governments can “wait out” the other when making policy, we assume these decisions are made simultaneously.

Setting the Tax Rate: To obtain $\tau_F < \tau_U$ as an equilibrium tax rate, the majority must prefer average majority welfare in Table 1, Cells (1, L or H) as an equilibrium outcome. Since $\tau_U > \tau_F$ and thus $g_U > g_F$, however, the majority will always be tempted in any single budget period to defect from the federal strategy, F , given either value of elite capture. The elite clearly prefers to have the majority choose τ_F , but they too may be tempted to defect from the equilibrium federal allocation of Table 1, Cell (4L) to high capture in Table 1, Cell (4H) if the returns from high capture exceed the costs ρ imposed by protests. Given these incentives to defect, the federal fiscal allocation described by Table 1, Cells (1L) and (4L) may not be a stable, long-run equilibrium when the fiscal policy game is played only once, or more generally, a finite number of times. For τ_F to remain an equilibrium policy choice, both the elite and majority must have credible and sufficiently harmful punishment strategies when the other defects from the federal fiscal choice. We present the necessary and sufficient conditions for such strategies in Section 4.

Setting the Level of Redistributive Services: We consider two alternative specifications for how the central government might set the level of redistributive services. The first assumes either a binding constitutional constraint on the level of services or a strong executive with agenda-setter powers. In either case, $q = \mathbf{q}$. The second specification allows the level of redistributive services to be chosen endogenously by a majority-run central legislature. In this case, $q = q^*$ is chosen so as to maximize the majority resident

welfare under each of the three regime choices – F , A , or U – conditional on the elite’s choice of capture. Given our specification of majority preferences as separable between income and redistributive services (no income effects) and of costs favoring elite provision in federalism, less redistributive services will be chosen by the majority under unitary governance than under either democratic or administrative federalism.⁸

4. Protecting the Elite Through Democratic Federalism

A peaceful transition from autocracy to democracy requires the agreement of both the ruling elite and the new majority. Crucial to such an agreement will be a credible promise by the majority not to fully expropriate the elite’s economic wealth under the new regime. One means for providing credible commitments, often used in private contracting, is for the majority to offer the elite a valued “hostage” which can be harmed or “taken” if the majority breaks its promise of less than full expropriation.⁹ The hostage remains and is cared for if the promise is kept. We argue here that the institutions of democratic federalism provide for the possibility of a successful hostage strategy. Proposition 1 provides the necessary and sufficient conditions for this to be true in our political economy as well as specifications for the lower and upper bounds for redistributive taxes and transfers.

While democratic federalism creates the institutional framework for implementing a hostage strategy, its success depends upon a credible threat by the elite to harm majority residents in those instances when the majority adopts maximal taxation. If the majority were to defect to τ_U from the cooperative federal agreement

⁸ For each regime, the demand curves are specified as:

$$\begin{aligned}
 (F, \varphi^L): \lambda \cdot v'(q) &= s_F'(q) - \varphi^L \cdot \mu \cdot s_e'(q) = p_L(\mu) \Rightarrow q^* = q_F^*(\mu, \lambda; \varphi^L) = q_L^*(\mu, \lambda) \\
 (F, \varphi^H): \lambda \cdot v'(q) &= s_F'(q) - \varphi^H \cdot \mu \cdot s_e'(q) = p_H(\mu) \Rightarrow q^* = q_F^*(\mu, \lambda; \varphi^H) = q_H^*(\mu, \lambda) \\
 (A, \varphi^L): \lambda \cdot v'(q) &= s_F'(q) - \varphi^L \cdot \mu \cdot s_e'(q) = p_L(\mu) \Rightarrow q^* = q_A^*(\mu, \lambda; \varphi^L) = q_L^*(\mu, \lambda) \\
 (A, \varphi^H): \lambda \cdot v'(q) &= s_F'(q) - \varphi^H \cdot \mu \cdot s_e'(q) = p_H(\mu) \Rightarrow q^* = q_A^*(\mu, \lambda; \varphi^H) = q_H^*(\mu, \lambda) \\
 (U): \lambda \cdot v'(q) &= s_U'(q) = p_U(\mu) \Rightarrow q^* = q_U^*(\lambda).
 \end{aligned}$$

The comments in the text follow directly from these specifications of demand and our specification for costs of providing services: $s_U'(q) > s_F'(q; \varphi^L) = s_A'(q; \varphi^L) > s_F'(q; \varphi^H) = s_A'(q; \varphi^H)$. The majority’s demands for q will satisfy: $q_U^*(\lambda) < q_A^*(\mu, \lambda; \varphi^L) = q_F^*(\mu, \lambda; \varphi^L) < q_A^*(\mu, \lambda; \varphi^H) = q_F^*(\mu, \lambda; \varphi^H)$. Comparative static results imply: $\partial q_L^*/\partial \mu > 0$ and $\partial q_H^*/\partial \mu > 0$ and $\partial q_L^*/\partial \lambda > 0$ and $\partial q_H^*/\partial \lambda > 0$.

⁹ Schelling (1960, pp.135-136) first proposed the use of “hostages” as a means for enforcing incomplete contracts; see also Williamson (1983).

in Cells (1L) and (4L) of Table 1, then the elite's punishment strategy will be to adopt high capture. This is only possible if the elite controls provincial fiscal policies and prefers φ^H to φ^L under maximal tax rates.

Formally:

DEFINITION: CREDIBLE ELITE PUNISHMENT. *The high capture strategy will be a credible elite punishment strategy when:*

(i) *The elite prefers the high capture strategy to low capture when the majority defects to administrative federalism, i.e., $y(A; \varphi^H) > y(A; \varphi^L)$;*

(ii) *The elite remains a political majority (and wins all ties) in at least one province, i.e., $N(\tau_U) \geq M_e$; and,*

(iii) *The poor majority prefers provinces and administrative federalism to unitary governance as their defection alternative – $\omega(A; \varphi^L) > \omega(U)$ – and as their punishment strategy when the elite defects – $\omega(A; \varphi^H) > \omega(U)$.*

These three requirements define two constraints on the federal constitution. First, a *Border Constraint* specifies lower and upper bounds for the constitutional parameter μ and ensures that conditions (i) and (ii) are met. Second, an *Assignment Constraint* specifies lower and upper bounds for values for \mathbf{q} or \mathbf{q}^* (or equivalently λ) so that condition (iii) is met. We specify Border and Assignment Constraints for both the \mathbf{q} - and \mathbf{q}^* regime.

Border and Assignment Constraints in the \mathbf{q} -regime: Condition (i) holds and $y(A; \varphi^H) > y(A; \varphi^L)$ if the elite province has a sufficiently large population of majority residents receiving redistributive transfers. If so, then benefits of high capture to the elite compensates for the potential protest costs imposed on each elite resident by the denied majority: $\mu > \mu^{\min}(\mathbf{q})$, where $\mu^{\min}(\mathbf{q})$ rises with \mathbf{q} . The precise specification of $\mu^{\min}(\mathbf{q})$ for our political economy is given in Appendix A.1. The strict inequality follows because we assume the elite prefers to cooperate and adopt φ^L if $y(A; \varphi^H) = y(A; \varphi^L)$. Condition (ii) requires the elite to be a political majority in its province(s). Thus μ cannot be too large; $N(\tau_U)/M = \mu^{\max} \geq \mu$. Together these two conditions define the *\mathbf{q} -Border Constraint* specified as:

$$\mu^{\max} \geq \mu > \mu^{\min}(\mathbf{q}). \quad (7q)$$

Condition (iii) requires that if the central government defects or punishes the elite, it does so within

a federal structure where provinces still have fiscal responsibilities. To satisfy condition (iii), therefore, $\omega(A; \mu, \mathbf{q}, \varphi^L) > \omega(U; \mathbf{q})$ when considering defection and $\omega(A; \mu, \mathbf{q}, \varphi^H) > \omega(U; \mathbf{q})$ when the majority punishes. Since $\omega(A; \mu, \mathbf{q}, \varphi^L) > \omega(A; \mu, \mathbf{q}, \varphi^H) > \omega(U; \mathbf{q})$, the binding constraint is from the decision to punish where $\omega(A; \mu, \mathbf{q}, \varphi^H) > \omega(U; \mathbf{q})$. The strict inequality follows because we assume the majority prefers unitary governance to federalism. This condition holds when \mathbf{q} is large enough that the cost advantage of using efficient elite provinces to provide redistributive services more than offsets the loss in the majority's welfare from high capture in those provinces. For condition (iii) to hold, therefore, we require $\mathbf{q} > \mathbf{q}^{\min}(\mu; \varphi^H)$; see Appendix A.1.

But the constitutionally mandated level of redistributive services cannot be set too high either. As \mathbf{q} increases, the net return to capture declines for the elite and may eventually fall below the amount needed for the elite to find the high capture strategy a preferred response to defection. The maximum value of \mathbf{q} that protects φ^H as a credible punishment strategy will be that $\mathbf{q}^{\max}(\mu)$ where the $\mu = \mu^{\min}(\mathbf{q})$ just holds for the constitutionally chosen value of μ ; see Appendix A.1. The *q-Assignment Constraint* is defined by:

$$\mathbf{q}^{\max}(\mu) \geq \mathbf{q} > \mathbf{q}^{\min}(\mu; \varphi^H). \quad (8q)$$

Lemma 1 follows.

LEMMA 1: CREDIBLE ELITE PUNISHMENTS IN THE q -REGIME. *For political economies satisfying the q -Border and q -Assignment Constraints, the high capture strategy will be a credible punishment strategy for the elite whenever the majority adopts a revenue-maximizing (centralizing) redistributive tax rate. (Proof: See Appendix A.2.)*

Figure 1 illustrates the feasible constitutional values of μ and \mathbf{q} sufficient to ensure credible elite punishments at the time of the South African transition decision. The q -Border Constraint requires that μ lie above the $\mu^{\min}(\mathbf{q})$ curve and below the μ^{\max} line. The q -Assignment Constraint requires that \mathbf{q} lie to the right of the $\mathbf{q}^{\min}(\mu; \varphi^H)$ curve and at or to the left of $\mathbf{q}^{\max}(\mu)$. The shaded area shows the constitutional assigned values of μ and \mathbf{q} where all constraints for a credible elite punishment are satisfied.

[FIGURE 1 HERE]

Border and Assignment Constraints in the q^ -regime:* This regime applies when the majority is free

to choose the level of redistributive services that provinces must supply. Services are assigned by the constitution, but their level to be funded by the central government and to be provided by the provinces is endogenous to the preferences of those controlling the central government. Exactly who that might be is left open, although we do require the decision-maker(s) to have a continuous downward sloping demand curve with respect to the marginal costs of services. Since q is one-dimensional in this model, we have in mind a majority voter with the median “taste” (λ) for redistributive services as setting q^* . Other specifications for majority politics are of course possible.

As in the constrained regime, the q^* -*Border Constraint* follows from the requirement that the elite province rationally adopt the high capture strategy when the majority defects to administrative federalism. In this case, we require $y(A; q^*_H, \varphi^H) > y(A; q^*_L, \varphi^L)$ which again allows us to specify a lower bound on the share of majority residents that must be allocated to the elite provinces: $\mu > \mu^{\min}(q^*_H)$; see Appendix A.1. Condition (ii) requiring elite political control continues to define the upper bound of $N(\tau_U)/M = \mu^{\max} \geq \mu$. Conditions (i) and (ii) together define the q^* -*Border Constraint*:

$$\mu^{\max} \geq \mu > \mu^{\min}(q^*_H). \quad (7q^*)$$

The q^* -*Assignment Constraint* ensures condition (iii) holds. Again, the decision to punish defines the binding constraint so $\omega(A; \mu, q^*_H, \varphi^H) > \omega(U; q^*_U)$ must hold. Since the majority is free to choose q^* , the assignment constraint is specified as a comparison of consumer surpluses under administrative federalism and unitary governance. Consumer surplus comparisons depend upon elite cost advantages and the relative attractiveness of the assigned redistributive services. Higher values of λ increase the consumer surplus of redistributive services to the majority, increasing the relative attractiveness of administrative federalism using low cost elite providers. The value of λ where the majority just prefers administrative federalism to unitary governance defines a minimal value for λ , denoted as $\lambda^{\min} = \lambda^{\min}(\mu; \varphi^H)$. For each value of μ there is an associated value of λ and thus a minimal q^*_H consistent with a credible elite punishment: $q^*_H^{\min}(\mu) = q^*_H(\mu, \lambda^{\min}(\mu))$; see Appendix A.1.

There is an upper bound on q^*_H as well, now specified as an upper limit on preference parameter, λ . If the assigned services are too important (high λ), the majority demands a high value of $q^*_H(\mu, \lambda)$, which reduces the amount of resources that can be captured by the elite when adopting strategy φ^H . Given the cost ρ of the high capture strategy, there is a value of λ above which high capture is no longer a credible choice for the elite. This maximal value for λ will define a majority chosen maximal amount of $q^*_H^{\max}(\mu) = q^*_H(\mu, \lambda^{\max}(\mu))$. Given a choice of provincial borders μ , $q^*_H^{\min}(\mu)$ and $q^*_H^{\max}(\mu)$ define the lower and upper bounds for q^*_H – or equivalently bounds on the value λ associated with constitutionally assigned services – for the q^* -Assignment Constraint:

$$q^*_H^{\max}(\mu) \geq q^*_H(\mu; \lambda) > q^*_H^{\min}(\mu). \quad (8q^*)$$

When the q^* -Border and q^* -Assignment Constraints are jointly satisfied, φ^H is a credible elite punishment.

LEMMA 2: CREDIBLE ELITE PUNISHMENTS IN THE q^* -REGIME. *For political economies satisfying the q^* -Border and q^* -Assignment Constraints, the high capture strategy will be a credible punishment strategy whenever the majority adopts a revenue-maximizing (centralizing) redistributive tax rate. (Proof: See Appendix A.2.)*

The shaded area in Figure 2 shows the set of provincial borders (μ) and assignments (λ) and the associated values of q^*_H that satisfy the q^* -Border and q^* -Assignment Constraints for simple (median) majority rule for the South African economy, specified for its transition economy.

[FIGURE 2 HERE]

Comparing the coordinates of the shaded areas in Figures 1 (points ABC) and 2 (points $A^*B^*C^*$) shows that the set of federal constitutions allowing credible elite punishments in the q^* -regime is a subset of federal constitutions allowing credible elite punishments in the q -regime. This result holds generally as

Lemma 3:

LEMMA 3: FEASIBLE FEDERAL CONSTITUTIONS: *When the Border and Assignment Constraints of Lemmas 1 and 2 are met, the set of feasible constitutions allowing democratic federalism is smaller in the q^* -regime than the q -regime. For any elite provincial border (μ), the level of minimally acceptable assignment must satisfy, $q^*_H^{\min}(\mu) > q(\mu)$. For any common $q_H^* = q$, the size of the minimally acceptable elite province must satisfy $\mu^{\min}(q_H^*) > \mu^{\min}(q)$. The maximal size of the elite province, μ^{\max} , is the same in both the*

q^* - and q -regimes. (Proof: See Appendix A.2.)

Allowing the majority the right to choose the level of constitutionally assigned redistributive services, rather than having that level set exogenously, narrows the set of constitutions which can sustain credible elite punishments and therefore constitutional promises not to adopt maximal taxation.

Ensuring the feasibility of elite punishments does not by itself guarantee that a federal fiscal allocation can exist as a long-run equilibrium of the annual policy game, however. The cooperative allocation of democratic federalism will only survive if punishments for deviating are sufficient to in fact discourage defections. Formally:

DEFINITION: SUSTAINABLE FEDERAL ALLOCATIONS: *The strategy pair (F, ϕ^l) will be a sustainable fiscal allocation if that pair is a subgame-perfect Nash equilibrium for the infinitely repeated fiscal policy game.*

Proposition 1 defines the conditions for when democratic federalism is an equilibrium, and thus sustainable, by specifying minimum and maximum bounds on central government tax rates and intergovernmental transfers. We do so for the case where majority and elite residents both play “grim trigger” strategies in an infinitely repeated fiscal policy game. Under the grim trigger strategy, the elite plays $\phi^l < \phi^H$, but were the majority to defect from democratic federalism and select τ_U , the elite would punish the majority by selecting ϕ^H forever.¹⁰ Similarly, the majority plays $\tau_F < \tau_U$ but were the elite to defect from the federal allocation and play ϕ^H , the majority would respond by playing τ_U forever.¹¹

The minimal tax rate (τ^{\min}) and associated intergovernmental transfer (g^{\min}) defines the minimal

¹⁰ It is useful to ask whether the elite could select a “tighter” threshold tax rate that will be less than τ_U for the implementation of its punishment strategy, ϕ^H . For elite punishments limited to a known upper rate of capture, as here, the answer is *no*. Announcing a lower threshold tax rate, say $\tau < \tau_U$, for implementing ϕ^H would not be credible. Once the lower threshold τ was crossed and ϕ^H imposed, no further punishment is possible. Given a fixed ϕ^H , the majority’s optimal strategy is to then raise taxes to τ_U ; see Table 1 (Cell 2H). The elite’s only credible threshold for its trigger strategy is therefore τ_U . It would be instructive to consider whether credible elite punishment “schedules” could be designed which might allow a more aggressive trigger strategy and thus a tighter upper limit for τ_F .

¹¹ These grim trigger strategies are the most extreme form of punishment one player can impose on the other for defection in this game. These strategies therefore give democratic federalism its best chance of being sustained; see Gibbons (1992, p. 99).

redistribution required for the majority to find the strategy pair (F, φ^L) its preferred long-run outcome, rather than defect to (A, φ^L) and run the risk of (A, φ^H) . The maximal tax rate (τ^{\max}) and associated transfer (g^{\max}) defines the maximal level of redistribution the elite will accept in (F, φ^L) , rather than defect to (F, φ^H) and then too run the risk of (A, φ^H) as a long-run equilibrium. For a subgame perfect equilibrium for the annual fiscal policy game we require $\tau^{\max} \geq \tau_F > \tau_F^{\min}$, or equivalently, $g^{\max} \geq g_F > g^{\min}$. Our central proposition uses the bounds $g^{\max} \geq g_F > g^{\min}$.

PROPOSITION 1: SUSTAINABLE DEMOCRATIC FEDERALISM: *For a political economy satisfying the payoff structure of Table 1 and appropriate Border and Assignment Constraints, there exists a grim trigger strategy equilibrium in which democratic federalism is sustainable, and in that equilibrium:*

1) The central government majority chooses a level of redistributive transfers (tax rate) bounded between a maximal grant (tax rate) acceptable to the elite and a minimal grant (tax rate) acceptable to the majority specified as:

$$g_U > g^{\max}(\delta; \kappa) \geq g_F > g^{\min}(\delta; \kappa) > 0,$$

for each constitutional $(\kappa = \mathbf{q}$ or q^) regime and common discount factor $(0 < \delta \leq 1)$, and*

2) The elite province(s) adopts the fiscal strategy φ^L .

The proof for Proposition 1 is outlined in Appendix A.2.¹²

Comparative static properties follow directly from the Border and Assignment Constraints and from the specifications of the upper and lower bounds for redistributive services. Three seem worth stressing here. First, it is possible that no choice of μ will satisfy the Border Constraint, either because there are too few elite residents making $\mu^{\max} = N(\tau_U)/M$ too low, or because the cost advantage of elite production is so slight that credible high capture requires too many majority residents making $\mu^{\min}(\mathbf{q}$ or $q^*_H)$ too high. Second, in the q^* -regime, credible elite punishments may not be possible when the majority has a very high value (λ) for redistributive services. If so, federal institutions will be insufficient to protect elite interests. Finally, as the majority and elite residents become less patient and δ declines, g^{\min} will increase and g^{\max} decline. This narrows the range of federally sustainable redistributions. It is possible for sufficiently impatient residents

¹² Proposition 1 generalizes easily to having different discount factors for the majority and elite residents.

(particularly majority residents) that $g^{\min}(\delta; \kappa) > g^{\max}(\delta; \kappa)$ and there will be no value of g_F that can be sustained in the long-run.¹³

5. Democratic Federalism and the South African Transition

5.1 Background: There is little doubt that at the time of the 1994 negotiations for the new constitution, the two important minority parties, the white elite National Party (NP) and the tribally based Zulu Inkata Freedom Party (IFP), needed credible assurances that their once favored economic positions would be protected in the new democratic regime. Simple promises by the new majority ANC were not sufficient. Both pressed for a federal solution with political control over at least one province, with each province promised significant fiscal powers; see Waldmeir (1997, Chapter 13). An agreement was reached in mid-April of 1994, codified as the Interim Constitution. The Interim Constitution drew the boundaries for nine new provinces, six to be controlled by the ANC, one by the IFP (KwaZulu Natal), and up to two by the National Party (the rural Northern Cape and the urban Western Cape). Borders were drawn explicitly to have political majorities for the IFP and NP provinces.¹⁴ In addition, the Interim Constitution outlined fiscal assignment for redistributive services. K-12 education, health care, and the administration of welfare services and payments were specified as “concurrent” functions which may be managed by the national government alone (our de facto unitary governance), by the provinces alone (our democratic or administrative federalism), or shared.¹⁵

¹³ Comparative statics for the model’s other important exogenous parameters as they impact g^{\max} and g^{\min} and thus the bargaining range for redistribution can also be specified. First, a larger outside obligation or less outside aid, a greater majority population, a lower rate of maximal elite capture (ϕ^H , holding ϕ^L fixed), and a larger penalty for high capture (ρ) each increases g^{\max} and reduces or leaves unchanged g^{\min} . In each case the bargaining range for acceptable redistribution expands. Second, in the q^* -regime, higher values of λ raise both g^{\min} and g^{\max} , but g^{\max} tends to g^u in the limit and as a consequence the bargaining range declines. Third, a smaller cost advantage for the elite because a_e falls relative to a_m and a_u increases both g^{\max} and g^{\min} ; again as g^{\max} tends to g^u in the limit the bargaining range declines.

¹⁴ Provincial borders were originally drawn to facilitate a NP victory in the Northern Cape to accommodate the rural whites; see Muthien and Khosa (1998). While the white landowners voted for the NP, the white farmhands failed to vote and the Northern Cape was won by the ANC by a small majority. It has remained an ANC province ever since.

¹⁵ Shared provision would involve a pre-assigned level q_0 to be provided by the national government with the provinces then providing the difference between q or q^* and q_0 on their own. The specified q_0 operates in our model simply as a targeted lump-sum grant for redistributive services provided at a cost of $s_m(q_0)$. The analysis here would

With the Interim Constitution in place, elections for the new President and the provincial legislatures could go forward. Nelson Mandela was elected President, and the NP and IFP each won political control over one province, the Western Cape and KwaZulu-Natal respectively. Because of a boycott of the elections by its hardline right-wing voters, the NP barely lost the rural Northern Cape.

While the Interim Constitution created independent provinces and the needed fiscal assignments, it left the details of federal governance largely unspecified. The final Constitution approved in October, 1996 filled the gap. It maintained the provincial borders (Chapter 6, 103) and concurrent redistributive service assignments (Schedule 4, Part A) as specified in the Interim Constitution, but now assigned all important taxation, except for property taxation, as central government responsibilities unless permitted by an explicit act of Parliament (Chapter 13, 228).

Finally, the new Constitution gives formal agenda-setting powers to the President. All policies relating to fiscal affairs of provinces must begin with the President (Chapter 4, 73). The President is responsible for administering and executing all laws approved by Parliament, including supervising the provision of redistributive services (Chapter 5, 100-1b). The President may veto any parliamentary approved legislation (Chapter 4, 79). The President's ability to exercise these agenda powers turns on his or her support within the national parliament. Subject to the constraints of democratic federalism, ANC party leadership has determined South Africa's fiscal policies; see Wittenberg (2006, p. 346).

Table 2 summarizes South Africa's post-apartheid redistributive fiscal policies. The Table lists aggregate central government revenues, total redistributive grants per capita (g_F) for the country as a whole, for the elite-run Western Cape and for the other, majority-run provinces; provincial spending for assigned redistributive services in the elite ($s_e(q)$) and majority provinces ($s_m(q)$); the feasible level of redistributive

go through completely. South Africa has not chosen this option, and wisely so. It is inefficient as $s_m(q_0) > s_e(q_0)$ in the elite province.

services q measured in input units as years of public employee training per majority resident;¹⁶ and finally, the basic grant available to the elite (b_e) and majority provinces (b_m) to fund other redistributive services including direct income transfers to households by the provinces.

[TABLE 2 HERE]

Four facts are evident from Table 2. First, as required for democratic federalism provincial governments have been given a significant role in the provision of redistributive services, funded entirely by grants from the central government. Second, the elite Western Cape receives on average 20 percent less in assigned services grants, $s_e(q)$, consistent with their efficiency advantage in providing redistributive services. Third, basic service grants, b_e , available for capture by the elite and crucial for a credible elite punishment are economically significant, never less than 380 Rand per capita (\approx \$300 Million in total) in the elite provinces. Fourth, there was an upward break in the level of required redistributive services funded by these budgets in FY 2006/07. This year corresponds to a time of growing militancy by the left-wing of the ANC, suggesting a shift from moderating presidential to more redistributive majority rule politics.

The question we wish to answer is this: Has this level and allocation of redistributive public spending been sufficiently constrained so as to sustain democratic federalism in South Africa? That is, have the requirements of Lemmas 1 or 2 been satisfied, and if so, has the overall level of redistributive taxation and spending been consistent with the requirements of Proposition 1 for sustainable democratic federalism? To provide one set of answers to these questions we have parameterized our model to the South African political economy at the time of the transition; see Appendix B for details.

¹⁶ The majority receives an input bundle, q , which it values as $\lambda \cdot v(q)$. For the purposes of Table 2 and the analysis which follows, we specify that input bundle by $q = a \cdot (X/M)$, where X/M is public employees (X) per adult majority resident (M) and where a is the measure of employee productivity equal to $a_e = 17$ years of education for the average elite public employees, $a_m = 14$ years of education for the average “trained” majority employee, and $a_u = 7$ years of education for the average “untrained” majority employee. For example, in FY 1995/96 in the elite province, $q_e = 17 \cdot (1/32) = .56$ while in the average majority province $q_m = 14 \cdot (1/32) = .44$. The number of employees per majority resident was set by national standards, but the quality of the employees – measured by years of schooling – was typically much higher in the elite province. See Appendix B for the details behind Table 2. Thus majority residents in the elite province receive approximately 25 percent more redistributive services than majority residents in a majority-run province. Modest exit costs – see fn. 7 – are sufficient to check migration into the elite province.

5.2 Is Democratic Federalism Feasible in South Africa? For democratic federalism to be a viable long-run constitution it must first satisfy the border and assignment constraints specified for the q -regime (Lemma 1) or q^* -regime (Lemma 2); see Figures 1 and 2.

Common to both regimes are provincial borders. Crucial to our argument is that at least one important province be politically controlled by the elite. This has been the Western Cape.¹⁷ The borders of the Western Cape were explicitly drawn to ensure elite political control over provincial politics and a sufficiently large share of majority residents as “hostages” so that elite high capture would be a credible punishment if the poor majority chose maximal taxation at the national level; see Muthien and Khosa (1998). The resulting share of the majority voting-age population residing in the elite province is estimated as $\mu = .184$.¹⁸ This value of μ satisfies the required border constraints for both the q and q^* constitutional regimes; see Figures 1 and 2.

The Mandela presidency was arguably a q -regime. During his tenure the level of redistributive services was recommended by a constitutionally created independent commission (Chapter 13, 220-222) known as Financial and Fiscal Commission (FFC), forwarded to the legislature without change by President Mandela, and then approved without amendment by the ANC controlled legislature.¹⁹ The FFC membership was appointed by Mandela and was equally divided between ANC and National Party representatives. Commission decisions were typically made by unanimous agreements between the representatives of the two

¹⁷ The ANC has never won more than 45 percent of the vote in the Western Cape. Coalitions of the various elite opposition parties having won at least 51 percent of the vote; see www.elections.org.za. In the latest election (2009), the Democratic Alliance won 48 percent of the Western Cape and the “break-away” moderate party from the ANC called the Congress of the People won 9 percent. The ANC won only 32 percent of the Western Cape vote.

¹⁸ We define $\mu = (M_e/M)$ so that $N(\tau_F)/[M_e + N(\tau_F)] = .51$; see fn. 19 above. For the adult populations, $N(\tau_F)$ is estimated to be only slightly larger than 4.8 Million. If so, then $M_e = 4.6$ Million, and therefore $\mu = (M_e/M) = 4.6M/25M = .184$.

¹⁹ The 1998 budget proposals by the Finance Department to the legislature commented that “its (FFC’s) recommendations for the division of resources between the three spheres of government form the basis of the current allocations” (1998 Budget Review, Department of Finance, as quoted in *Financial and Fiscal Commission: A Ten Year Review*).

parties.

The FFC's recommended level of redistributive services was 1 teacher per 38 school-aged children, 3.5 preventive health care clinic visits a year for each majority adult and child, and 4500 (real 2000) Rand for each income eligible child, elderly, and disabled majority resident for social insurance transfers.²⁰ Together, these targets required redistributive grants sufficient to pay for .038 public employees per majority resident or, for an average level of training of 14 years per employee, $q = .53$ public employee training-years per majority resident.²¹ To fund this FFC recommended level of redistributive services, transfers of 1635 Rand/capita are needed in the majority provinces and 1,347 Rand/capita in the elite province.²²

Beginning in FY 1998/99 and continuing to FY2000/01 (the last Mandela budget), actual transfers as reported by the Ministry of Finance and reported in Table 2 are very close to the FFC recommended levels, confirming our specification of the Mandela years as a q -regime. Budgets before FY 1998/99 did not provide full redistributive spending to the majority provinces (actual $q_m < q$) but favored the Western Cape. These budgets are best seen as transition budgets designed to "wean" the once favored elite residents of the Western Cape away from their pre-apartheid public allocations. By FY 1998/99, however, the new redistributive q -regime was in place. Given $\mu = .184$, $q = .53$ falls within the set of feasible assignments satisfying Lemma

²⁰ See FFC, *The Allocation of Financial Resources Between the National and Provincial Governments, FY 1996/97*, September 8, 1995.

²¹ The value of (X/M) is estimated from FFC targets and the assumption that (1) each majority adult has one child requiring .026 education professionals per majority resident; (2) each medical professional can provide 3.5 visits to each of 500 majority residents a year requiring .002 health care professionals per majority resident; and (3) that approximately 17 percent of the majority population qualifies for some form of income assistance for an average spending per majority resident of 765 Rand per year or, in fiscally equivalent units of a public employee, about .0095 public employees per majority resident. Together the mandates require funding sufficient to pay for .0375 public employees per majority resident. See FFC, *The Allocation of Financial Resources Between the National and Provincial Governments, FY 1996/97*, September 8, 1995, p. ii. Assuming an average level of training of 14 years per public employee, this implies the need for .53 public employee training-years per majority resident.

²² Required spending per majority adult to support $q = .53$ equals $S \cdot (X/M) = S \cdot (q/a) = 80,000 \cdot (.53/14) = 3030$ Rand/majority adult. The average ratio of majority adults to total population is .54 (=25M/46M), implying a required redistributive service grant *per capita* of 1635 Rand/capita (= 3030R x.54). To fund $q = .53$ in the elite province, $S \cdot (q/a) = 80,000 \cdot (.53/17) = 2494$ Rand/majority adult is required or approximately 1,347 Rand/capita (= 2494R x.54). These estimates are very close to actual funding as reported in Table 2.

1 for a \mathbf{q} -regime; see Figure 1, shaded area ABC. The Mandela presidency could sustain democratic federalism.

Matters became less certain under the leadership of Mandela’s successor, Thabo Mbeki. The Mbeki budgets funded levels of redistributive services very near the Mandela/FFC recommendations ($\mathbf{q} = .53$) until FY 2005/06, at which time redistributive spending began a strong upward trend towards today’s values of $\mathbf{q} = .85$; see Table 2. This break in redistributive spending suggests a break in underlying political regimes as well, away from a strong president setting services exogenously and towards a president increasingly responsive to the preferences of the majority controlled ANC. Concurrent political events culminating in the ouster of President Mbeki, first as head of the ANC (December, 2007), and then as President (September, 2008) strongly suggest such a regime change.²³ If so, South Africa’s federal policies must now meet the requirements of Lemma 2 for a \mathbf{q}^* -regime; see Figure 2. By Lemma 3, the set of feasible federal democracies in the \mathbf{q}^* -regime is smaller than those under the \mathbf{q} -regime.²⁴

We bound our estimate of the majority’s preferences for redistributive services in a \mathbf{q}^* -regime as $6100 \geq \lambda \geq 4230$, with the lower bound corresponding the last (FY 2008/09) Mbeki budget and the upper bound corresponding to the stated ambitions of the left wing of the ANC for full public service equality; see Appendix B. The lower bound of $\lambda = 4230$ is consistent with $\mathbf{q}^*_L = .79$ (Table 2, FY 2008/09) under democratic federalism. But does this value of λ satisfy the requirements of Lemma 2? The border and assignment constraints set $\mathbf{q}^*_{H^{\max}}(\mu = .184) = .98$; see Figure 2. For $\lambda = 4230$, we compute $\mathbf{q}^*_{H}(\mu = .184; \lambda = 4230) = .88$. Thus Lemma 2 holds and democratic federalism is still feasible for the last Mbeki budget: $\mathbf{q}^*_{H^{\max}}(\mu = .184) = .98 > .88 > .59 = \mathbf{q}^*_{H^{\min}}(\mu = .184)$; see Figure 2.

²³ President Mbeki began to feel pressure from the left wing of the ANC mid-way through his presidency, particularly on matters of public services for the poor. This pressure culminated in his ouster as head of the ANC and finally his resignation from the Presidency in September, 2008. On this growing pressure from the left, see “Boost for Zuma’s Leadership Campaign,” *Financial Times* (September 21, 2007, p. 4).

²⁴ Compare the ABC coordinates in Figures 1 and 2 to see that this is so for our parameterization of the South African political economy.

The last budget for which we have full data, FY 2009/10, is arguably a new ANC majority budget, a majority now unconstrained by the Mandela-Mbeki moderates. The ouster of Mbeki as leader of the ANC in favor of Jacob Zuma in December, 2007 has established the party's pro-redistribution wing as the new "decisive voter" for the majority. The FY 2009/10 budget sets $q^*_L = .85$, a 7.6 percent increase in real redistributive spending over the last Mbeki budget and a 34 percent increase over what might reasonably be seen as the last pro-moderate budget of FY 2005/06; see Table 2. The implied value of λ for this last ANC budget of $q^*_L = .85$ is $\lambda = 4550$.²⁵ For $\lambda = 4550$, we compute $q^*_H(\mu = .184; \lambda = 4550) = .95$ which falls just within the upper bound for Lemma 2: $q^*_H^{\max}(\mu = .184) = .98 > .95$; see Figure 2. Any value of $\lambda > 4700$, only a 3 percent ($1.03 = 4700/4550$) increase in distributive demands, will push $q^*_H^{\max}(\mu = .184) > .98$ and lead to a constitutional "contract" outside the shaded area A*B*C* in Figure 2 defining feasible democratic federalism as set by Lemma 2.

5.3 Is South Africa's Federal Contract Sustainable? Even if the requirements of Lemmas 1 and 2 are met and democratic federalism is *feasible*, it may not be *sustainable* by the requirements of Proposition 1. For sustainability, the parties to the constitution must be sufficiently far-sighted that they check their short-term inclinations to exploit the other party. Far-sighted players will have values of their discount factor (δ) near 1; short-sighted players nearer 0. We assume the elite has a discount factor $\delta_e = .93$ while the majority's discount factor is bounded as $.93 \geq \delta_m \geq .33$; see Appendix B.

For these discount factors and for both the \mathbf{q} and \mathbf{q}^* regimes, $g^{\max}(\delta_e; \kappa) > g^{\min}(\delta_m; \kappa)$ and democratic federalism is sustainable. For the \mathbf{q} -regime, $g^{\max}(\delta_e = .93; \kappa = \mathbf{q} = .63) = 3300$ Rand/resident $> g^{\min}(\delta_m = .33; \kappa = \mathbf{q} = .63) = 3234$ Rand/resident $> g^{\min}(\delta_m = .93; \kappa = \mathbf{q}) = 3108$ Rand/resident. For the \mathbf{q}^* -regime, $g^{\max}(\delta_e = .93; \kappa = \mathbf{q}^*; \lambda = 4550) = 3304$ Rand/Resident $> g^{\min}(\delta_m = .33; \kappa = \mathbf{q}^*; \lambda = 4550) = 3261$ Rand/resident $> g^{\min}(\delta_m = .93;$

²⁵ The demand for $q^*_L = \lambda/p_L(\mu)$. We estimate the average $p_L(\mu) = 5355R$ for this political economy; see Appendix B. For $q^*_L = .85$, $\lambda = 4550 = .85 \cdot 5355$.

$\kappa=q^*; \lambda = 4550) = 3187$ Rand/resident.²⁶

We conclude for our calibration of the South African political economy that at least to today, the proposed federal constitution has been both feasible as a self-enforcing constraint on maximal redistribution and democratically sustainable as required by our Proposition 1.

6. The Future of Democratic Federalism for South Africa

Though democratic federalism has provided a valuable check on redistributive taxation in South Africa for the early years of its democracy, and arguably offered the “inbuilt mechanism which makes it impossible for one group to suppress the other” that President Mandela thought so important to transition from apartheid to democracy, there is no guarantee that these federal institutions can continue to play this important role in the future. The ability of democratic federalism to credibly check elite taxation rests crucially upon the majority’s demand for redistributive services. If majority preferences for redistributive services move above the threshold required for self-enforcing federalism ($q^*_H > .98$; Figure 2), then the elite province will lose its ability to credibly threaten the high capture penalty necessary to constrain maximal redistribution. While the majority has seen a near doubling of redistributive service inputs per majority resident since the start of the new democracy – from $q_m = .44$ in FY1995/96 to $q_m = .85$ in FY 2009/10 (Table 2) – current levels still fall short, perhaps as much as 34 percent short, of what is now provided to the typical elite family.²⁷

If a future majority demands redistributive services outside the feasible set in Figure 2, then democratic federalism can no longer limit redistribution and unitary governance or its *de facto* equivalent may

²⁶ An impatient majority ($\delta_m = .33$) will always demand more immediate redistribution than a patient majority ($\delta_m = .93$) as is observed for our simulated values of g^{\min} .

²⁷ The typical elite resident is now provided with 1 teacher for every 20 students and 3.5 health care visits per family member. Assuming a doubling of the current income transfer for children in poverty and disabled and elderly pensioners, then q_m would need to equal 1.14 public employee training years per majority residents. The ratio of $1.14/.85 = 1.34$ implies a 34 percent shortfall in inputs for majority residents relative to the typical middle class (elite) resident.

result.²⁸ We then need to ask: What additional institutions, if coupled with provincial governments as modeled here, might help to check the majority's demand for redistributive services? The task is to return democratic federalism to a q -regime of constrained redistribution, with q set independently from majority preferences. Two possibilities suggest themselves.²⁹

The first sets q through majority party politics by giving a moderate minority in the majority party control over party policy through the control of party resources and candidates for parliament. This was the case when the older, Mandela-Mbeki establishment controlled the ANC. This coalition set the budgets for fiscal years FY1996 to FY 2006; see Figure 1. The moderates' control of the ANC has been "overturned" by more redistributive inclined party members with the election of Jacob Zuma as party leader.

The second possibility concedes majority control over the majority party and therefore parliament, but then sets q less than majority preferred q^* using presidential agenda powers and a 33 percent veto-proof coalition of elites and other fiscal moderates. Provided the reversion budget after the veto is within the feasible set of Lemma 2, as it now would be at $q^*_H = .95 < q^*_{H^{\max}} = .98$, then overall redistributive taxation can still be constrained; see Figure 2. The South African constitution does provide the president with strong agenda-setting powers and there is a sufficient coalition of elite and independent moderates to sustain a veto.³⁰

²⁸ That the preferences of the majority can undo the stability of institutions was first stressed by William Riker (1980) in his friendly critique of the then new institutional political science when he asked: Where do institutions come from? If the majority does not like the performance of an institution, they can change it. So too here. We thank our referee for reminding us of this important point.

²⁹ There is a third alternative worth mentioning but it does not appear likely within South Africa in the near term. This is the emergence of a strong centrist party within Parliamentary elections. This alternative would break the ANC's monopoly hold on fiscal policy and the likely outcome would be the median position on redistribution between that of the elite and the current ANC. At the moment the main centrist party is the Democratic Alliance and they hold 17 percent of the seats in Parliament. In response to their loss of the ANC party apparatus in December of 2007, a group of ANC moderates broke away from the ANC to form a new party called the Congress of the People (COPE). In the most recent parliamentary elections COPE was third with 7.5 percent of the vote. The ANC still controls 65 percent of the seats in the new parliament.

³⁰ See Romer and Rosenthal (1979) for a model where agenda-setting powers coupled a veto coalition of 33 percent in the legislature and a sufficiently low reversion for the provision of redistributive services will be sufficient for a President to check Parliament's preferences for redistributive services. As to agenda-setting powers in South Africa, all policies relating to fiscal affairs of provinces must begin with the President (Final Constitution, Chapter 4, 73) and the President is responsible for administering and executing all laws approved by Parliament, including

The question remains: Who elects the President? In South Africa the answer is the Parliament by simple majority rule. This will continue to be the majority party with potentially high redistributive demands. We are back then to the preferences of the majority members of the ANC for redistributive services and the inclination and ability of President Zuma, like his predecessors, to use party resources to hold possibly “excessive” demands in check. It is here, within ANC party politics and the specification of majority and presidential preferences, that the future of federalism in South Africa as an effective constraint on fiscal policy is likely to be decided.³¹

7. Summary and Extensions

Any nation state hoping to move from autocratic, elite rule to a functioning democracy with protected property rights, and to enjoy the economic benefits such a transition can confer, faces the challenge of providing credible assurances to the elite that their economic interests will not be fully exploited after the transition. Three strategies used in prior transitions – continued elite control of the military, elite veto power in the legislature, or the gradual extension of the franchise – are unlikely to be accepted by any repressed majority today.

South Africa’s transition from apartheid to democracy suggests a fourth alternative, what we have

supervising the provision of redistributive services (Final Constitution, Chapter 5, 100-1b). The President may veto any parliamentary approved legislation (Final Constitution, Chapter 4, 79). The ANC now controls 65 percent of Parliament’s set. The major “elite party” known as the Democratic Alliance has 17 percent of the seats while the break away moderate ANC party known as the Congress of the People now has 7 percent of the seats. The anti-ANC Inkata Freedom Party has 5 percent of the seats. What is required is an additional 4 percent of the legislature. The President has the discretionary resources he needs to win over the required additional votes from the small conservative, moderate, and even radical parties.

³¹ Our analysis for South Africa’s federal institutions helps us to understand where to look, and what to look for, in plotting the future path of RSA fiscal policies, but it does not provide compelling answers to what determines majority preferences, leadership preferences, and how those two are balanced within the structure of the ANC. These are important questions but ones we have not pursued here. At least to date, Jacob Zuma remains in control of the party. However, his current platform (shown as $q^*_H = .95$ in Figure 2) has been strongly criticized by Julius Malema, leader of the ANC Youth League, who is advocating significantly more redistributive services paid for through the expropriation of white owned assets. Zuma and the older ANC leadership have so far been able to isolate Malema, labeling him an “anger young man.” Malema has recently been assigned to take anger management classes; see C. Hunter-Gault, “Letter From South Africa,” *The New Yorker* (July 5, 2010).

called democratic federalism. If the economic elite is sufficiently large and geographically concentrated so that an elite controlled province can be established (our Border Constraint) and if the constitution assigns to the provinces, particularly the elite run province, the right to provide important redistributive public services (our Assignment Constraint), then a federal democracy, even with universal suffrage and a majority controlled army and central legislature, can provide protection for elite economic interests. So constructed, democratic federalism creates a “hostage game” played between the new majority’s control of taxation and the elite’s efficient provision of redistributive services that can constrain the majority’s inclination to exploit the old elite. To date, democratic federalism appears to have so checked maximal redistribution in South Africa.

Federalism as a path to democracy may not be for everyone, however. Our Border Constraint requires a geographically concentrated elite. South Africa could meet this requirement by establishing elite provinces around either Johannesburg or Cape Town. The constitution chose Cape Town with the creation of the province of Western Cape. In contrast, early efforts to establish a federal democracy in then Rhodesia were undone by the reluctance of the rural elites spread throughout the country to accept minority status in all provinces; Barber (1967; Chapters 1-8). Our Assignment Constraint requires that the assigned redistributive services be efficiently provided by the political minority. Recent efforts to establish a federal democracy in Sri Lanka failed for just this reason as the Tamal minority had no comparative advantage in the provision of any majority valued government service. One can imagine democratic federalism succeeding in Iraq, however. Like South Africa there is a talented elite minority (the Sunni) concentrated in a major urban center (Baghdad) and a poor, largely rural majority now in control of the central government (the Shiite). A federal structure and provincial boundaries are now part of the interim Iraqi constitution; see Dawisha and Dawisha (2003) and Anderson and Stansfield (2005). What appears to be missing to date is a trusted leader, a “Mandela,” capable of persuading the competing groups that such a federal compromise is

in all parties' long-run interests.³²

Finally, our specification of democratic federalism is not that typically seen in federal public economies of most mature democracies, but it can be extended to accommodate the richer institutional and political environment that typically characterize such economies. First, under our constitution all redistributive taxation has been assigned to the central government and all redistributive spending to provinces. Typically, these functions are shared between the two levels of government. We adopted our “knife-edge” specification to simplify the analysis, but all our qualitative results in Lemmas 1-3 and Proposition 1 go through for shared responsibilities.³³ Second, our political economy has only a monolithic poor majority seeking maximal redistribution. This assumption can be relaxed as well by allowing a significant faction within the majority to have more moderate demands for redistributive services. Again, all our qualitative results go through, but now the moderate faction acts as a decisive median when setting

³² Beyond case studies, our model of how federal institutions can facilitate the transition does provide the foundation for including a “federal” variable in a larger empirical study of the transition into democracy as, for example, in Przeworski, et. al. (2000) or Boix (2003). Our model suggests that a federal democracy is more likely than a unitary democracy to facilitate a democratic transition when both the majority and the elite prefer democratic federalism to autocracy but the elite prefers autocracy to a very redistributive unitary democracy. In this case, democratic federalism is necessary for the transition; see Section 2. This ranking depends upon how much lower will be redistribution under federalism than under unitary governance with maximal taxation. Redistributive taxation under federalism falls as g^{\max} falls towards g^{\min} , provided democratic federalism remains sustainable by our Proposition 1. In our model, g^{\max} declines as the initial elite population is larger relative to the poor majority, as the ability of the elite to protect its interests in federalism through “high capture” increases, as the possible penalty imposed by the majority for high capture declines, as the initial ability difference (education) in providing public services between the elite and the majority increases, and as the distributive demands of the majority are less; see the comparative statics summarized in fn. 13 above. Were one to run a regression on the probability of a transition to democracy – as do Przeworski, et. al. and Boix – then our analysis suggests a two-stage specification, first where the transition depends upon the use of unitary or federal institutions with federal institutions more successful than unitary institutions, and then second, where the use of federal institutions over unitary institutions is conditioned on the ratio of the elite-to-majority populations, elite-to-majority average educations, determinants of majority mobility as the key determinant of high capture, strength of majority unions or local political parties as a determinant of penalties for elite capture, and attributes of the majority population likely to predict the demand for redistributive services.

³³ Sharing redistributive taxation with the provinces can be modeled as an inward and downward shift in the central government’s revenue hill by altering the values of N_0 and β , the intercept and slope of the tax base relationship respectively. Sharing redistributive taxation will reduce the aggregate level of redistribution. Sharing responsibility for redistributive services reduces the value of the exogenous or demanded level of q assigned to provinces; see fn. 15 below. Of course, there will be limits to sharing. Democratic federalism will not succeed if the provinces have almost “all” control over taxation, and the center has almost “all” control over providing redistributive services. Clearly our “knife-edge” assignment gives democratic federalism its best chance of facilitating the transition. Finding the limits to shared responsibilities for actual federal economies would be a valuable extension of our analysis.

the central government's demand for redistributive services.³⁴

With these extensions, our analysis fits comfortably within the current literature studying the virtues of federalism in more mature democracies. First, with some decentralization of redistributive taxation, provinces can then compete for the location of business investment and human capital as in Weingast's (1995) analysis of "market-preserving federalism." The virtue of such policy decentralization will be expanded economic investment and higher economic growth as the country can now credibly commit to low taxation of new assets. The costs to the poor majority will be an lower level of redistribution. The task at the time of the transition is to persuade that majority that their future incomes from improved growth will more than compensate for today's lower level of redistributive taxation.³⁵

Second, with sufficiently large political factions within the poor majority, provinces can serve as "testing grounds" for political leadership as in Myerson's (2006) analysis of "politically competitive federalism." Here provincial governments provide elected politicians an opportunity to demonstrate their commitment to democratic rule and efficient government. Political competition within provinces and "yardstick" comparisons across provinces allows voters to identify and defeat corrupt or inefficient politicians. Those politicians that provide honest and efficient leadership at the provincial level develop a reputation that can lead to national election. Further, the threat of credibly honest and capable provincial leaders disciplines current national leaders.³⁶ In Myerson's analysis, federalism contributes to democratic survival as Boix (2003) finds.

³⁴ There has emerged such a moderate faction within the ANC majority, but right now they do not constitute a decisive median. See fn. 29 above.

³⁵ In fact in the early specification of South Africa's new federal constitution, there were explicit proposals by the FFC to share redistributive taxation with the provinces. Those proposals were ultimately rejected by the ANC (poor majority) leadership.

³⁶ This was indeed the hope of the National Party's President F. W. de Klerk. He expected the new ANC run governments to reveal their incompetence and perhaps corrupt behaviors, and that such performance would stand in sharp contrast to the well-run Western Cape. "When asked whether he would miss the supremacy of the National Party, (h)e responded that he would not be out of office for long. He wasn't the only one who believed that liberation movements often fail at governing." C. Hunter-Gault, "Letter from South Africa," *The New Yorker* (July 5, 2010). On the potential for political competition within the South African provinces, see Hawker (2000) and Lodge (2005).

Contemporary analyses of federal governments from Tiebout (1956) to Riker (1964) to Buchanan and Brennan (1980) to Weingast (1995) have focused on the virtues and difficulties of federal governance *within* established democracies. Our work has sought to answer a prior question: Can federal institutions facilitate the transition from autocracy *to* democracy, and if so, what should be the structure of those institutions? From our analysis the answer is *yes*, provided federal institutions, perhaps as specified here, create provinces and assign fiscal responsibilities in ways that mutually empower and then benefit both the new majority and the old elite.

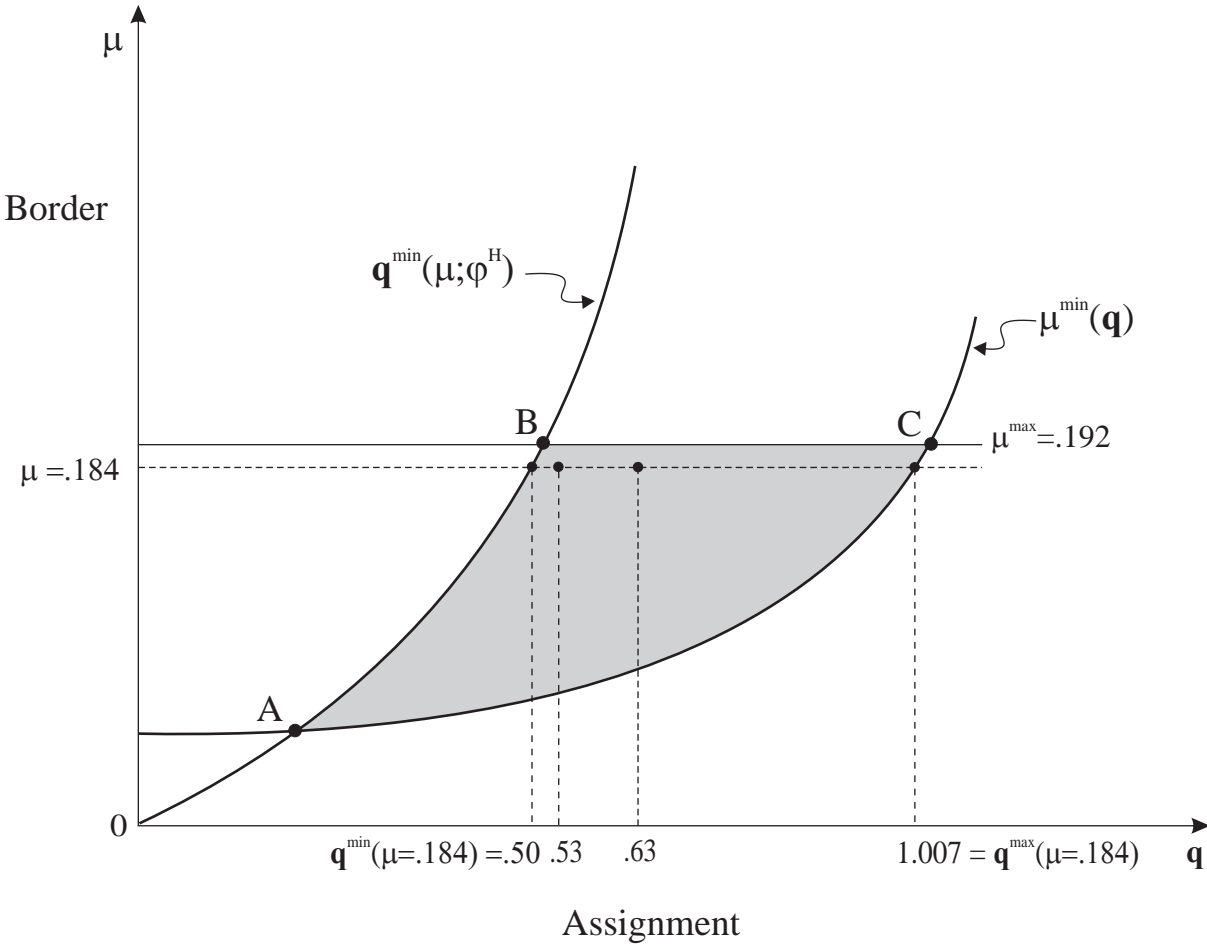
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Figure 1: Feasible Federalism for the q -Regime



Mandela Assignment $q=.53$

Mbeki Assignment (FY 05/06) $q=.63$

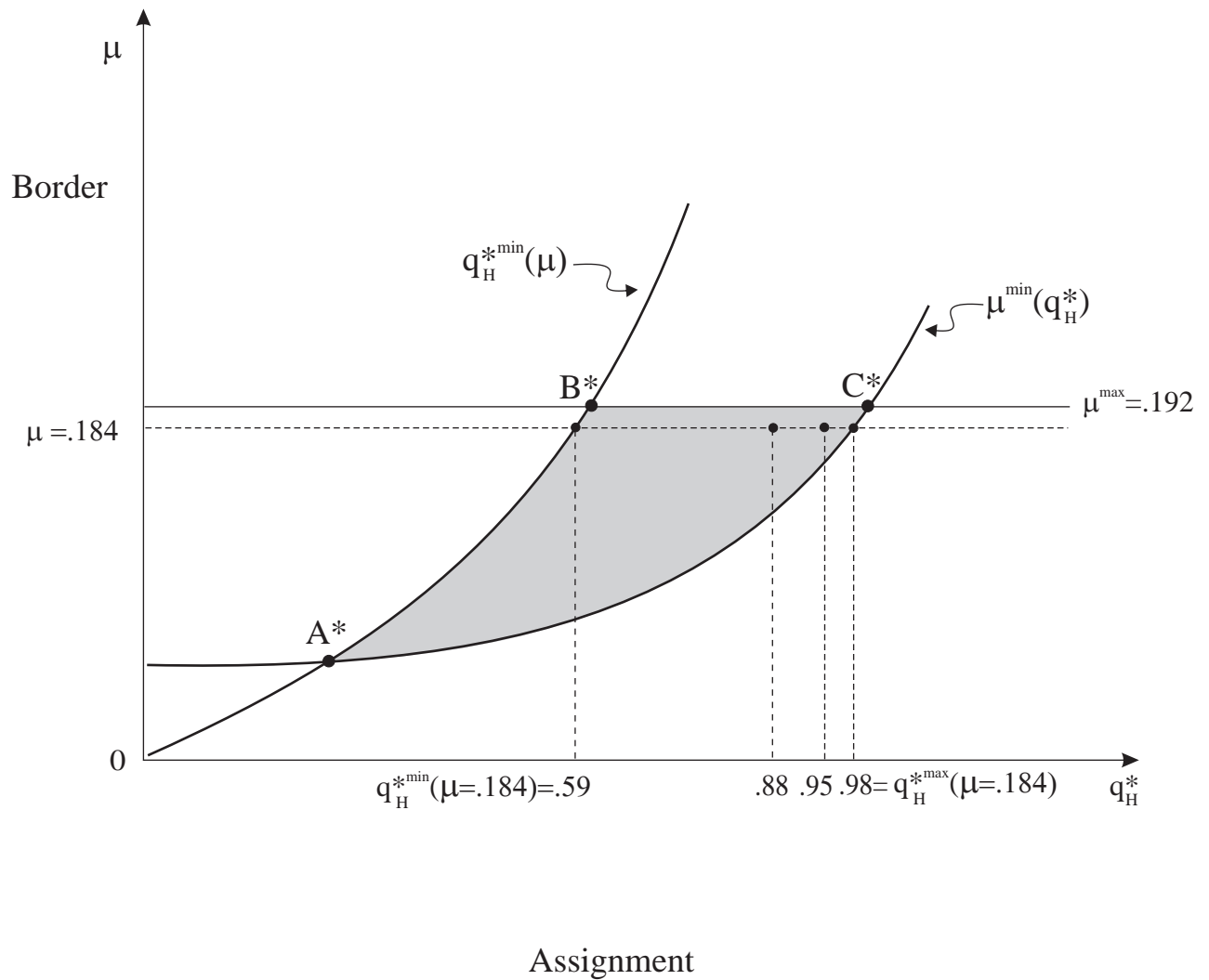
Coordinates for Points:

A: $\mu = .050$; $q = .20$

B: $\mu = .192$; $q = .51$

C: $\mu = .192$; $q = 1.02$

Figure 2: Feasible Federalism for the q^* -Regime



Mbeki Assignment (FY 08/09) $q_H^* = .88$

Zuma Assignment (FY 09/10) $q_H^* = .95$

Coordinates for Points:

A*: $\mu = .055$; $q_H^* = .25$

B*: $\mu = .192$; $q_H^* = .61$

C*: $\mu = .192$; $q_H^* = .99$

TABLE 1: THE POLICY GAME

MAJORITY PAYOFFS per MAJORITY CITIZEN

STRATEGIES	MAJORITY STRATEGY F: (τ_F ; PROVINCES > 1)	MAJORITY STRATEGY A: (τ_U ; PROVINCES > 1)	MAJORITY STRATEGY U: (τ_U)
ELITE STRATEGY: φ^L	(1L) $\omega(F; \varphi^L) = W + g_F[1 - \varphi^L \cdot \mu] - s_F(q) + \varphi^L \cdot \mu \cdot s_e(q) + \lambda v(q)$	(2L) $\omega(A; \varphi^L) = W + g_U[1 - \varphi^L \cdot \mu] - s_F(q) + \varphi^L \cdot \mu \cdot s_e(q) + \lambda v(q)$	(3) $\omega(U) = W + g_U - s_U(q) + \lambda v(q)$
ELITE STRATEGY: φ^H	(1H) $\omega(F; \varphi^H) = W + g_F[1 - \varphi^H \cdot \mu] - s_F(q) + \varphi^H \cdot \mu \cdot s_e(q) + \lambda v(q)$	(2H) $\omega(A; \varphi^H) = W + g_U[1 - \varphi^H \cdot \mu] - s_F(q) + \varphi^H \cdot \mu \cdot s_e(q) + \lambda v(q)$	(3) $\omega(U) = W + g_U - s_U(q) + \lambda v(q)$

ELITE PAYOFFS per ELITE CITIZEN

STRATEGIES	MAJORITY STRATEGY F: (τ_F ; PROVINCES > 1)	MAJORITY STRATEGY A: (τ_U ; PROVINCES > 1)	MAJORITY STRATEGY U: (τ_U)
ELITE STRATEGY: φ^L	(4L) $y(F; \varphi^L) = Y - \tau_F + \varphi^L \cdot [g_F - s_e(q)] \cdot [M_e/N(\tau_F)]$	(5L) $y(A; \varphi^L) = Y - \tau_U + \varphi^L \cdot [g_U - s_e(q)] \cdot [M_e/N(\tau_U)]$	(6) $y(U) = Y - \tau_U$
ELITE STRATEGY: φ^H	(4H) $y(F; \varphi^H) = [Y - \rho] - \tau_F + \varphi^H \cdot [g_F - s_e(q)] \cdot [M_e/N(\tau_F)]$	(5H) $y(A; \varphi^H) = [Y - \rho] - \tau_U + \varphi^H \cdot [g_U - s_e(q)] \cdot [M_e/N(\tau_U)]$	(6) $y(U) = Y - \tau_U$

TABLE 2: RSA INTERGOVERNMENTAL TRANSFERS: Real (2000) Rand per Capita[†]

FISCAL YEAR	Cen Gov. Revenues	g_F National Average	g_F Western Cape	$s_e(q)$ Western Cape	q_e Western Cape	b_e Western Cape	g_F Majority Provinces	$s_m(q)$ Majority Provinces	q_m Majority Provinces	b_m Majority Provinces
1995/96	4237	2189	2923	1371	.56	1552	2119	1356	.44	763
1996/97	3938	2030	2587	1334	.52	1253	1978	1345	.44	633
1997/98*	3942	2000	2424	1250	.49	1174	1959	1332	.43	627
1998/99	4265	2154	2206	1398	.55	808	2149	1709	.55	440
1999/00	4093	2108	2097	1368	.54	729	2110	1674	.54	436
2000/01	6636	2242	2185	1455	.57	730	2247	1778	.58	469
2001/02	5570	2302	2196	1494	.59	702	2313	1826	.59	487
2002/03**	5178	1903	1720	1342	.53	378	1923	1500	.49	423
2003/04	5630	2151	1896	1479	.58	417	2180	1700	.55	480
2004/05	5610	2231	1941	1514	.60	427	2264	1766	.57	498
2005/06	5962	2327	2011	1609	.63	402	2363	1890	.61	473
2006/07	6764	2559	2186	1750	.69	436	2603	2082	.68	521
2007/08	7760	2735	2293	1835	.72	458	2787	2230	.72	557
2008/09	8381	3005	2522	2018	.79	504	3063	2450	.79	613
2009/10	8113	3213	2710	2168	.85	542	3273	2619	.85	654

SOURCES: FY: 1995/96 to 1997/98: Financial and Fiscal Commission, *The Allocation of Financial Resources Between the National and Provincial Governments: FY 1997/98*, Tables 2, 3, 6b. FY 1998/99 to 2009/10: Minister of Finance, *Division of Revenue Bill, Various Years*, Part 4: Provincial Allocations.

†NOTES TO TABLE 2

COLUMN DEFINITIONS: For the purposes of this analysis, all allocations to KwaZulu-Natal are included as part of the allocations to “Other Provinces.” Central Government Revenues = Total revenues per capita raised by central government taxation; g_F = Total intergovernmental transfers per capita paid to the province(s), averaged over all provinces (National Average), for the Western Cape, and for all other provinces excluding the Western Cape (Ave. Other Provinces); $s(q)$ = Assigned service grants per capita to fund 5-17 education, primary health care services for (lower income) citizens qualifying for medical assistance, and social security grants for the elderly, disabled, and children, for the Western Cape ($s_e(q)$) and the average for all other provinces ($s_m(q)$); q_e and q_m are estimates of the redistributive service bundle provided in the elite (Western Cape) province and all other majority-run provinces computed as $q_e = s_e(q)/S_e = s_e(q)/2541R$ and $q_m = s_m(q)/S_m = s_m(q)/3086R$ respectively (S_e and S_m are computed from estimates in Table 3 adjusted to reflect costs per resident, not majority adult); and b = “basic grant” per capita to fund all other provincial services and is defined as $b = g_F - s(q)$ and includes funding for “basic government services,” government administration, and provincial economic development initiatives.

*Data for FY 1997/98 is based upon projected grants provided in the FFC, *The Allocation of Financial Resources Between the National and Provincial Governments: FY 1997/98*, Table 6b.

** Beginning with the FY 2002/03 Budget, the Department Finance adjusted the accounting procedures for funding of the provincial activity. There is therefore an unavoidable break in the data sequence. All financial data from FY 2002/03 onward is recorded on a consistent basis.

APPENDIX A: Model Specification and Proofs

Specification

Demographics:

M = Adult (Voting Age) Population.
M_e = Adult Population Residing in Elite Province(s).
 $\mu = M_e/M$ = Share of Adult Population Residing in Elite Province(s).
N = Elite Residents.

Income:

W = Income (exogenous) of Majority Residents.
Y = Income (exogenous) of Elite Residents.

Technology of Public Service Provision:

q = a·(X/M) = Quality Adjusted (a) Public Employees (X) per Majority Resident (M).
a_e = Years of Training of Elite Public Employees.
a_m = Years of Training of Majority Public Employees.
a_u = Years of Training of “Untrained” Public Employees.

Costs of Public Service Provision:

S = Salary (uniform) Paid to Public Employees.

s_e(q) = S·(X/M) = S·(q/a_e) = Cost per q in Elite Province(s) Using Elite Employees..
s_m(q) = S·(X/M) = S·(q/a_m) = Cost per q in Majority Province(s) Using Majority Employees.
s_u(q) = S·(X/M) = S·(q/a_u) = Cost per q Using Untrained Employees in Unitary Governance.
m = Share of Unitary Governance Employees Considered “Untrained.”

s_F(q) = $\mu \cdot s_e(q) + (1 - \mu) \cdot s_m(q)$ = Average cost per q Under Federalism.
s_U(q) = $m \cdot s_m(q) + (1 - m) \cdot s_u(q)$ = Average Cost per q Under Unitary Governance.

Government Budget Constraint:

g = Redistributive Grant per Majority Resident = $g(\tau) = [\tau \cdot N(\tau) - Z]/M$;
 τ = Redistributive Tax Rate per Elite Resident (N).
N(τ) = Elite Residents Paying the Redistributive Tax Allowing for Tax Avoidance.
 τ_U = Maximal Redistributive Tax Rate.
Z = Outside (Exogenous) Payments (Z > 0) or Transfers (Z < 0) to the Redistribution Budget.

Majority Preferences and Demands Under the q-Regime:*

v(q) = $\lambda \cdot \ln(q)$, $\lambda > 0$.
q*_L(μ , λ) = Demand for q when Elite Capture Equals ϕ_L .
q*_H(μ , λ) = Demand for q when Elite Capture Equals ϕ_H .

$q^*_U(\lambda)$ = Demand for q when Under Unitary Governance.

Majority Citizen Welfare:

$\omega_e(\tau, \varphi) = W + (1 - \varphi_{L,H}) \cdot r_e(\tau; q) + \lambda \cdot \ln(q)$ = Majority Welfare in Elite Province.

φ_L = Low Elite Capture.

φ_H = High Elite Capture.

$r_e(\tau; q) = [g(\tau) - s_e(q)]$ = “Free” Provincial Revenues per Majority Resident.

$\omega_m(\tau, \varphi) = W + r_m(\tau; q) + \lambda \cdot \ln(q)$ = Majority Welfare in Majority Province.

$r_m(\tau; q) = [g(\tau) - s_m(q)]$ = “Free” Provincial Revenues per Majority Resident.

$\omega(\tau, \varphi) = \mu \omega_e(\tau, \varphi) + (1 - \mu) \omega_m(\tau, \varphi)$ = “Average” Majority Welfare under Federalism.

$\omega(U) = W + r(\tau_U; q) + \lambda \cdot \ln(q)$ = Majority Welfare Under Unitary Governance.

$r(\tau_U; q) = [g_U - s_U(q)]$ = “Free” Central Government Revenues per Majority Resident.

Elite Citizen Welfare:

$y(\tau; \varphi_L) = Y - \tau + \varphi_L \cdot r_e(\tau; q)$ = Elite Welfare in Elite Province with Low Capture.

$y(\tau; \varphi_H) = Y - \tau + \varphi_H \cdot r_e(\tau; q) - \rho$ = Elite Welfare in Elite Province with High Capture.

$r_e(\tau; q) = [g(\tau) - s_e(q)] \cdot [M_e/N(\tau)]$ = “Free” Provincial Revenues per Elite Resident.

ρ = Penalty per Elite Resident for Adopting High Capture.

$y(U) = Y - \tau_U$ = Elite Welfare Under Unitary Governance.

Proofs

A.1 Defining Border and Assignments Constraints

q-Border Constraint: Condition (i) for a credible elite punishment requires the elite to prefer the strategy φ^H whenever the majority defects from democratic federalism to administrative federalism with the central government setting taxes at the maximal tax rate, τ_U . In the **q-Regime** this requires:

$$y(\tau_U; \varphi_H) > y(\tau_U; \varphi_L) \Leftrightarrow (\varphi_H - \varphi_L)[g_U - s_e(\mathbf{q})][M_e/N(\tau_U)] > \rho,$$

or:

$$(M_e/M) = \mu > \{\rho[N(\tau_U)/M]\} / \{(\varphi_H - \varphi_L)[g_U - s_e(\mathbf{q})]\} \equiv \mu^{\min}(\mathbf{q}).$$

where μ is the fraction of majority residents who reside in the elite province. We use a strict inequality, assuming that the elite prefers to cooperate rather than defect, all else equal. Because condition (ii) for a credible elite punishment must also hold μ cannot be too large. Thus $N(\tau_U) \geq M_e$, or dividing by M :

$$N(\tau_U)/M = \mu^{\max} \geq \mu = (M_e/M).$$

For high capture to be a credible punishment strategy for a given \mathbf{q} , the constitutionally mandated population size of the elite province must satisfy the **q-Border Constraint** specified as:

$$\mu^{\max} \geq \mu > \mu^{\min}(\mathbf{q}).$$

q-Assignment Constraint: Condition (iii) for credible elite punishments requires that if the central government defects or punishes the elite, it continues to do so within the federal structure where provinces still have fiscal responsibilities – that is, within administrative federalism with tax rates set at τ_U and not unitary governance. The binding constraint is the requirement that when the majority punishes the elite for defection, it does so using provinces rather than moving fully to centralized government provision.¹ For the majority's punishment strategy, condition (iii) requires:

$$\omega(\tau_U; \varphi_H) > \omega(U) \Leftrightarrow s_U(\mathbf{q}) - [s_F(\mathbf{q}) - \varphi_H \cdot \mu \cdot s_e(\mathbf{q})] > \varphi_H \cdot \mu \cdot g_U,$$

which holds when \mathbf{q} meets the constraint:²

$$\mathbf{q} > \mathbf{q}^{\min}(\mu; \varphi_H) = (\varphi_H \cdot \mu \cdot g_U) / [S \cdot \hat{a}(\mu; \varphi_H)].$$

The constraint ensures that the majority's punishment strategy for an elite defection is not unitary governance. \mathbf{q} cannot be set too high either. The maximum value of \mathbf{q} that protects φ_H as a credible punishment strategy will be that \mathbf{q} ($= \mathbf{q}^{\max}$) where the $\mu = \mu^{\min}(\mathbf{q})$ just holds for the constitutionally chosen value of μ . From the definition of $\mu = \mu^{\min}(\mathbf{q})$:

$$\mathbf{q}^{\max}(\mu) = \{g_U \cdot (\varphi_H - \varphi_L) \cdot \mu - \rho \cdot [N(\tau_U)/M]\} / [(\varphi_H - \varphi_L) \cdot \mu \cdot (S/a_e)].$$

The \mathbf{q} -Assignment Constraint is defined by:

$$\mathbf{q}^{\max}(\mu) \geq \mathbf{q} > \mathbf{q}^{\min}(\mu; \varphi_H).$$

q-Border Constraint:* In the q^* -Regime, condition (i) for credible high capture by the elite requires:

$$y(\tau_U; q^*_H, \varphi_H) > y(\tau_U; q^*_L, \varphi_L) \Leftrightarrow \{\varphi_H \cdot [g_U - s_e(q^*_H(\mu, \lambda))] - \varphi_L \cdot [g_U - s_e(q^*_L(\mu, \lambda))]\} \cdot [M_e/N(\tau_U)] > \rho,$$

or:

$$(M_e/M) = \mu > \{\rho[N(\tau_U)/M]\} / \{\varphi_H \cdot [g_U - s_e(q^*_H(\mu, \lambda))] - \varphi_L \cdot [g_U - s_e(q^*_L(\mu, \lambda))]\} = \mu^{\min}(q^*_H),$$

where for pair of values of μ and q^*_H there is an associated value of λ and thus of q^*_L which then allows us to specify a value for $\mu^{\min} = \mu^{\min}(q^*_H)$. Condition (ii) requiring elite political control again sets the upper bound, μ^{\max} , defined as above. Together, the *q*-Border Constraint* is specified as:

$$\mu^{\max} \geq \mu > \mu^{\min}(q^*_H).$$

q-Assignment Constraint:* Again, condition (iii) for credible elite punishment must be met, now

¹ We also require that when the majority defects from the cooperative federal allocation it defects to a regime still using provinces. This is needed so that the elite can still punish the majority for that defection. This requirement is specified as: $\omega(\tau_U; \varphi_L) > \omega(U)$. We show in the full Technical Appendix that this requirement places less of a constraint on the minimal level of \mathbf{q} than does the constraint needed for majority punishment for elite defection.

² From the definitions of $s_U(q)$, $s_F(q)$, and $s_e(q)$: $\hat{a}(\mu; \varphi_{L,H}) = \mu \cdot [(1/a_m) - (1/a_e)] + (1 - m) \cdot [(1/a_u) - (1/a_m)] + (\mu \cdot \varphi_{L,H} / a_e) > 0$.

defined for majority chosen values of q^* as $\omega(\tau_U; \mu, q_H^*(\mu, \lambda), \varphi_H) > \omega(U; q_U^*(\lambda))$ to ensure provinces survive the majority's decision to punish any defecting elite province.³ From Table 1's specifications of $\omega(\tau_U; \mu, q_H^*(\mu, \lambda), \varphi_H)$ and $\omega(U; q_U^*(\lambda))$, this requirement reduces to:

$$[v(q_H^*(\mu, \lambda)) - p_H(\mu) \cdot q_H^*(\mu, \lambda)] - [v(q_U^*(\lambda)) - p_U \cdot q_U^*(\lambda)] > \varphi_H \cdot \mu \cdot g_U,$$

where the LHS measures the difference between the consumer surplus earned by a typical majority resident under federalism with τ_U when the price of assigned services under federalism is $p_H(\mu)$ and that surplus earned by the majority resident under unitary democracy when the price of a comparable service bundle under unitary governance is p_U . Since $p_U > p_H(\mu)$, consumer surplus is greater under federalism. Because of elite capture, however, federalism also imposes an income loss $\varphi_H \cdot \mu \cdot g_U$ on the average majority resident. The more important are assigned services to the majority ($\lambda \uparrow$), the larger becomes the gain in consumer surplus from moving to federalism from unitary governance. The value of λ where the inequality above just holds defines a minimal value for λ , denoted as $\lambda^{\min} = \lambda^{\min}(\mu)$. For each value of μ there is an associated value of q_H^* that defines the minimal q_H^* consistent with a credible elite punishment:

$$q_H^*(\mu, \lambda) > q_H^{*\min}(\mu) = q_H^*(\mu, \lambda^{\min}(\mu)).$$

As for the \mathbf{q} -Regime here too there is an upper bound on majority demanded q consistent with a feasible federal allocation, now specified as an upper limit on λ . Given μ and the cost of high capture, ρ , there is a value of λ for which high capture is no longer a credible choice for the elite: $\mu^{\max} = \mu^{\max}(\lambda)$: $\lambda^{\max} = \lambda^{\max}(\mu)$. For each value of μ , define: $q_H^{*\max}(\mu) = q_H^*(\mu, \lambda^{\max}(\mu))$. Given μ , the q^* -Assignment Constraint is specified as:

$$q_H^{*\max}(\mu) \geq q_H^*(\mu, \lambda) > q_H^{*\min}(\mu).$$

A.2. Specifying Feasible and Sustainable Democratic Federalism

We outline the proofs here. The algebraic details are provided in a Technical Appendix available from the authors upon request.

LEMMA 1: CREDIBLE ELITE PUNISHMENTS IN THE \mathbf{q} -REGIME. *For political economies satisfying the \mathbf{q} -Border and \mathbf{q} -Assignment Constraints, the high capture strategy will be a credible punishment strategy for the elite whenever the majority adopts a revenue-maximizing redistributive tax rate.*

OUTLINE OF PROOF: To show sufficiency of the \mathbf{q} -Border and \mathbf{q} -Assignment Constraints for meeting the three conditions for high capture, φ_H , to be a credible elite punishment, first show that if the upper bound on the \mathbf{q} -Assignment Constraint is met, then $g_U - \rho/(\varphi_H - \varphi_L) \geq S\mathbf{q}/a_e = s_e(\mathbf{q})$ or $1 \geq \rho/(\varphi_H - \varphi_L) \cdot [g_U - s_e(\mathbf{q})]$. Multiplying both sides through by $N(\tau_U)/M$ then shows that $\mu^{\max} \geq \mu = M_e/M$, and therefore $N(\tau_U) \geq M_e$, satisfying condition (ii) for a credible punishment. If the lower bound on the \mathbf{q} -Border Constraint is met, then $\mu = M_e/M > \{\rho[N(\tau_U)/M]\}/\{(\varphi_H - \varphi_L)[g_U - s_e(\mathbf{q})]\}$, which implies, $(\varphi_H - \varphi_L)[g_U - s_e(\mathbf{q})][M_e/N(\tau_U)] > \rho$. Adding $(Y - \tau_U)$ to both sides and re-arranging terms gives $y(\tau_U; \varphi_H) > y(\tau_U; \varphi_L)$, satisfying condition (i) for a credible elite punishment. Finally, from the lower bound of the assignment constraint, $\mathbf{q} > (\mu \cdot g_U \cdot \varphi_H)/[S \cdot \hat{a}(\mu)]$. Multiplying both sides by $S \cdot \hat{a}(\mu)$ and using the definitions for $s_e(\mathbf{q})$, $s_m(\mathbf{q})$, $s_u(\mathbf{q})$, $s_F(\mathbf{q})$, and $s_U(\mathbf{q})$, will give

³ The requirement that provinces survive the majority's decision to defect – $\omega(\tau_U; \mu, q_L^*(\mu, \lambda), \varphi_L) > \omega(U; q_U^*(\lambda))$ – is also met if the “tighter” requirement that provinces survive the majority's decision to punish is satisfied. This is shown in the full Technical Appendix.

$[s_U(\mathbf{q}) - s_F(\mathbf{q})] > \varphi_H \cdot \mu \cdot [g_U - s_e(\mathbf{q})]$. Adding $W + g_U + v(\mathbf{q})$ to both sides and again re-arranging terms and using the definitions of $\omega(\tau_U; \varphi_H)$ and $\omega(U)$, we have $\omega(\tau_U; \varphi_H) > \omega(U)$. And since $\omega(\tau_U; \varphi_L) > \omega(\tau_U; \varphi_H)$ for $\varphi_H > \varphi_L$, it also follows that $\omega(\tau_U; \varphi_L) > \omega(U)$ as well. This condition (iii) for a credible punishment is met. Necessity is shown in the complete Technical Appendix.

LEMMA 2: CREDIBLE ELITE PUNISHMENTS IN THE q^* -REGIME. *For political economies satisfying the q^* -Border and q^* -Assignment Constraints, the high capture strategy will be a credible punishment strategy whenever the majority adopts a revenue-maximizing redistributive tax rate.*

OUTLINE OF PROOF: For sufficiency, use the same argument as for Lemma 1 to show that if the upper bound of the q^* -Border Constraint is met, then $N(\tau_U) \geq M_e$ and condition (ii) for the a credible punishment is satisfied. If the lower bound of the q^* -Border Constraint is met, then by the argument presented above for Lemma 1, condition (i) for a credible punishment holds. Finally, to show that condition (iii) is met when the q^* -Assignment Constraint holds, note that because $v'(q) > 0$ and $v''(q) < 0$, the majority's preferences for q are single-peaked. If the assignment constraint is to hold for a given λ and $q^*_H(\mu, \lambda)$ is the preferred level of q for those values of μ and λ , then any $q \neq q^*_H(\mu, \lambda)$ gives the majority less utility than that obtained at $q^*_H(\mu, \lambda)$. This is the case for the two values of q equal to either $q^*_H^{\max}(\mu)$ and $q^*_H^{\min}(\mu)$. By definition, $q^*_H^{\max}(\mu)$ and $q^*_H^{\min}(\mu)$ give a majority utility equal to that available under unitary governance – $\omega(U; q_U^*(\lambda))$. Thus $\omega(\tau_U; \varphi_H) = \omega(\tau_U; \mu, q^*_H(\mu, \lambda), \varphi_H) > \omega(U; q_U^*(\lambda)) = \omega(U)$.⁴ Necessity is shown in the complete Technical Appendix.

LEMMA 3: FEASIBLE FEDERAL CONSTITUTIONS: *When the Border and Assignment Constraints of Lemmas 1 and 2 are met, the set of feasible constitutions allowing democratic federalism is smaller in the q^* -Regime than the q -Regime. The maximal size of the elite province is the same in both regimes.*

OUTLINE OF PROOF: First, to show that $\mu^{\min}(q_H^*) > \mu^{\min}(\mathbf{q})$ for common values $q_H^* = \mathbf{q}$, we proceed by construction. Since $q_H^*(\mu, \lambda) > q_L^*(\mu, \lambda)$, it will be true that $0 > -\varphi_L \cdot [s_e(q_H^*(\mu, \lambda)) - s_e(q_L^*(\mu, \lambda))]$. Under the assumption that $q_H^*(\mu, \lambda) = \mathbf{q}$, it will also be true that $(\varphi_H - \varphi_L) \cdot [g_U - s_e(\mathbf{q})] > (\varphi_H - \varphi_L) \cdot [g_U - s_e(q_H^*(\mu, \lambda))] - \varphi_L \cdot [s_e(q_H^*(\mu, \lambda)) - s_e(q_L^*(\mu, \lambda))]$. Adding $[\varphi_L \cdot g_U - \varphi_L \cdot g_U]$ to the RHS and rearranging terms, implies that $\rho[N(\tau_U)/M] / \{\varphi_H \cdot [g_U - s_e(q_H^*(\mu, \lambda))] - \varphi_L \cdot [g_U - s_e(q_L^*(\mu, \lambda))]\} \equiv \mu^{\min}(q_H^*) > \mu^{\min}(\mathbf{q}) \equiv \{\rho[N(\tau_U)/M]\} / \{(\varphi_H - \varphi_L)[g_U - s_e(\mathbf{q})]\}$, for common values of $q_H^*(\mu, \lambda) = \mathbf{q}$. Second, when the Assignment Constraints for the two regimes hold, we know $[v(q_H^{*\min}(\mu)) - p_H(\mu) \cdot q_H^{*\min}(\mu)] - [v(q_U^*) - p_U \cdot q_U^*] = \varphi_H \cdot \mu \cdot g_U = \mathbf{q}^{\min}(\mu) \cdot S \cdot \hat{a}(\mu; \varphi_H)$, must hold from the definitions of $q_H^{*\min}(\mu)$ and $\mathbf{q}^{\min}(\mu)$. Next, since $q_H^{*\min}(\mu) \neq q_U^*$ when demand curves slope downward, it will also be true that $[v(q_U^*) - p_U \cdot q_U^*] > [v(q_H^{*\min}(\mu)) - p_U \cdot q_H^{*\min}(\mu)]$, since q_U^* is optimal for the price p_U . Re-arrange this expression and add $[p_U \cdot q_U^* - p_H(\mu) \cdot q_H^{*\min}(\mu)]$ to both sides. This gives: $[p_U - p_H(\mu)] \cdot q_H^{*\min}(\mu) > [v(q_H^{*\min}(\mu)) - p_H(\mu) \cdot q_H^{*\min}(\mu)] - [v(q_U^*) - p_U \cdot q_U^*] = \mathbf{q}^{\min}(\mu) \cdot S \cdot \hat{a}(\mu)$, using the step above. Finally, from the definitions of $p_U = s_U'(q)$, $p_H(\mu) = s_F'(q) - \varphi_H \cdot \mu \cdot s_e'(q)$, and $\hat{a}(\mu; \varphi_H)$, we can show $[p_U - p_H(\mu)] \cdot q_H^{*\min}(\mu) = [S \cdot \hat{a}(\mu; \varphi_H)] \cdot q_H^{*\min}(\mu)$. Thus $[S \cdot \hat{a}(\mu; \varphi_H)] \cdot q_H^{*\min}(\mu) > \mathbf{q}^{\min}(\mu) \cdot [S \cdot \hat{a}(\mu; \varphi_H)]$, from which it follows that $q_H^{*\min}(\mu) > \mathbf{q}^{\min}(\mu)$. This completes the proof of Lemma 3.

PROPOSITION 1: SUSTAINABLE DEMOCRATIC FEDERALISM: *For either the q - or q^* -Regime and political economy satisfying the appropriate Border and Assignment Constraints, there exists a grim trigger strategy equilibrium in which democratic federalism is sustainable. In that equilibrium:*

⁴ As for the q -Regime, we will also require that the majority defection strategy even if the elite cooperates retains the use of provinces – that is, $\omega(\tau_U; \varphi_L) > \omega(U)$. We show in the full Technical Appendix that this constraint is met if the requirement that provinces remain in place if majority punishes elite defection – that is, if $\omega(\tau_U; \varphi_H) > \omega(U)$.

1) The central government majority chooses a level of redistributive transfers bounded between a maximal grant acceptable to the elite and a minimal grant acceptable to the majority for appropriate elite and majority discount factors, and,

2) The elite province(s) adopts the low-capture strategy.

We prove existence of a democratic federalism as a subgame perfect Nash equilibrium for the \mathbf{q} - and \mathbf{q}^* -Regimes for at least some discount factor bounded as $0 < \delta \leq 1$. The proof moves in three steps.

STEP 1: Specify the minimal grant (tax rate) the majority will accept and the maximal grant (tax rate) the elite will allow such that the majority and elite prefer democratic federalism when the other prefers democratic federalism. The minimal grant acceptable to the majority will be unambiguously positive, while the maximal grant that the elite will be pay will be less than that available from maximal taxation.

STEP 2: Show that the elite's maximal grant is larger than the majority's minimal grant for either regime and for the potentially most favorable discount factor, $\delta = 1$:

$$\mathfrak{R}(\mathbf{q} \text{ or } \mathbf{q}^*, \delta = 1) = g^{\max}(\mathbf{q} \text{ or } \mathbf{q}^*, 1) - g^{\min}(\mathbf{q} \text{ or } \mathbf{q}^*, 1) > 0.$$

If $\mathfrak{R}(\mathbf{q} \text{ or } \mathbf{q}^*, \delta = 1) > 0$, then there is a economically feasible fiscal policy in the annual policy game that will sustain democratic federalism, at least for infinitely far-sighted majority and elite residents ($\delta = 1$).

STEP 3: Show that the more general specification $\mathfrak{R}(\mathbf{q} \text{ or } \mathbf{q}^*, \delta) = g^{\max}(\mathbf{q} \text{ or } \mathbf{q}^*, \delta) - g^{\min}(\mathbf{q} \text{ or } \mathbf{q}^*, \delta)$ is a continuous function of δ , implying there is a $\delta < 1$ (though perhaps only slightly less than 1) where $\mathfrak{R}(\mathbf{q} \text{ or } \mathbf{q}^*, \delta) > 0$ continues to hold.

The full details of the algebra for STEPS 1-3 as well as the specifications for $g^{\max}(\mathbf{q}, \delta)$, $g^{\min}(\mathbf{q}, \delta)$, $g^{\max}(\mathbf{q}^*, \delta)$, and $g^{\min}(\mathbf{q}^*, \delta)$ are provided in a longer Technical Appendix available upon request.

APPENDIX B: Political Economy of South Africa at Transition

Demographics and Incomes: The initial, pre-democracy elite and majority voting age populations were $N_0 = 9.6$ million and $M = 25$ million residents. Elite and majority pre-democracy incomes are $Y_0 = 86,000$ (real 2000) Rand/Elite Adult ($\approx \$22,000$ USD in 1996) and $W_0 = 9,700$ (real 2000) Rand/Majority Adult ($\approx \$2,500$ USD), respectively. Because no South African data were available to directly estimate the elite's response to redistributive taxation, we calibrated β to imply a plausible peak to the national revenue hill from elite resident taxation. Setting $\beta = .00015$ implies a revenue maximizing tax rate of approximately 67 percent; see Gruber and Saez (2002).

Technology and Costs of Redistributive Services: Redistributive public services per majority resident, q , are specified as proportional to units of *training adjusted public employees per majority resident*: $q = a \cdot (X/M)$, where a is the level of training of the public employees. We use as our estimates of training, the years of schooling of white elite teachers ($a_e = 17$ years), certified trained majority teachers ($a_m = 14$ years), and uncertified or untrained majority teachers ($a_u = 7$ years), respectively. Table 2 provides estimates of q for post-apartheid South Africa for the constitution's specified redistributive services: K-12 education, primary health care services, and redistributive transfers. For comparison, we have estimated q in the last years of apartheid to be .36.

The cost per majority resident of providing q is $s = S \cdot (X/M)$, where S is the uniform salary paid to public employees, (X/M) is public employees per majority resident. From the specification of q , costs in the elite province equal $s_e(q) = S \cdot (q/a_e)$ and in the majority province, $s_m(q) = S \cdot (q/a_m)$. Under unitary governance, when untrained public employees may be required, the per unit cost is $s_u(q) = m \cdot s_m(q) + (1 - m) \cdot s_u(q)$, where $s_u(q) = S \cdot (q/a_u)$ and where m is the share of majority residents that served by majority trained employees. m was estimated to be .825. S is the average teacher salary in 2001 equal to \$80,000 Rand per employee. Therefore:

$$\begin{aligned} s_e(q) &= (S/a_e) \cdot q = (80,000/17) \cdot q = 4,706 \cdot q \text{ (Real 2000) Rand/Majority Adult.} \\ s_m(q) &= (S/a_m) \cdot q = (80,000/14) \cdot q = 5,714 \cdot q \text{ (Real 2000) Rand/Majority Adult.} \\ s_u(q) &= (S/a_u) \cdot q = (80,000/7) \cdot q = 11,428 \cdot q \text{ (Real 2000) Rand/Majority Adult.} \end{aligned}$$

Outside Transfers: Payments made by the central government to KwaZulu-Natal as part of the implicit agreement for the IFP to peacefully join the new democracy are estimated to be 600 Million Rand per year.

Preferences and Discount Factors: The majority residents' demand for redistributive public goods is specified as $\lambda \cdot v(q) = \lambda \cdot \ln(q)$, where λ measures the intensity with which the majority demands redistributive goods is bounded as $6100 \geq \lambda \geq 4230$. The lower bound corresponds to the level of $q = .79$, chosen during the last year (FY 2008/09) of the Mbeki presidency when it is plausible to assume he responded to the demands of the ANC's majority member at that time; see Table 2. The upper bound is set under the assumption that the majority will demand that level of education and health care services currently received by upper income households plus twice the currently proposed level of transfers for poor children, disabled, and elderly persons, implying a value of $q = 1.14$.

The discount factor for elite residents assumes a rate of time preference of .08, the real rate of return on ten year South African bonds over the period 1996-2006: $\delta = 1/(1 + r) = .93$. The upper estimate for the poor majority's δ assumes that the poor are not credit constrained and can access the capital markets at the same rate as can the elite; therefore, $\delta = .93$. A lower bound estimate for δ is from Karlan and Zinman (2008)

estimate the rate of time preference for South Africa's urban poor as $r = 2.00$ for which $\delta = .33$.

Elite Rates of Capture and Protest Costs: Estimates of the elite's potential rate of capture of unallocated grants are from recent estimates of the rates of capture by bureaucrats running Ugandan local schools: $\varphi^L = .20$ and $\varphi^H = .85$; See Reinikka and Svensson (2003, 2004). These estimates are consistent with the international literature on the ability of local officials to capture central government transfers for their own uses; see, for example, Duggan (2000) and Gordon (2004). The estimates of protests costs born by the elite when they adopt high capture are from Collins and Margo (2007). They estimate the decline in property values of cities having experienced a moderate to severe urban riot during the 1960's and 1970's as ranging from $\frac{1}{2}$ to 1 percent of property owners' annual income; we set protest costs imposed on elite residents from engaging in high capture at .01 of elite resident income or $\rho = 860$ (real 2000) Rand/Elite Resident (= .01•86,000 Rand/Elite Resident).

A full Data Appendix available upon request and provides the details and data sources for Table B.1.