"Sons of the Soil"

A Model of Assimilation and Population Control

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Abstract

We model the cultural outcomes of "sons of the soil" conflicts. These are conflicts between the local inhabitants of a particular region and migrants to the region, typically belonging to a dominant national culture. Our goal is to understand the conditions under which migrants assimilate into the local culture, or the locals assimilate into the national culture. The model has two main actors: a national elite of a dominant ethnic group, and a regional elite seeking to promote the traditional culture of the sons of the soil. Both actors have parallel strategies, viz. assimilating the other group into their culture, controlling the size of the migrant population, doing both, or allowing market forces to determine outcomes. The model has three possible cultural outcomes: the culture tips to that of the sons of the soil; the culture tips to that of the migrant group; the region remains bi-cultural with each group retaining its own culture. We illustrate these outcomes through four cases: (i) Bengalis and Assamese in the Indian state of Assam, (ii) Russians and Estonians in the Ida-Virumaa county of Estonia, (iii) Tamils and Sinhalese in Jaffna and the Eastern Province of Sri Lanka, and (iv) Castilians and Catalans in the autonomous community of Catalonia in Spain.

Key words: sons of the soil, assimilation, population control, ethnic conflict

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1 Introduction

Sons of the soil are populations that are culturally dominant in a region of a country, demographically subordinate to the dominant culture of that country, and threatened by the migration of settlers from the dominant culture into their historical homeland. Weiner (1978) observed the incendiary nature of this threat in his studies of communal and linguistic conflicts in India. Fearon and Laitin (2003, 2011) subsequently elaborated on how these communal conflicts become the foundation for long and deadly civil wars, noting that a significant proportion of post-World War II civil war onsets were originally sons of soil insurgencies.

In encouraging members of the dominant group to settle in the traditional homeland of a minority population, national elites are motivated in part by the desire to build national cultures such that the boundaries of the state coincide with the boundaries of the nation. This may succeed, as with the case of homesteaders in 19th century America decimating local populations; but it may backfire, as with Norman settlers into Britain in the 11th century whose descendants became Anglo-Saxons. Meanwhile, regional elites face marginalization should their population assimilate into the dominant culture, and they would lose their claim to become future leaders of a new nation, separate from the state that now rules over them. They are, therefore, motivated by preserving the culture, and identity, of the sons of the soil.[1]

In this paper, we are interested in understanding the conditions under which nation-building strategies—by both central elites and aspiring regional elites—succeed. We study these conditions by examining the determinants of the various cultural outcomes of sons of the soil disputes. More specifically, we ask, under what conditions do the settlers from the dominant culture assimilate into the culture of the sons of the soil, leading to a "monocultural outcome" in which the regional culture becomes predominant? For example, Spanish-speaking Andalusian migrants from southern Spain into Catalonia have since the fall of the Franco regime tended to assimilate culturally and linguistically into Catalan culture and language. Alternatively, under what conditions do the sons of the soil assimilate into the dominant national culture, leading to a different monocultural outcome in which the national culture becomes predominant? For example, Spanish-speaking autochthons in Texas largely assimilated into the culture and language of Anglo settlers in the 19th century. Finally, under what conditions is there a stand-off between

[1] Gellner (1983, 58-62) explores the role of assimilation to the dominant culture and the incentives to promote a regional culture in his classic allegory of Megalomania and Ruritania.

the two cultures in which a "bi-cultural outcome" persists? For example, massive Han settlements in Tibet have neither turned Tibetans into Hans, nor Hans into Tibetans.

We develop a framework to analyze the various cultural outcomes of such sons of the soil struggles. Our framework builds upon the fact that regional and national elites have used a mix of strategies to influence the cultural outcome. Though our model provides a general theory of the struggle for cultural dominance between the regional sons of the soil and the central state, we are primarily motivated by the following four cases:

1. In the Indian state of Assam, Bengali elites encouraged young Bengali migrants to resettle in Assam in hopes of finding decent paying jobs, while the local Assamese elites tried to keep the Bengali migrants out.

2. In the Sinhalese-Tamil conflict in Sri Lanka, Sinhalese elites encouraged Sinhalese migrants to resettle in Jaffna and the Eastern Province, and tried to assimilate the Tamils of this region into the Sinhalese culture, while the Tamil elites tried only to keep the Sinhalese migrants out.

3. In the Ida-Virumaa county located on the northeastern boarder of post-Soviet Estonia, Russian-speaking elites exploited the wide availability of Russian language media not just to sustain their own culture but also to project it onto non-Russian-speakers with the hope that they would either learn Russian or emigrate to the core Estonian population areas. Meanwhile, the Estonian elite in Tallinn used its control over the Russian border to prevent large-scale in-migration of Russians while also using the national education system and language requirements for public employment to attract young Russians into Estonian medium schools.

4. In the case of Catalonia, each of the Spanish and Catalan elites have tried to assimilate the other group into their own culture by promoting their respective languages in public education and the media.

These four examples appear different, but we demonstrate how all of them can be analyzed through the lens of a single two-stage model that we develop. The first stage of the model is a *contest* between the national elite of a dominant ethnic group in a country and a regional elite that seeks to preserve and promote the traditional culture of the sons of the soil. The outcome of this contest influences the outcome of the second stage *coordination game* between members of the population that belong to one of two groups: the sons of the soil, who, at the very start of the game, have the regional culture, and the migrants, who, at the same point, have the dominant culture.

In the coordination stage, each individual decides whether to keep her own culture or switch to the other culture. Keeping one's native culture is costless, but switching is costly. Incentives to conform with the majority culture arise because each individual is randomly matched with another member of the population, and receives a benefit only if she has the same culture as her match. This renders the coordination stage of our model to be a standard tipping model with two initially distinct groups.[2] We use a simple refinement motivated by evolutionary stability to select equilibria, and hence outcomes, of the coordination stage game. An important premise of our model worth emphasizing is that cultural decisions are instrumental. For instance, it does not pay to teach one's children only the regional language when the rest of one's community communicates in the national language.

The fraction of individuals who start the coordination stage with the regional or national culture is determined by the population control policies of each elite in the first period. These elites can also try to lower the costs for the dominant culture individuals to switch to the regional culture, while the national elite can try to lower the costs for sons-of-the-soil individuals to switch to the national culture, each through assimilation policies. Therefore, each elite group has a parallel set of choices in the first stage: (i) whether or not to exert effort toward population control, and (ii) whether or not to exert effort in assimilating the population of the other group.[3]

For the dominant culture elites, population control refers to state-supported policies that promote in-migration of the dominant culture individuals or re-settlement of the sons of the soil individuals to change the ethnic balance of the region in favor of the dominant ethnic group in the country. Assimilation refers to the use of nonviolent cultural policies such as the design of primary education curricula, which work in homogenizing the country's population—especially in reducing the costs of the sons of the soil population to adopt the national culture.

Analogously, for the regional elites, population control refers to attempts that either encourage return migration of settlers or induce the central government to limit the number of any future in-migrants. Assimilation refers to efforts to induce migrants to

[2]Bowles (2009) discusses a number of applications of these models including the celebrated residential segregation model of Schelling (1971).

[3]Both population control and assimilation strategies can be repressive. For example, the national elite may use constitutional measures, economic sanctions or even violence to make autonomy more difficult. Similarly, the regional elites may encourage violent confrontations with in-migrants and the state police forces protecting them to fight the population control strategies of the central government. We consider repression to be a dimension of, rather than an alternative to, assimilation and population control, and we do not separately analyze it in this paper.

appreciate and adopt local cultural norms and practices, for example by opening schools where the local language is taught or is a medium of instruction.

Since the choices of the elites in the first stage affect the coordination outcome of the second stage, one of the ancillary contributions of this paper is to extend the standard tipping model to allow elites to fight a contest to influence the cultural choices of individuals, and hence the coordination outcome. We use the model to rationalize the strategies of the elites in the four cases that motivate it, and demonstrate how it provides an understanding of the cultural outcomes that have prevailed.

2 Model

2.1 Setup

There is a Sons of the Soil (SoS or S) elite, a Dominant Culture (DC or D) elite, and a large population of individuals, fraction λ_0 of whom are initially members of the SoS. These individuals interact in two stages. In the first stage (the "elite stage"), each elite group $i \in \{S, D\}$ decides whether or not to use population control to influence the fraction of population that is SoS versus DC, a decision we indicate by $p_i \in \{0, 1\}$, and whether or not to use assimilation policies to attract members of the other group to switch to their culture, a decision we indicate by $a_i \in \{0, 1\}$.

In the second stage (the "population stage"), each member of the population decides whether to retain his or her own culture or adopt the other culture. Retaining one's own culture is costless but switching to the other culture is costly. We let $c_{S,0} > 0$ be the initial cost to an SoS individual from switching to the national culture, and $c_{D,0} > 0$ the initial cost to a DC individual from switching to the regional culture. Each SoS person begins the population stage with the regional culture while each DC person begins the stage with the national culture. Thus, the fraction of SoS individuals that initially have the regional culture is $\alpha_0 = 1$ while the fraction of DC individuals that initially have the regional culture is $\beta_0 = 0$. We let α denote the fraction of SoS that retain the regional culture and β the fraction of DC individuals that adopt the regional culture. These are equilibrium quantities that will be derived below.

The policy of population control by the elite of each group influences the shares of the SoS and DC populations, while the policy of assimilation influences the cost that members of the other group pay to switch their culture. We now describe how these policies work, and then discuss the objectives of each of the actors.

2.2 Elite Strategies

Most elite policies have implications for both population control and assimilation. For example, population control sends signals of the future returns for any group of assimilation. And, lowering the costs of assimilation may induce migration. However, for modeling purposes, we separate the two policies.

To capture the effects of population control by the elites, we assume that given the starting share λ_0 of SoS individuals in the population, a random variable

$$\hat{\lambda} \text{ is drawn uniformly from the interval } \left[\lambda_0 - \frac{1}{2}p_D, \lambda_0 + \frac{1}{2}p_S\right] \tag{1}$$

and the share of SoS individuals in the population stage is simply

$$\lambda = \max\left\{0, \min\{\hat{\lambda}, 1\}\right\}. \tag{2}$$

This technology for population control reflects the idea that efforts at population control by the SoS elite make higher values of λ (i.e., a higher share of SoS individuals) more likely, while efforts at population control by the DC elite make smaller values of λ more likely; but the outcome of population control policies is nevertheless uncertain. Thus the use of population control by either elite refers to strategies such as migration and settlement policy that influence the demographic ratio of sons-of-the-soil to dominant culture individuals in the region.

Similarly, to capture the effects of assimilation, we assume that given the starting values of $c_{S,0}$ and $c_{D,0}$, the costs to the members of the SoS and DC groups from switching to the other culture are, respectively,

$$c_S = (1 - a_D)c_{S,0} \quad \text{and} \quad c_D = (1 - a_S)c_{D,0}. \tag{3}$$

Therefore, the assimilation policy for the SoS elite amounts to eliminating the cost for DC individuals to adopt the regional culture, while the assimilation policy for the DC elite amounts to eliminating the cost for SoS individuals to adopt the national culture.[4] In general, we think of policies that influence the costs of cultural switching for members of the population, such as education and media policies, as assimilation policies.

[4]While this is a stark assumption, it serves to simplify the analysis. Additionally, our qualitative results are not fragile to natural relaxations of this assumption.

2.3 Payoffs to Group Members

After the members of the population make their decisions of whether to keep their own culture or to switch to the other culture, each is matched randomly with another individual from the population. If two individuals who have chosen the same culture get matched then each gets a payoff of $b > 0$; otherwise, each gets a payoff of 0. For cultural switching to ever be an attractive choice when assimilation policies are not in effect, we will assume that the benefit from a successful match b is larger than both of the initial costs of switching, $c_{D,0}$ and $c_{S,0}$.

In a large population, the probability that an individual matches with an SoS person that has retained the regional culture is $\alpha\lambda$, while the probability that the individual matches with a DC person that has adopted the regional culture is $\beta(1-\lambda)$. This means that the probability of a profitable match for an individual that has chosen the regional culture is

$$\tilde{\lambda}(\alpha, \beta) := \alpha\lambda + \beta(1-\lambda). \tag{4}$$

Similarly, the probability of a profitable match for an individual who has chosen the national culture is $1-\tilde{\lambda}(\alpha, \beta)$. The payoff to an SoS individual from retaining the regional culture is $\tilde{\lambda}(\alpha, \beta)b$, and the payoff from adopting the national culture is $[1-\tilde{\lambda}(\alpha, \beta)]b - c_S$. The payoff to a DC individual from adopting the regional culture is $\tilde{\lambda}(\alpha, \beta)b - c_D$, and the payoff from retaining the national culture is $[1-\tilde{\lambda}(\alpha, \beta)]b$.

2.4 Payoffs to the Elites

We assume that the SoS elite maximize the fraction of individuals who adopt the regional culture in the second period net of any costs they incur for implementing the population control and assimilation policies. Similarly, the DC elite maximize the fraction of individuals who adopt the national culture net of any costs they incur. Formally, the payoffs to the SoS and DC elites are

$$\begin{aligned} &\text{SoS elite payoff:} && \tilde{\lambda}(\alpha, \beta) - p_S P_S - a_S A_S(c_{D,0}/2b) \\ &\text{DC elite payoff:} && 1 - \tilde{\lambda}(\alpha, \beta) - p_D P_D - a_D A_D(c_{S,0}/2b) \end{aligned} \tag{5}$$

where (α, β) are the fractions of SoS and DC individuals who retain or adopt the regional culture in the subsequent population stage, P_S and P_D are the costs of population control to SoS and DC elites respectively, and $A_S(c_{D,0}/2b)$ and $A_D(c_{S,0}/2b)$ are the respective

costs of implementing the assimilation policies. Note that A_S and A_D are parameters—they are the marginal costs for the elite of lowering the switching costs for group members, normalized by the benefit of a profitable match.[5]

3 Illustrative Cases

In this section, we code the four cases that we mentioned in the introduction according to the parameters of the model presented in the previous section. We also describe the choices made by the SoS and DC elites. Table 1 presents a summary.

We provide details for each case in the next four subsections, but before that we provide some background to our coding decisions. First, for each case our story begins at the point of independence or constitutional change when the SoS issue becomes politically salient in a new regime. Our estimates of the SoS population size, λ_0, and other parameters are best guesses from examination of standard sources.

Second, each cost parameter $c_{S,0}$ and $c_{D,0}$ reflects both the logistical costs for an individual to switch to a different culture given the available resources, as well as any possible opportunity cost associated with abandoning one's own culture. For example, if switching cultures entails switching languages then these costs could reflect the linguistic distance between the DC and SoS languages, the search costs of finding a school where the medium of instruction is in a different language, and the job opportunities that become available or are foregone by switching languages.

Third, we interpret the parameters a_S and a_D that scale the costs to the elites of the SoS and DC of implementing the assimilation policies as also reflecting the logistical costs of implementing these policies. These costs depend on the administrative resources available to the elites. For example, they may reflect whether or not the elites have autonomous education policy-making capacity, or whether they have access to economic resources from the diaspora to disseminate cultural material, or similar resources.

[5]The fact that the elites' costs of implementing the assimilation policy is increasing in the switching costs for group members is natural: the more costly it is for an individual to switch languages, the more costly it should be for the elite to lower the switching cost. If this were not the case, then as the switching costs for members of one group (e.g., $c_{S,0}$ or $c_{D,0}$) increases, assimilation would be a *more attractive* policy for elite of the other group. On the other hand, the normalization of these costs by $1/2b$ is without loss of generality, and serves to scale the marginal costs A_S and A_D to the size of the economy.

Table 1: Notation Summary and Coding for Illustrative Cases

	Notation	Assam	Ida-Virumaa	Jaffna & E.P.	Catalonia
Start of period	T_0	1948	1991	1947	1975
Sons of the soil	SoS	Assamese	Russian-speakers	Tamils	Catalans
Dominant culture	DC	Bengalis	Estonians	Sinhalese	Castilians
Fraction of SoS at T_0	λ_0	∼65%	∼82%	∼90%	∼65%
Cost to an SoS from switching to DC culture at T_0	$c_{S,0}$	High	High	Medium	Low
Cost to a DC from switching to SoS culture at T_0	$c_{D,0}$	High	Low	High	Low
Cost of population control for SoS elite	P_S	Low	High	Low	High
Cost of population control for DC elite	P_D	Low	Low	Medium	High
Cost to implement assimilation policies for SoS elite	$A_S(c_{D,0}/2b)$	High	Low	High	Low
Cost to implement assimilation policies to DC elite	$A_D(c_{S,0}/2b)$	High	Low	Low	Low
SoS elite decision to use pop. control and assimilation	(p_S, a_S)	$(1,0)$	$(0,1)$	$(1,0)$	$(0,1)$
DC elite decision to use pop. control and assimilation	(p_D, a_D)	$(1,0)$	$(1,1)$	$(1,1)$	$(0,1)$

3.1 Assam

Assam, in India's far northeast, is a state of about 31 million people. Once pacified by the British in the 1820s, Assam became a center for settlers from many other states, but mostly Bengal, as it was part of the Bengal province until 1874 (Weiner, 1978, 80). It was incorporated into the new province of Eastern Bengal and Assam in 1905 and re-established in 1912 as Assam Province.

In the 1830s, the Governor General Lord William Bentinck worked to bring tea to Assam, and it became a booming business, but lack of labor was a key drawback. The indigenous population was decimated by the aftershocks of Burmese invasions and infectious disease from contact with the British; besides, the Assamese from the valleys did not want to work in the jungles. Getting workers proved difficult until British contractors recruited indigent tribesmen from the hill areas of southern Bihar. By 1921, the census estimated that tea migrants and their descendants were 1.3 million, about 17% of the state's population. Unwilling to entrust local Assamese with estate management,

the British trained Bengali officers to work in Assam, and their descendants, educated in British schools, became the first generation of professionals in Assam.

These Bengalis persuaded the British that Assamese was a poor dialect of Bengali, so the latter became the official standard until 1871, when an American missionary group persuaded the British to give Assamese official status. With Bengali as the official language, young Bengalis flooded Assam in search of middle class jobs. To make matters even worse for the autochthonous, when the Muslim League got control over the state government in 1936, it pushed hard for more immigration to ensure a Muslim majority, with many of the migrants coming from Bengal (Chattopadhyay, 1990, 22).

After partition in 1947, the starting point of our analysis, Assam became a constituent state in independent India. In 1961, the Government of Assam passed legislation making use of the Assamese language compulsory. It was withdrawn later under pressure from the local Bengali population. In the 1970s nationalist claims escalated with armed groups like United Liberation Front of Asom demanding separation from India, ultimately reaching civil war proportions. In the 1980s there was another agitation triggered by the discovery of a sudden rise in registered voters on electoral rolls. Assamese protesters tried to force the government to identify and deport foreigners illegally migrating from neighboring Bangladesh. The agitation ended after an accord between its leaders and the Union Government. But as this accord remained unimplemented, discontent simmered. In our framework, Bengali migrants from both West Bengal and Bangladesh have turned Assamese into sons of the soil.

The SoS in this case are the Assamese and the DC are the Bengali speakers. At the time of independence, the share of Assamese speakers (λ_0) was greater than 50%, but not predominant. The costs of population control (P_S and P_D) were relatively low for both the Assamese and Bengali elites. With statehood within India, the majority of Assamese could favor co-ethnics for government jobs and provide them with a variety of educational preferences as well, deterring Bengalis from seeking a professional future in Assam. Meanwhile, the Bengali settlers could rely on protection from the central government that secures the right of all Indians to live anywhere in India. Therefore, there are no constraints to encouraging Bengali co-ethnics to leave West Bengal to join local Bengali communities. As reported in *The Hindu*,[6] this strategy has been steadily increasing the percentage of Bengalis in the rich agricultural districts of Assam. Population control policies deterring migrants from neighboring Bangladesh have been relatively more suc-

[6]"Decline in Assamese-speaking population in 7 districts," *The Hindu*, August 10, 2008.

cessful, though Union Government promises to deport foreign migrants and control the border have not been assiduously fulfilled.

While population control was a policy tool of both sides, assimilation turned out to be an unproductive strategy. To be sure, structural differences between Assamese and Bengali are small,[7] making the costs of learning the other language low. However, the costs to each of the Assamese and Bengali elites for assimilating the other side ($A_S(c_{D,0}/2b)$ and $A_D(c_{S,0}/2b)$) have been relatively high. For one, the opportunity costs for both the Assamese and the Bengalis to learn each other's language are high. For both groups, the two languages for broader occupational mobility are English and Hindi; therefore each other's language would be fourth in their preferred repertoires. Moreover, the federal bargain in India guarantees that minorities in any state have the right to education in their own language, and therefore Bengali holds official status in several districts where Bengalis are concentrated.

3.2 Ida-Virumaa

After Sweden's defeat, the Russian Empire in 1710 incorporated today's Estonia, and ruled over this territory through German aristocrats. Rural Estonians who sought literacy learned German, with only few aspiring positions in Russia, the imperial center, and therefore few learned Russian. However, German lost ground with an Estonian national movement that began to form in 1860, encouraging a moment of literary florescence in Estonian, up till then a peasant dialect. In response, Czarist Russia began in the early 1880s to Russify in Baltic territories to freeze out both Baltic nationalism and German influence. But when Russia fell into turmoil and revolution, Bolshevik Russia conceded Estonian independence in 1920, and the educational system diverted to Estonian medium.

After the start of World War II, Estonia fell to the Soviet army and was incorporated into the Soviet Union in 1940. For our purposes, two features of the Soviet occupation merit mention. First, there was depopulation of Estonians from Estonia. During the first year of Soviet occupation (1940- 1941) over 8,000 people, including most of the country's leading politicians and military officers, were arrested. About 2,200 of the arrested were executed in Estonia, while most of the others were moved to prison camps in Russia. Data from the 1941 deportation of 10,000 Estonian civilians show only about one-half survived.

[7] In the language trees of Ethnologue, they share seven branches (Indo-European, Indo-Iranian, Indo-Aryan, Outer, Eastern, Bengali-Assamese) before they separate linguistically. Both rely on the same script for writing. When Assam was still part of the Bengal Province, Bengali elites insisted that Assamese was a mere dialect of Bengali high-culture.

Subsequently, 23,000 Estonian farmers were deported to Siberia in March 1949. Of the 32,100 Estonians who were drafted into the Soviet army to fight the Germans, nearly 40% died within a year.

Over the next decade, an increasing number of Estonians were imprisoned in state labor camps (the infamous *gulag*). Second, after the war, demobilized Russian soldiers were encouraged to settle in northeastern Estonia in construction crews and as workers in a uranium plant on the Baltic coast. Between 1946 and 1953, Estonians were not allowed to settle in major industrial towns such as Narva and Sillamäe. While in 1917 there were a mere 2.8% of Russians in Estonia, by 1989 that figure reached 30%, and in the three largest towns of the northeastern district of Ida-Virumaa, Narva, Sillamäe, and Kohtla-Järve, Russian-speakers (including ethnic Russians, Belarusans, Ukrainians, and Jews) were estimated to be greater than 82% of the population.[8]

All Russian-speakers in the post-World War II Estonian Soviet Socialist Republic were assured an historical right to remain monolingual in Russian with a school system and an occupational structure that did not require competence in Estonian. Meanwhile Estonians were granted the right to education in their language, but a broader range of occupational possibilities required Russian competence. Furthermore, all Estonian men were subject to the military draft and this would demand taking orders in Russian. Finally, all deported Estonians (sympathetically portrayed in Solzhenitsyn's *Cancer Ward*) survived only in Russian while in the gulag. In 1991, the starting point of our analysis, the Soviet Union collapsed, and Estonia's *de jure* independence became *de facto*. Estonia became what Brubaker (1996) has called a "nationalizing state" and its new leaders sought to Estonianize the country as a monocultural state, with Russian-speakers (mostly descendants of the post-war migrants) finding themselves without citizenship and facing pressures to self-deport to a country (now the Russian Federation) in which they never lived and was collapsing socially, politically, and economically.

The SoS are the Russian speakers of Ida-Virumaa, the DC are the Estonians, and the proportion of Russian speakers at the start of our period (λ_0) was very high—nearly the entire urban population. On the one hand, the cost of population control for the Russian elite in 1991 (P_S) became high. They no longer had state authority, and Estonians controlled the border with Russia and were soon supplemented by NATO allies in protecting that border. Even as the Russian economy was collapsing and there was

[8]The Ida-Virumaa countryside remained Estonian-dominated, but this represented only a small portion of the population. The total non-Estonian population in the Ida-Virumaa county was high, estimated to be 81.5% in 1989. See Katus, Puur, and Poldma (2002) and Kirch and Laitin (1994).

great economic hardship in St. Petersburg *oblast* that bordered Estonia, Russians from Russia had no easy route to entering Estonia. The cost of assimilating Estonians for the Russian elite ($A_S(c_{D,0}/2b)$), however, was and continues to be relatively low. Bordering the Russian media behemoth, Estonians have easy access to Russian media. Furthermore, despite state regulations demanding that Estonian become the universal medium of instruction in Estonian schools, the state has had difficulty in staffing schools in Ida-Virumaa with Estonian-speaking teachers. Therefore, the county is replete with Russian speaking teachers.

On the other hand, the costs of population control and assimilation policies for the Estonian elites (P_D and $A_D(c_{S,0}/2b)$) are both relatively low. Controlling the border with Russia, the Estonians can prevent in-migration of Russians. Moreover, since the Estonian state controls the educational system and sets language requirements for citizenship and jobs, it has been able to attract many young Russians into Estonian medium schools. As an added incentive, Estonians have coordinated in committing themselves to elimination of Russian from their (and their children's) language repertoires, thereby compelling Russian-speakers to learn Estonian if they want to communicate with elite Estonians (Laitin, 1998).

The cost to the Estonians of learning Russian ($c_{D,0}$) was initially low but has been increasing. With the Estonian-Russian border virtually closed, and occupational mobility for Estonians demanding a language repertoire of Estonian and English, the opportunity costs of learning Russian have increased. (This is especially the case after Estonia joined the European Union.) The cost to the Russians of learning Estonian ($c_{S,0}$) has been moderately high, but is declining. The structural distance between Russian (a Slavic language) and Estonian (a Finno-Ugric language) is maximal, as they diverge linguistically at the level of language family. This distance made it virtually impossible for Russian-speakers to become fluent in Estonian during the Soviet period when there were no occupational rewards for learning it, and no need for it to enjoy Soviet culture. However, since 1991 the returns for learning Estonian are rising, and it has been a route to citizenship. Also important is that Russian-speakers evaluate the language as one of high (Western) culture, and therefore a language that is a route to European civilization (Laitin, 1998). Thus, despite the linguistic distance, the costs of learning Estonian for Russian-speakers in Estonia is declining.

In the meantime, the number of Russian-speakers in Ida-Virumaa is declining. With Estonian accession into the European Union, once Russians receive an Estonian passport (and for those born before 1991 this required a degree of fluency in Estonian) they are free

to enter the European labor market for which English is the most valued second language. Since these Russian-speakers have no ethnic/national tie to Estonia, they see Europe rather than Estonia as their new homeland and thus there are high incentives to emigrate from Ida-Virumaa. From 2008 and through 2013, however, a new in-migration has brought about 30,000 Russian-speakers into Estonia from Russia (seeking family reunification) and Ukraine (escaping warfare). Many of these settle in the Tallinn region, however, where jobs are abundant, and this has not substantially replaced the steady outflow of Russian-speakers from Ida-Virumaa.

3.3 Jaffna and the Eastern Province

Sri Lanka, with a population today of about twenty million, received independence from the UK in 1947, the starting point of our analysis. The two largest ethnic groups are the Sinhalese, with 74 percent of the population, and the Tamils, with 19 percent. The Tamils are divided between the Sri Lankan Tamils, those from the northeast, who see themselves as indigenous to the island (encompassing about 13 percent of the population), and the Indian Tamils, who arrived as indentured laborers to the central plantations in the nineteenth century (encompassing about 6 percent of the population). In Jaffna and the Eastern Province of Sri Lanka, the case we analyze here, the SoS are the Tamils and the DC are the Sinhalese.

Sinhalese colonization of the Tamil-populated areas in the northeastern part of the island began in the 1930, when still under British colonial rule. The share of Tamils in these areas at this time prior to independence (λ_0) was well over 90%. The resettlement of Sinhalese into these areas came in the form of government programs under which Sinhalese homesteaders were encouraged to migrate into newly irrigated zones in the Tamil populated regions. In 1949, the newly independent government of Sri Lanka expanded this program. It created the Gal Oya Development Board, for the purpose of settling landless peasants into this fertile area of the Eastern Province. At first, most of the migration was by Tamils and Muslims from poorer areas of the province. But then came a group of "Kandyan" Sinhalese villagers from the Central Province, and then mostly Sinhalese from elsewhere. These Sinhalese received the best land (Tambiah, 1997, 83-94). Therefore, the percentage of Tamils in the Eastern Province has been declining since the 1930's while Jaffna remained predominantly Tamil.

The Sri Lankan Tamils were far better educated in British schools than were the Sinhalese, and Tamils dominated both the higher civil service in the capital Colombo as well

as in the business world. In 1956, amidst an economic recession, the upstart Sri Lankan Freedom Party defeated the old-guard United National Party in large part by blaming the Tamils for occupying the best jobs. Shortly after its victory, the new government presented parliament with the Official Language Act, which declared Sinhala the one official language. The act was passed and immediately caused a reaction among Tamils, who perceived their language, culture, and economic position to be under attack. The passage of the Official Language Act induced a *satyagraha* (nonviolent protest) among Tamils that was answered with violent retributions on the streets by the Sinhalese. Concerned with the violence, Prime Minister S.V.R.D. Bandaranaike negotiated with S.J.V. Chelvanayakam, leader of the Tamil-dominated Federal Party, and agreed to a wide measure of Tamil autonomy in the Northern (i.e. Jaffna) and Eastern provinces. It also provided for the use of the Tamil language in administrative matters.

Despite this, the resettlement programs continued and Chelvanayakam warned in his inaugural address as Federal Party leader in 1949 that the Sri Lankan government's resettlement policy was even more dangerous to the Tamil people than the proposed Sinhala-language policy (Tambiah, 1997, 83-94). From 1960 to 1980, more Sinhalese were brought in under new irrigation schemes and their proportion in the major eastern city of Trincomalee rose to 28% in 1963 when it had been only 4.4% in 1921 before the start of the resettlement programs.[9] The sense of demographic threat, especially when Tamil majorities in local areas became precarious (Manogaran & Pfaffenberger, 1994, 116) aroused autochthonous Tamils into political action (Tambiah, 1997, 83-94). State supported Sinhalese homesteading in Sri Lanka's Eastern Province (bordering on the Tamil dominant Jaffna Peninsula) turned the Tamils into sons of the soil. Communal violence ensued, reaching civil war proportions in 1983, when after anti-Tamil pogroms, some 150,000 Tamils fled the island, many across the Palk Straight into Tamil Nadu into the Indian state of Tamil Nadu.

Many factors help account for the Sri Lankan Tamil rebellion. Certainly the language laws along with ethnic quotas for government jobs that discriminated against Tamil applicants built up resentment. They induced many highly educated Tamils (those who might have been a moderating force) to emigrate to Canada, the UK and the US. The refusal of the central government to allow for cultural and legal autonomy in the Tamil region in Jaffna and the northeast was consequential in building up resentment. Also important was the role of India in providing a base of operations for Tamil insurgents. But here we

[9]University Teachers for Human Rights (Jaffna), Sri Lanka, "Report 11: Appendix II, Colonization & Demographic Changes in the Trincomalee District and Its Effects."

concern ourselves only with the costs of assimilation and population control to reveal the "sons of the soil" dynamic.

We begin with the assimilation costs, which are structurally high for both groups, given that Tamil (Dravidian) and Sinhala (Indo-European) are from different language families, and therefore maximally different. But the relative costs for each group in fostering assimilation of the other are not symmetric.

The cost to the Tamil elite of fostering assimilation of Sinhala migrants into the Tamil language is relatively high. Because they could not run their own schools and the Sinhalese migrants received all state services through the Sinhala medium, the costs of assimilating the migrants into Tamil culture ($A_S(c_{D,0}/2b)$) were prohibitive. Moreover, the individual level assimilation cost for the Sinhalese migrants ($c_{D,0}$) is relatively high net of costs. The Sinhalese received no job opportunities or social mobility prospects from learning Tamil, even for those living in Tamil-majority zones.

In contrast, the costs for the Sinhalese of assimilating the Tamils ($A_D(c_{S,0}/2b)$) have been comparatively low. While the absolute costs of educating and assimilating Tamils may appear prohibitive, relative to the potential gains from getting the monocultural outcome to be in their favor, and their full control over the educational system as well as elite government jobs, these costs should be considered low. Given the state school system, the individual level assimilation cost for the Tamils, of learning and becoming Sinhalese, is relatively low net of costs, but this should be compared to the cost of exit to the Indian state of Tamil Nadu where their language is official. The cost of assimilating as a Sri Lankan Sinhala is probably much higher than as an Indian Tamil. We therefore code the cost to the Tamil sons of the soil of learning Sinhala ($c_{S,0}$) as medium.

In contrast to the assimilation costs, the cost of population control (P_S) to the Tamil elite was relatively low. For a generation, Tamils were able to terrorize the Sinhalese settlers, and intimidate them from coming in. Indeed, the 1983 pogroms against Tamils in Colombo began in retaliation for an ambush of an army patrol in the north that left thirteen Sinhalese soldiers dead. And, Tamil insurgents, taking advantage of their superior knowledge of inland forest terrain, were able to make the Sinhalese army pay a heavy cost in protecting their own homesteaders. The costs to the Sinhalese elite of population control, on the other hand, was absolutely high. Defending the Sinhalese settlers in their homesteads from attacks by the autochthonous Tamil populations required far more than normal policing. It required military action. In the late 1960s the government provocatively set up military and air force bases throughout the Eastern Province. However, relatively, the costs of population control were moderate. Sinhalese-dominant

governments in Sri Lanka understood that their electoral mandate required protection of the settler populations in the East. And so, counterinsurgency had to be weighed against the goal of the economic development of the region (where land-hungry Sinhalese saw golden opportunities in the resettlement schemes), and elites also factored in the high political returns of building a Sinhala nation-state. Thus we code the relative costs for the Sinhalese elites of population control (P_D) as being medium.

3.4 Catalonia

Catalonia has all the historical conditions that might have predicted the emergence of a modern nation-state.[10] The broad set of territories forming what Catalan nationalists refer to as *els països catalans* (the Catalan countries) were well delineated as far back as in Roman times, and include today's provinces of Barcelona, Tarragona, Lleida and Gerona that make up the present-day Catalan Autonomy in the Spanish state. But nationalists also include as part and parcel of the Catalan countries the Spanish provinces of Valencia, Alicante, Castellon, and the Balearic Islands, the French County of Rousellon, and the Principate of Andorra in the Pyrenees.

Catalonia is institutionally rich. By the 13th century, a representative assembly (*les corts catalanes*) became the basis of law, and governed the extensive Mediterranean trade for which Barcelona was a major port. A centralized administrative apparatus (*la Generalitat*) emerged a century later. The Catalan language, from Latin origins, developed an extensive literature and its authors were the first on the Iberian Peninsula to rely on the Gutenberg printing press to reach mass audiences.

But the 17th century florescence of Spain (*el siglo de oro*), culminating in the early 18th century victory of the Bourbon pretender for the Spanish Crown, led to the slow and steady assimilation of Catalans into the Spanish national project. Under the Decree of the New Foundation, the first Bourbon king demanded that all court (*audiencia*) cases brought before him had to be written in Castilian. Before that decree, largely because of the burdens put on Catalan elites during the 17th century Franco-Spanish War, which brought many appeals by Catalan aristocrats to the King for recompense for the quartering of troops on their estates (translated into Castilian by notaries), the weight of publications in Catalonia had already switched to Castilian (Laitin, Solé, & Kalyvas, 1994). Catalan historiographers speak of this era as foreshadowing the death of the Catalan nation.

[10] This background is largely drawn from Vilar (1987) and Laitin (1989).

Despite this, the Catalan nation saw rebirths at appropriate times. In the late 19th century, when Catalan elites failed in getting protection from Madrid for its infant industries, their businessmen lobbied for Catalan autonomy. Again in the 1930s, when the Second Republic provided democratic rights, Catalan politicians campaigned for autonomy. The Spanish Civil War, undermining that republic, was largely fought by the Falangists to put a halt to all forces seeking to dismember the country. And with their victory, President Francisco Franco worked assiduously to quash any sense of a separate Catalan identity. He did this through outlawing the public use of the language, and inducing large numbers of Spaniards from poor regions to work in factories situated in the Catalan zones. By 1975, upon his death, some 35% of the population in the four provinces of today's autonomous region were of Castilian-speaking origin.

We consider the end of the Franco era to be the starting period of our analysis. The SoS are the Catalan-speakers in the Catalan autonomy of Spain and the DC are the descendants of the Franco-induced migrants into Catalonia. The post-Franco democratic compromise assured the Catalans of a Statute of Autonomy and the restoration of its Generalitat. The share of the Catalans (λ_0) was approximately 65% of the population. The remaining share of the population had roots from elsewhere in Spain, and shared the dominant culture of the country. The victorious political coalition in Catalonia, CiU, at the time was intent in turning all residents in *els països catalans* into Catalans. "All those who live and work in Catalonia" declared Jordi Pujol, the first President of the post-Franco Generalitat, "are Catalan" (Shafir, 1995, 7). The question we ask is whether his sons of the soil could induce those of Spanish origin to become Catalans.

The Catalan and Castilian languages are both Romance languages and share seven branches of commonality in the Ethnologue classification system. (The shared branches are Indo-European, Italic, Romance, Italo-Western, Western, Gallo-Iberian, and Ibero-Romance.) The two languages are thus structurally very similar. Therefore, from a structural criterion, the individual costs of assimilation in either direction are quite low, but the cost of learning Spanish for the Catalans was lower than the cost of learning Catalan for the migrants. Nearly all Catalans, due to incorporation into the Spanish state, were bi-lingual, and remain so. On the other hand, the migrants into Catalonia had a less compelling reason to learn Catalan, protected as they were by the Franco government.

From an opportunity cost viewpoint, however, the cost of learning Spanish for the Catalans is getting higher over time, as the returns for making English their second language are increasing relative to the returns of maintaining Spanish as their second

language. Conversely, for the children of working class migrants, the returns for speaking Catalan are rising, as this opens up the white-collar job market for them in their host region economy. In sum, we code the individual level assimilation costs ($c_{S,0}$ and $c_{D,0}$) as being relatively low for both groups, but note that the individual level cost of assimilation into Spanish culture for the Catalans is rising while the individual level cost of assimilation into Catalan culture for the Spanish speakers is falling.

Crucially, the costs of population control for both the Catalan and Spanish elites (P_S and P_D) are high. In a liberal democratic society, the Catalans cannot prevent in-migration into or induce out-migration from their region of legal residents. Similarly, post-Franco, the Spanish state has no means to induce internal migration for any political project. Population control is therefore out of the hands of both Catalan and Spanish elites. On the other hand, the costs for both the Generalitat and for the Spanish Ministry of Education to promote their preferred languages are low. In their autonomous region, the Catalans control the public school curriculum, the language of local services, and a television network that projects Catalan-language programs throughout the region. Few children of migrants can avoid high exposure to the regional tongue. Meanwhile, the Spanish state demands continued use of Spanish in schools, and provides many state-level jobs that require full facility in Spanish. In sum, we code the assimilation costs for both the Catalan and Spanish elites ($A_S(c_{D,0}/2b)$ and $A_D(c_{S,0}/2b)$) as being low.

4 Elite and Population Choices

We now return to the model to examine the choices of the elites and population in the two stages of the game. Our equilibrium concept for solving the model is subgame perfect Nash equilibrium subject to a refinement of the Nash equilibrium played in the second (population) stage. We introduce the refinement below and solve the model by backwards induction, first characterizing the equilibrium of the population stage and then characterizing equilibrium behavior in the elite stage.

4.1 Population Choices

We start by solving the second stage of the model. We first characterize the optimal cultural choices for members of the SoS and DC populations in this stage. Recall that the cultural switching costs to SoS and DC individuals, c_S and c_D, respectively, as given in equations (3), are influenced by the elites' assimilation strategies in the first stage. The

proportion of SoS individuals at the start of this stage, $\tilde{\lambda}(\alpha, \beta)$ is given in equation (4) and is influenced by the elites' population control strategies, through λ, which is a random variable described in lines (1) and (2). A summary of parameters is given in Table 1.

An SoS individual will want to retain the regional culture when

$$\tilde{\lambda}(\alpha, \beta)b \geq [1 - \tilde{\lambda}(\alpha, \beta)]b - c_S, \tag{6}$$

which says that the expected payoff from retaining the regional culture is at least as large as the expected payoff from switching to the national culture. This inequality rearranges to make

$$\tilde{\lambda}(\alpha, \beta) \geq \frac{1 - c_S/b}{2} =: \lambda_l \tag{7}$$

Therefore, when the probability of matching with someone who has chosen the regional culture exceeds a threshold λ_l that is to the left of $1/2$, an SoS individual wants to retain the regional culture. An SoS individual will want to adopt the national culture if the reverse of the above inequality holds. Similarly, a DC individual will want to adopt the regional culture if

$$\tilde{\lambda}(\alpha, \beta) \geq \frac{1 + c_D/b}{2} =: \lambda_r \tag{8}$$

which again says that the probability of matching with an individual who has chosen the regional culture exceeds a threshold λ_r that is to the right of $1/2$. A DC individual will want to adopt the national culture if the reverse inequality holds.

Note that the population stage is a coordination stage so it has multiple Nash equilibria; for example, $(0, 0)$ and $(1, 1)$ are both Nash equilibrium pairs of (α, β).[11] Given that there are multiple Nash equilibria in the population stage, how do the elite form expectations about which of these will be played when making their choices in the first stage? To address this issue we impose a refinement which requires that the second stage Nash equilibrium to be a strict best response to the initial condition $(\alpha_0, \beta_0) = (1, 0)$. We will refer to a Nash equilibrium that satisfies this refinement as an *equilibrium*.

This refinement is motivated by the following reasoning. When members of the population in the second stage decide whether to keep their culture or switch, we imagine that they make these choices naively by best responding to the environment that they begin with. They switch cultures only if switching is strictly profitable given the initial

[11] $(0, 0)$ and $(1, 1)$ are always Nash equilibrium pairs of (α, β). If $\lambda > \lambda_l$, the pair $(\alpha, \beta) = (\frac{\lambda_l}{\lambda}, 0)$ is also a Nash equilibrium pair. Similarly, if $\lambda < \lambda_r$ then $(\alpha, \beta) = (1, \frac{\lambda_r - \lambda}{1 - \lambda})$ is another Nash equilibrium pair. Finally, if $\lambda \in (\lambda_l, \lambda_r)$ then the initial condition $(\alpha, \beta) = (1, 0)$ is also a Nash equilibrium pair. There are no other Nash equilibrium pairs for generic λ. These all follow from (7) and (8).

conditions. The outcome of this naive behavior is an equilibrium if, after each individual makes his or her decision, nobody has a profitable deviation. In other words, it is an equilibrium if after playing naively as such, the population arrives immediately at a Nash equilibrium. Alternatively, if we require that the Nash equilibrium played in the second stage generate an evolutionary stable state such that the initial condition lies in its basin of attraction, we would select the same equilibrium as we do with our simple refinement.[12]

Proposition 1. *There is a unique equilibrium of the population stage for every value of* λ *besides* λ_l *and* λ_r*. In particular, (i) if* $\lambda < \lambda_l$ *then* $(\alpha, \beta) = (0, 0)$ *is the unique equilibrium, under which the SoS and DC both choose the national culture; (ii) if* $\lambda_l < \lambda < \lambda_r$*, then* $(\alpha, \beta) = (1, 0)$ *is the unique equilibrium, under which the SoS retain the regional culture and the DC retain the national culture; and (iii) if* $\lambda > \lambda_r$*, then* $(\alpha, \beta) = (1, 1)$ *is the unique equilibrium, under which the SoS and DC both choose the regional culture.*

This result comports with our intuition: if the population threshold and costs go in favor of the DC then society tips to the dominant culture; vice versa for the SoS; and there is a middle range in which each group retains its original culture. The proof of the proposition is given in Appendix A. Although there is no equilibrium when λ equals λ_l or λ_r, this will not affect our analysis of the elite stage.

Figure 1 represents the range of possible population fractions of SoS culture individuals at the beginning of the game. The figure depicts the two thresholds λ_l and λ_r defined in (7) and (8) above. These thresholds determine whether or not society transitions to a "monocultural" outcome or stays at a "bicultural" outcome. Any value of λ that is to the left of λ_l will lead to the monocultural outcome in which the SoS culture dies out. (The shares of SoS and DC individuals adopting the regional culture are $(\alpha, \beta) = (0, 0)$ and thus the fraction of population that has the regional culture is $\tilde{\lambda}(0, 0) = 0$.) We call this the *monocultural-DC* outcome. Any starting value of λ that is to the right of λ_r will lead to the monocultural equilibrium in which the DC culture dies out in the region ($(\alpha, \beta) = (1, 1)$ and thus $\tilde{\lambda}(1, 1) = 1$). We call this the *monocultural-SoS* outcome. These potential transitions are represented by the left and right arrows of Figure 1 in the relevant regions. Any value of λ_0 that is between the two thresholds, λ_l and λ_r, gives rise to the bicultural outcome in which each group maintains its own culture ($(\alpha, \beta) = (1, 0)$, and thus $\tilde{\lambda}(1, 0) = \lambda$). We refer to this as a *bicultural* outcome. For each of the three

[12]Defining these concepts for our game is cumbersome, so we refer to Bowles (2009) for a formal treatment of these concepts.

Figure 1: The range of possible λ

cultural outcomes—monocultural-DC, bicultural, and monocultural-SoS—we refer to the intervals $[0, \lambda_l)$, (λ_l, λ_r), and $(\lambda_r, 1]$, respectively, as the *attraction sets* for these outcomes.

4.2 Elite Choices

Given the characterization of the second stage equilibrium in Proposition 1, we now study equilibrium choices for the elites in the first stage. In particular, we attempt to rationalize the elite strategies in each of the four cases that we discussed in Section 3. We do so under the additional assumption that

$$b > c_{S,0} + c_{D,0}$$

which guarantees that no matter what the initial fraction λ_0 of SoS individuals is, it is feasible that population control strategies alone can, at least in some cases, shift the final outcome from one in which the share of individuals with the SoS culture is 0 to one in which it is 1, or vice versa.[13]

In Proposition 2 below, we report four sets of equilibrium conditions descriptively tied to the prevailing outcomes in each of our four cases.[14] The first is a set of conditions in which the initial share of SoS population is moderately high and the SoS and DC elites both use only population control; this corresponds to the case of Assam. The second is a set in which the initial share of SoS population is very high and the DC elite use both population control and assimilation while the SoS elite use only assimilation; this corresponds to the case of Ida-Virumaa. The third is a set in which the initial share of SoS population is very high and the DC elite use both population control and assimilation while the SoS elite use only population control; this corresponds to the case of Jaffna and the Eastern Province.

[13] In Proposition 1 above we showed that there are two thresholds λ_l and λ_r such that the equilibrium fraction of individuals with the regional culture is 0 if and only if $\lambda \in [0, \lambda_l)$ and is 1 if and only if $\lambda \in (\lambda_r, 1]$. When the elites do not use assimilation policies, these thresholds are given by $\lambda_l = \frac{1-c_{S,0}}{2}$ and $\lambda_r = \frac{1+c_{D,0}}{2}$. Thus, for it to be feasible for population control policies alone to move the share of individuals with the SoS culture from a value in the interval $[0, \lambda_l)$ to one the interval $(\lambda_r, 1]$ or vice-versa, we need $\frac{1+c_{D,0}}{2} - \frac{1-c_{S,0}}{2} < \frac{1}{2}$, which rearranges to $b > c_{S,0} + c_{D,0}$.

[14] A full characterization over the entire parameter space, which we do not provide, follows by similar methods.

Finally, the fourth is a set of conditions under which the initial share of SoS population is moderately high and the SoS elite use only assimilation policies while the DC elite use neither population control nor assimilation. Although this does not correspond to the current situation in Catalonia, where DC elite have also been using assimilation policies, the use of assimilation policies by both the SoS and DC elites cannot be rationalized since the DC elite would always have a profitable deviation to not doing either population control or assimilation when the SoS are a majority.[15] This deviation—that is, the situation in which the SoS elite use assimilation policies and the DC elite do nothing—is, however, an equilibrium under the parameter coding in Table 1, and it is our long-term projection for the Catalonia case. We say more on this in Section 5.4.

Proposition 2. *Define* $\lambda_{l,0} = \frac{1-c_{S,0}/b}{2}$ *and* $\lambda_{r,0} = \frac{1+c_{D,0}/b}{2}$. *In every equilibrium, we have the following:*

(i) Suppose $\frac{1}{2} < \lambda_0 < \lambda_{r,0}$. *Then there exist thresholds* $\underline{A}_S$, $\overline{P}_S$, $\underline{\Delta}_S$, $\underline{A}_D$, $\overline{P}_D$ *such that the DC elite and the SoS elite both use only population control if and only if:*

$$A_S \geq \underline{A}_S,\ P_S \leq \overline{P}_S,\ \tfrac{c_{D,0}}{2b}A_S - P_S \geq \underline{\Delta}_S,\ A_D \geq \underline{A}_D,\ \text{and}\ P_D \leq \overline{P}_D.$$

Moreover, $\underline{A}_S$ *is decreasing in* $c_{D,0}/b$, $\overline{P}_S$ *is increasing in* $c_{D,0}/b$ *and decreasing in* $c_{S,0}/b$ *and* λ_0, $\underline{\Delta}_S$ *is increasing in* $c_{D,0}/b$, $c_{S,0}/b$, *and* λ_0, $\underline{A}_D$ *is decreasing in* $c_{S,0}/b$, *and* $\overline{P}_D$ *is increasing in* $c_{D,0}/b$ *and decreasing in* $c_{S,0}/b$ *and* λ_0.

(ii) Suppose $\lambda_{l,0} + \frac{1}{2} < \lambda_0 < 1$. *Then there exist thresholds* $\overline{A}_S$, $\underline{P}_S$, $\underline{\Delta}_S$, $\overline{A}_D$, *and* $\overline{\Delta}_D$ *such that the DC elite use both population control and assimilation while the SoS elite use only assimilation, if and only if:*

$$A_S \leq \overline{A}_S,\ P_S - \tfrac{c_{D,0}}{2b}A_S \geq \underline{\Delta}_S,\ A_D \leq \overline{A}_D,\ \text{and}\ P_D + \tfrac{c_{S,0}}{2b}A_D \leq \overline{\Delta}_D.$$

Moreover, $\overline{A}_S$ *is decreasing in* $c_{D,0}/b$, $\underline{\Delta}_S$ *is increasing in* $c_{D,0}/b$ *and decreasing in* λ_0, $\overline{A}_D$ *is decreasing in both* λ_0 *and* $c_{S,0}/b$, *and* $\overline{\Delta}_D$ *is decreasing in* $c_{S,0}/b$.

(iii) Suppose $\lambda_{l,0} + \frac{1}{2} < \lambda_0 < 1$. *Then there exist thresholds* $\underline{A}_S$, $\overline{P}_S$, $\underline{\Delta}_S$, $\overline{A}_D$, *and* $\overline{\Delta}_D$, *such that the DC elite use both population control and assimilation while the SoS elite only use population control, if and only if:*

[15] In particular, the choice by Madrid to use assimilation strategies does not improve their chances of avoiding a transition to the monocultural-SoS outcome in which the Catalan culture prevails; but it comes with a cost, making the strategy suboptimal.

$$A_S \geq \underline{A}_S,\ P_S \leq \overline{P}_S,\ \tfrac{c_{D,0}}{2b}A_S - P_S \geq \underline{\Delta}_S,\ A_D \leq \overline{A}_D,\ \text{and}\ P_D + \tfrac{c_{S,0}}{2b}A_D \leq \overline{\Delta}_D.$$

Moreover, $\underline{A}_S$ is decreasing in $c_{D,0}/b$, $\overline{P}_S$ is increasing in $c_{D,0}/b$ and decreasing in λ_0, $\underline{\Delta}_S$ is decreasing in $c_{D,0}/b$, $\overline{A}_D$ is decreasing in both λ_0 and $c_{S,0}/b$, and $\overline{\Delta}_D$ is increasing in λ_0.

(iv) Suppose $\frac{1}{2} < \lambda_0 < \lambda_{r,0}$. Then there exist thresholds $\overline{A}_S$, $\underline{\Delta}_S$, $\underline{P}_D$, $\underline{\Delta}_D$, such that the DC elite use neither population control nor assimilation while the SoS elite only use assimilation, if and only if:

$$A_S \leq \overline{A}_S,\ P_S - \tfrac{c_{D,0}}{2b}A_S \geq \underline{\Delta}_S,\ P_D \geq \underline{P}_D,\ P_D + \tfrac{c_{S,0}}{2b}A_D \geq \underline{\Delta}_D.$$

Moreover, $\underline{A}_S$ is decreasing in λ_0 and $c_{D,0}/b$, $\underline{\Delta}_S$ is decreasing in λ_0 and $c_{D,0}/b$, $\underline{P}_D$ is decreasing in $c_{S,0}/b$ and λ_0, and $\underline{\Delta}_D$ is decreasing in λ_0.

The proof of Proposition 2 appears in Appendix B. Here we explain the result of the proposition in a few words.

The proposition reports conditions that correspond to no profitable deviation conditions for each elite from using their equilibrium strategies. The threshold conditions on individual costs are intuitive: they represent the incentives (of the lack thereof) in adopting individual policies. The threshold conditions on the normalized sum and differences between costs represent no profitable deviation conditions from changing multiple policies. For example, the threshold conditions on the sum $P_D + \frac{c_{S,0}}{2b}A_D$ represent conditions under which the DC elite prefer using *neither* population control and assimilation policies to *both* policies in cases (ii) and (iii) and prefer using both policies to neither of the two in case (iv). The threshold conditions on the difference $\frac{c_{D,0}}{2b}A_S - P_S$ say that the SoS elite prefer doing only population control to doing only assimilation in cases (i) and (iii), while the threshold conditions on the difference $P_S - \frac{c_{D,0}}{2b}A_S$ say that they prefer doing only assimilation to only population control in cases (ii) and (iv).[16]

In the rest of this section we discuss, in turn, the intuition for how elites on both sides choose among their strategies, the comparative statics of the model, and the cultural outcomes that the model predicts in each of the four cases.

[16]Note that we must consider three possible deviations for each elite but in cases (i) and (iii) we have only five threshold conditions while in (ii) and (iv) we have only four. This is because some of the no profitable deviation conditions necessarily hold when some of the others are satisfied.

Tradeoffs Proposition 2 highlights the tradeoffs that the elites face in deciding which policies to adopt. These tradeoffs are built upon a simple cost-benefit analysis for each elite that weighs the gains from improving the chances that they get a better cultural outcome against the costs of a policy that improves these chances.

The elites play a standard contest in the first stage. Given the equilibrium concept for the second stage, their objective in the first is to increase the probability that the population characteristics at the start of the second stage are inside the attraction set of a cultural outcome they prefer more, so long as the costs are not too high. Recall that for each elite, the most preferred cultural outcome is the monocultural outcome in which the whole population adopts their culture, followed by the bicultural outcome and then the monocultural outcome in which the population is homogenized in the other culture. The elite can achieve their objective through population control, assimilation policies, or a combination of both. These policies (weakly) improve the odds that the starting conditions of the second stage lie in the attraction set of cultural outcomes that they prefer more. Population control shifts demographic parameters so that they are more likely to lie in the more preferred attraction set. Assimilation policies enlarge the size of the attraction set of an elite's most preferred cultural outcome by reducing the switching costs for members of the population that start with the other culture.[17]

Because the first stage is a standard contest, elite strategies are (weakly) strategic substitutes. Thus, while costs play an important role in determining whether or not an elite will adopt a particular policy, how exactly one elite trades off costs and benefits depends on how the other elite plays. To see this, consider any of the four cases of the proposition, depicted graphically in Figures 2 (i)-(iv). Given that $\lambda_0 > 1/2$ in all four cases, the DC elite have no interest in using assimilation policies unless they also choose population control, since assimilation alone cannot improve the odds that λ lies in the attraction set of the monocultural-DC outcome. (The farthest right they can move $\lambda_{l,0}$ is $1/2$ which is insufficient to put λ_0 in the attraction set of the desired outcome.) Thus, the first question for the DC elite is whether or not to adopt population control policies. If they don't, then society may remain bicultural or the monocultural-SoS outcome may prevail depending on whether or not $\lambda_0 < \lambda_{r,0}$, and what strategy the SoS elite adopts. The key tradeoff for the DC elite then is between the gains from increasing the probabilities that

[17]Recall that assimilation policies set $c_{S,0}$ or $c_{D,0}$ to zero, which is equivalent to bringing the thresholds between bi-cultural and monocultural outcomes (λ_l, λ_r in Figure 1) to 1/2. This shrinks the range of initial population shares that gives rise to a bi-cultural outcome and enlarges the range that give rise to the preferred monocultural outcome.

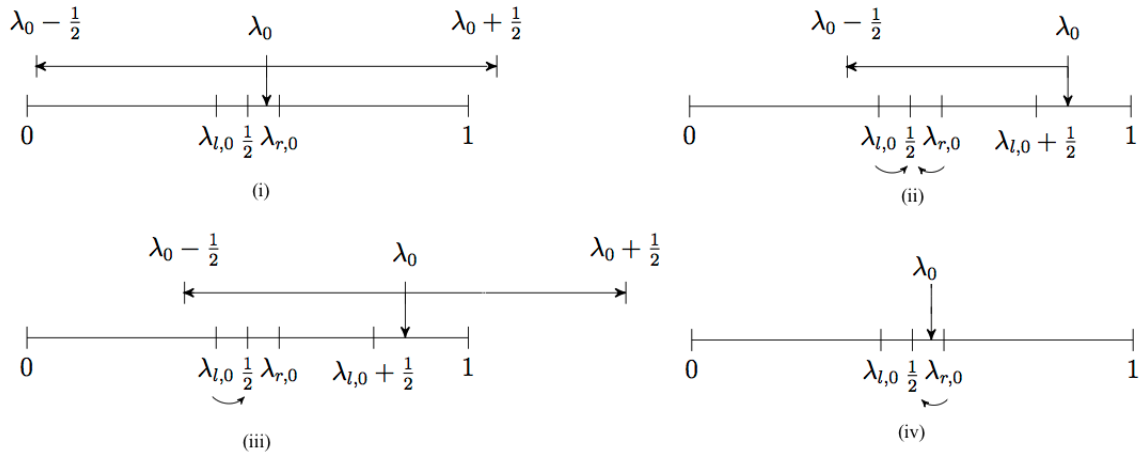

Figure 2: The results of Proposition 2 depicted graphically. The figure depicts each case (i) - (iv) separately.

the monocultural-DC or bicultural outcomes prevail at the expense of, respectively, the bicultural and monocultural-SoS outcomes, against the cost of population control. If the SoS elite were to not use population control strategies, the DC elite would trade off these choices differently since the marginal gains in these probabilities would increase. Indeed, the DC elite would have an even greater incentive to use population control. In cases (i)-(iii), the DC elite adopt population control policies. In case (iv), population control is too costly, and thus unattractive, for the DC elite.

If the DC elite do engage in population control, then they must decide whether or not to also try to assimilate the SoS population. They do this in cases (ii) and (iii). Here, they are increasing the odds of getting the monocultural-DC outcome at the expense of the bicultural outcome. However, assimilation policies do not lower the likelihood of getting the monocultural-SoS outcome.[18] The story on the SoS elite side is similar, but because $\lambda_0 > 1/2$ in all four cases, the SoS elite may try to assimilate the DC population without engaging in population control. They do this in case (iv).

[18]In fact, assimilation by either elite cannot lower the likelihood of getting their least preferred cultural outcome; it can at best increase the likelihood of getting their most preferred cultural outcome at the expense of the intermediate, bicultural, outcome.

Finally, it is worth noting that in all cases except case (iv), the outcome is inefficient as both elites expend costly effort at getting their preferred cultural outcomes, but have opposing preferences over the cultural outcome.

Comparative Statics The comparative statics reported in the proposition describe how the key parameters of the model affect the size of the parameter region that the elites will use certain strategies.

One key parameter is λ_0, the SoS population share at the starting point of our analysis. In cases (i) and (ii), for example, as the initial share of SoS population becomes higher, it becomes harder to sustain the condition under which the SoS elite uses population control. This is because given the already large share of SoS population at the starting point, the marginal payoff gains due to an increase in the SoS population share are higher for the case where the SoS elite do not do population control than for the case where they do. Therefore, the net payoff change from the marginal increase in the SoS population share is negative. On the flip side, given a small share of DC population to begin with, the DC elite have greater incentives to contain further expansion of the SoS population as the share of SoS population increases. In fact, this observation holds for all four cases. The DC elite would like the outcome to be at least bicultural if they expect the monocultural-DC outcome to be unlikely despite their best efforts.

The other parameters of note include individual costs of assimilation and the returns from a profitable match. Observe that the thresholds $\overline{A}_S$ and $\underline{A}_S$ are decreasing in $c_{D,0}/b$, and the thresholds $\overline{A}_D$ and $\underline{A}_D$ are increasing in $c_{S,0}/b$ in all four cases. This is because when the cost of assimilating into the other culture is high for an individual of one group, the elite of the other group find it more challenging to assimilate the members of the first group; therefore, they want to use assimilation policies only when the cost of implementing these policies is very low.

Similarly, as the returns to a profitable match b decreases, individuals have less of an interest in coordinating with members of the other population and again it becomes more challenging for the elite of the other side to incentivize assimilation. This generates an empirical prediction: if economic development is associated with an increase in the returns to a profitable match (i.e., with greater economic development it becomes more attractive to culturally coordinate with others) then we should see elites adopting assimilation policies more and more as the society modernizes.[19]

[19] As Gellner (1983) argues, cultural coordination is less important to agricultural societies but of great importance to modern societies.

Predicted Cultural Outcomes Proposition 2 characterizes equilibrium strategies for the elites in each of the four cases. Here, we discuss the cultural outcomes that are likely to prevail under these strategies.

Case (i) describes Assam. Both elites use population control strategies, and λ_0 is above $\frac{1}{2}$. Since $c_{S,0}$ and $c_{D,0}$ are both high in this case, $\lambda_l = \lambda_{l,0}$ is small and $\lambda_r = \lambda_{r,0}$ is big. The monocultural-DC outcome is either impossible if λ_l is so small that $\lambda_l \leq \lambda_0 - \frac{1}{2}$; or it is possible but unlikely if $\lambda_0 - \frac{1}{2} \leq \lambda_l$ since it arises only when $\hat{\lambda}$ falls in the interval $\left[\lambda_0 - \frac{1}{2}, \lambda_l\right]$, which is a small interval when λ_l is small. Because λ_r is big and the monocultural-SoS outcome obtains only if $\hat{\lambda}$ falls in the interval $\left[\lambda_r, \lambda_0 + \frac{1}{2}\right]$ this outcome too is unlikely. Biculturalism, therefore, is the most likely outcome since it obtains if $\hat{\lambda}$ falls in the interval $[\lambda_l, \lambda_r]$, which is a large interval since λ_l is small and λ_r is big.

Case (ii) describes Ida-Virumaa. The DC elite use both population control and assimilation while the SoS elite use only assimilation. Here, only the two monocultural outcomes are possible since $\lambda_l = \lambda_r = \frac{1}{2}$, so the interval $[\lambda_l, \lambda_r]$ on which the bicultural outcome obtains does not exist. If, in addition, the starting share of the SoS population λ_0 is high, as it is in the case of Ida-Virumaa, then the monocultural-SoS outcome is considerably more likely than the monocultural-DC outcome. This is because the interval $\left[\lambda_0 - \frac{1}{2}, \frac{1}{2}\right)$ of values of $\hat{\lambda}$ on which the monocultural-DC outcome prevails is considerably smaller than the interval $\left(\frac{1}{2}, \lambda_0\right]$ on which the monocultural-SoS outcome prevails.

Case (iii) describes Jaffna and the Eastern Province of Sri Lanka. The DC elite use both population control and assimilation while the SoS elite use only population control. Thus $\lambda_l = \frac{1}{2}$ and $\lambda_r = \lambda_{r,0}$. All three cultural outcomes are possible. If, in addition, λ_0 and $c_{D,0}$ are high, as they are in the case of Jaffna and the Eastern Province, then the monocultural-SoS outcome is most likely, followed by the bicultural outcome. The monocultural-DC outcome is unlikely. This is because the range of $\hat{\lambda}$ on which the monocultural-SoS outcome prevails is $\left(\lambda_{r,0}, \lambda_0 + \frac{1}{2}\right]$, whose length is larger than 1/2; the range of $\hat{\lambda}$ on which the bicultural outcome prevails is $\left(\frac{1}{2}, \lambda_{r,0}\right]$, whose length is less than but close to 1/2; and the range of $\hat{\lambda}$ on which the moncultural-DC outcome prevails is $\left(\lambda_0 - \frac{1}{2}, \frac{1}{2}\right]$, whose length is even smaller than the length of the interval on which the bicultural outcome obtains (since λ_0 and $\lambda_{r,0}$ are both high).

Case (iv) describes Catalonia. Since λ_0 is above $\frac{1}{2}$ and the SoS elite use assimilation policies, $\lambda_r = \frac{1}{2}$. Thus λ_0 lies in $(\lambda_r, 1]$, where the monocultural-SoS outcome prevails.

5 Cultural Outcomes

In this section, we discuss the actual cultural outcomes for each of the four cases and compare them to the predictions made above.

5.1 Assam

The cultural outcome in Assam has so far been a bicultural one, with Bengalis maintaining their linguistic repertoire of Bengali-Hindi-English, and Assamese similarly with Assamese-Hindi-English. Despite the population advantage of the Assamese, there has so far been no demographic tip toward Assamese dominance. The initial fraction of the Assamese-speaking population was high. But with the possibility that Assamese youth would leave Assam to find employment in Kolkata (the capital of West Bengal State), the balance would then tip more in favor of the Bengali migrants to the region. If lots of young Assamese do move to Kolkata, then the Bengali elite may find it optimal to start using assimilation strategies, at which point the bicultural outcome may tip towards a monocultural-DC outcome. On the other hand, as economic development takes place in Assam and the returns to cultural coordination with others increases, it might become attractive to the elites to adopt assimilation policies. If the regional Assamese elites do this before the demographic tip towards Bengali culture takes place, then these policies could not only make the monocultural-SoS outcome more likely, they may also hasten the convergence to this outcome.

5.2 Ida-Virumaa

Given the high proportion of Russian-speakers at the time when the Soviet Union collapsed, Ida-Virumaa maintained a monocultural-SoS outcome in the first decade after independence. The Russian-speaking elites tried to keep Ida-Virumaa a Russian-speaking region through reliance on the Russian mass media that would assimilate all residents into the Russian cultural zone. Meanwhile, the Estonians tried to exert population control, making sure there is no in-migration of Russians from Russia, and seeking to repopulate the region with Estonians, as well as putting into place assimilation policies that demanded Estonian language facility for all citizens. So far, the outcome has been a monocultural-SoS outcome. But, given the demographic changes that are taking place in the region, a monocultural-DC outcome may be possible in the long run. The fraction of the Russian-speaking population was initially very high, and has continued to be

high, sustained in part by new in-migration of Russian-speaking Ukranian refugees. However, the fact that Russians are now leaving Ida-Virumaa to find jobs in other European countries, as permitted by Estonia's EU membership, suggests that the cultural outcome may cascade to one with Estonian dominance after sufficiently many Russian speakers out-migrate.

5.3 Jaffna and the Eastern Province

Given the combination of parameters for this case, and the strategies used by the SoS and DC elites, the model's prediction is that the monocultural-SoS outcome is most likely. Nevertheless, with the defeat of the LTTE (the insurgent Tamil Tigers) population control through military action by the Tamils has become a nonviable strategy, though politically the Tamils still work to maintain Jaffna and the Eastern Province as predominantly Tamil regions. In the long term, therefore, the Tamil elite are likely to give up using population control. When this dynamic is underway, the Sinhalese elite are likely to continue to use population control as well as policies to promote assimilation. It is therefore possible that the Eastern Province (but less likely the Jaffna peninsula) will tip to a monocultural-DC outcome in which the Sinhalese culture dominates.

5.4 Catalonia

According to the model's predictions, we should observe the Catalan elite pursuing an assimilation strategy while the Spanish elites use neither assimilation nor population control. But in fact both elites have continued to pursue assimilation strategies even though, according to our model, the Madrid elites cannot affect the cultural outcome unless they also engage in population control.

What accounts for the discrepancy? We offer one possible explanation. Several decades prior to the death of the Franco in 1975, Catalan-speakers were the vast majority of the population in Catalonia, close to 90%. During the Franco period, the Spanish state had adopted a policy of population control and assimilation in Catalonia, encouraging Castilian-speakers to migrate to Catalonia, demanding proficiency in Castilian Spanish in government jobs, and prohibiting Catalan-medium education. The Catalan elite in this period did not adopt a counter-strategy largely because they were powerless.[20] With the advent of democracy in 1975, the political costs of population control for both sides rose;

[20]In Appendix C we characterize conditions under which this strategy pair constitutes an equilibrium in the elite stage, given the high value of λ_0 in Catalonia during the Franco era.

and the cost of assimilation for the Catalan elites fell, since the promise of a liberal state meant that they could no longer be prohibited from teaching in their language. Thus, the Madrid elites abandoned their population control policies while the Catalan elites adopted policies of assimilation. The regional government's interest in using assimilation policies may have also been reinforced by the economic development that has taken place in Catalonia in the last few decades which has increased the incentives of descendants of the Castilian-speaking migrants to culturally coordinate with the Catalans. These changes have consequently led to a disequilibrium strategy being played by the Madrid elites, who have yet to abandon their assimilation policies and move toward the equilibrium strategy of no population control and no assimilation that is described in Proposition 2, case (iv).

However, regardless of whether the Madrid elites do eventually abandon their policies of assimilation, the prediction of the model is that the monocultural-SoS outcome will eventually prevail. And in fact there are some indications that Catalonia is on a path towards this outcome. Census data now reveal that for the population under twenty-five years old, 84% of Catalan residents report facility in Catalan, with only 3% saying they do not understand it. These figures would go up if only those of non-foreign origin were counted.[21] Compared to the virtual ignorance of Catalan by approximately 35% of the population at the starting point of our analysis in 1975, this is a substantial shift in the direction predicted by the model.

6 Discussion

We now remark briefly on potential extensions of the model and ways in which the model can inform a large N empirical analysis.

First, our characterization of equilibrium in the elite stage has focused on four sets of parameter regions that correspond to the coding of the four cases that motivated the study. Providing a full characterization of the equilibrium is possible using similar methods, but the number of cases to report is large so we leave this to future work as new cases emerge.

Second, we have assumed that individuals can only choose one culture, or language; that is, our model does not allow individuals to be bicultural, even though in many instances being bicultural is possible even at the individual level. Our model provides a first approximation of the reality that one culture probably dominates another culture at the individual level: individuals may be bilingual but most bicultural individuals have a

[21] "News Census reveals 73% speak Catalan in Catalonia, 95% understand it, 56% can write it," *Nationalia*, November 21, 2013.

primary culture and a secondary culture. That said, an interesting extension of our model would allow for individuals to belong to multiple cultures.

Third, we have assumed that the strategy sets of the elites are coarse in the sense that elites choose whether or not to engage in population control or assimilation rather than how much population control or assimilation to engage in. Furthermore, the choice to engage in assimilation policies has dramatic consequences for the costs to individual group members for assimilating: it reduces these costs all the way to zero. Likewise, the choice to engage in population control extends the support of λ by a fixed length. Allowing the elites to choose the amount of assimilation or population control would make the model less coarse. For example, assimilation costs may vary continuously with elite efforts at assimilation, and the support of λ could vary continuously with elite efforts at population control.

Another strategy that elites have occasionally used but that we have not explored here is efforts *against* assimilation. For example, the regional elite could try to counteract efforts at assimilation by the national elite by making it costly for the sons of the soil to assimilate into the national culture. Similarly, and especially in the ancient world, elites have used extreme forms of population control or repression, such as enslavement or genocide, that may not be adequately captured by our model. Including such strategies in the set of choices for the elites may expand the scope of our model cases outside of the contemporary world, where such policies violate contemporary international norms.

Fourth, we have assumed that all individuals are equally likely to be matched with each other, even though in reality members of the same group may be more likely to be matched with each other. This could happen, for example, if the region is very ethnically segregated. A simple extension of our model could account for this. Suppose each member of the SoS has a probability $q_S = (1-\lambda)w$ of being matched with a member of the DC, and each member of the DC has a probability $q_D = 1-\lambda w$ of being matched with another member of the DC. Here, $w \geq 0$ is a parameter that captures bias in the matching process. If $w < 1$ then SoS-DC matches are less likely than random; they are random when $w = 1$; and they are more likely than random when $w > 1$. If σ_j indicates the choice to retain or adopt the regional culture for an individual of type $j \in \{S, D\}$ then the probability of a profitable match for such an individual is

$$\pi_j(\sigma_j, \alpha, \beta|\ \lambda) = (1-q_j)[\alpha\sigma_j + (1-\alpha)(1-\sigma_j)] + q_j[\beta\sigma_j + (1-\beta)(1-\sigma_j)] \qquad (9)$$

and the expected payoffs to SoS and DC individuals are $\pi_j(\sigma_j, \alpha, \beta|\ \lambda)b - (1 - \sigma_S)c_S$ and $\pi_D(\sigma_D, \alpha, \beta|\lambda)b - \sigma_D c_D$, respectively. Similarly, we have assumed that profitable matches yield the same return b, but the return could vary with whether a match is a within-group match or a between-group match.[22] It is straightforward to solve the model under these different assumptions, and such extensions could be worthwhile for generating comparative statics on parameters such as w and the returns to different kinds of matches when data on ethnic segregation and variation in the profitability of different types of economic exchange (across and within groups) are available.

This leads us to our fifth and final remark, which concerns coding. In this paper, we have coded four cases according to the parameters of the model based on our reading of qualitative and historical accounts. Conducting a large N study of the model's implications would require both completing the equilibrium characterization across the entire parameter space as well as a more systematic coding procedure. We consider this to be an important endeavor for future empirical research on sons of the soil interactions.

7 Conclusion

In this paper, we have presented a model and illustrative cases where members of the dominant cultural group in a country migrate to regions inhabited by a culturally distinct population whose members consider themselves "sons of the soil." The standard literature on sons of the soil focuses on the probability and intensity of inter-group violent conflict. Here we examine instead the battle for cultural dominance in the region of migration. The model has three possible cultural outcomes: the sons of the soil assimilating into the dominant culture; the migrants adopting the regional culture of the sons of the soil; and a bicultural outcome where both the sons of the soil and migrants maintain their separate cultures over generations.

The model is a two stage game. First, the elites of the two groups decide on their optimal strategies of population control and assimilation. Then in the second stage, both migrants and autochthons decide whether to retain their group culture or to adopt the culture of the other. The model predicts which of the three possible cultural outcomes will be realized. The principal strategies available to elites to secure their preferred outcome for both the sons of the soil and for the migrants are parallel. First, they can seek to control the flow of population—here the elites representing the sons of the soil will try to

[22] Jha (2013) shows the conditions of a bonus for a successful between-group match.

limit the rates of in-migration and perhaps attempt to induce those of migrant background to return to their ancestral regions; and the elites representing the dominant culture can induce, perhaps through homesteading incentives or higher wages, greater numbers of the dominant culture to migrate to the region inhabited principally by sons of the soil. Second, the elites can seek to induce members of the other group to learn their language and adopt their cultural identities; that is to say, to assimilate the other.

We motivate the model with four vignettes of sons of the soil interactions at a time when the sons of the soil or members of the dominant culture have the opportunity to challenge the dynamic migration situation of the *ancien régime*. Typically, this occurs at the time of regime change. First, we look at the long-standing Bengali migration into Assam in India's far northeast once India becomes an independent state in 1948, with the Assamese defending their homeland as sons of the soil. Second, we examine a region of Estonia where Russians had become the sons of the soil due to Soviet policies, and examine the political and cultural strategies unleashed with the *de facto* independence of Estonia in 1991. Third, we discuss Jaffna and the Eastern Province of Sri Lanka after independence in 1956, where Tamils, as sons of the soil, had long been threatened by massive homesteading available to the country's dominant Sinhalese population. Last, we analyze the case of Catalonia after the death of Spain's dictator Francisco Franco, whose fascist regime had induced the dominant Castilian speakers of the country to migrate as industrial workers into Catalonia, turning the Catalans into sons of the soil.

Given the parameter values we assign to the cases, we foresee a long-term bicultural outcome in Assam, a continuation of the sons-of-soil culture in the heavily Russianized Ida-Virumaa region of Estonia (with the possibility of a longer-term tip towards the country's dominant Estonian culture with out migration to other EU countries by Russian speakers), a sustenance of the sons of soil Tamil culture in Jaffna (but less likely in the Eastern Province of Sri Lanka), and a long-term shift toward Catalan, the language of the sons of the soil in Catalonia, by the descendants of the Castilian-speaking Franco-era migrants. These projections are, to be sure, controversial, but they will allow for refinements of the model, perhaps with added parameters, as we watch these, and other sons of the soil dynamics, evolve.

Appendix

A. Proof of Proposition 1

Footnote 11 in the main text reports the set of Nash equilibria of the population stage. This characterization follows from (7) and (8). Now we consider the refinement.

If $\lambda \in [0, \lambda_l)$ then it is a strict best response to the initial condition $(\alpha_0, \beta_0) = (1, 0)$ for each SoS individual to switch to the dominant culture (since inequality (7) fails) and for each DC individual to retain the dominant culture (since inequality (8) fails as well). The outcome in which everyone adopts the dominant culture is a Nash equilibrium outcome of the population stage, so this is the unique equilibrium.

If $\lambda \in (\lambda_l, \lambda_r)$, then it is a strict best response to the initial condition $(\alpha_0, \beta_0) = (1, 0)$ for each SoS individual to retain the regional culture (since inequality (7) holds strictly) and for each DC individual to retain the dominant culture (since inequality (8) fails). Again, this outcome is a Nash equilibrium outcome of the population stage, so it is the unique equilibrium.

Finally, if $\lambda \in (\lambda_r, 1]$, then it is a strict best response to the initial condition $(\alpha_0, \beta_0) = (1, 0)$ for each SoS individual to retain the regional culture (since inequality (7) holds strictly) and for each DC individual to adopt the regional culture (since inequality (8) holds strictly). This outcome is also a Nash equilibrium outcome of the population stage, so it is the unique equilibrium for this case. □

B. Proof of Proposition 2

(i) When $\frac{1}{2} < \lambda_0 < \lambda_{r,0}$, the DC elite and the SoS elite both use only population control in equilibrium. Under these strategies the SoS elite's payoff is:

$$(\lambda_0 + \frac{1}{2} - \lambda_{r,0}) + (\lambda_{r,0} - \lambda_{l,0})(\frac{\lambda_{r,0} + \lambda_{l,0}}{2}) - P_S \tag{10}$$

If the SoS elite deviate to not using population control or assimilation, their payoff is

$$2(\lambda_0 - \lambda_{l,0})(\frac{\lambda_0 + \lambda_{l,0}}{2}) \tag{11}$$

The deviation is unprofitable if and only if the payoff in (11) does not exceed the payoff in (10). That is,

$$P_S \leq \frac{1}{2}(\lambda_{l,0})^2 - \frac{1}{2}(\lambda_{r,0})^2 - \lambda_{r,0} - \lambda_0^2 + \lambda_0 + \frac{1}{2} =: \overline{P}_S.$$

This condition says that the cost to do population control for the SoS elite must not exceed $\overline{P}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{P}_S}{\partial(c_{D,0}/b)} = \frac{\partial((\lambda_{r,0})^2/2)}{\partial(c_{D,0}/b)} = \frac{1}{4}(1 + \frac{c_{D,0}}{b}) > 0$$

$$\frac{\partial \overline{P}_S}{\partial(c_{S,0}/b)} = \frac{\partial((\lambda_{l,0})^2/2)}{\partial(c_{S,0}/b)} = -\frac{1}{4}(1 - \frac{c_{S,0}}{b}) < 0$$

$$\frac{\partial \overline{P}_S}{\partial \lambda_0} = -2\lambda_0 + 1 < 0.$$

If the SoS elite deviate to using both population control and assimilation, they get

$$(\lambda_0 + \frac{1}{2} - \frac{1}{2}) + (\frac{1}{2} - \lambda_{l,0})(\frac{\frac{1}{2} + \lambda_{l,0}}{2}) - P_S - (\lambda_{r,0} - \frac{1}{2})A_S. \tag{12}$$

The deviation is unprofitable if and only if the payoff in (12) does not exceed the payoff in (10). That is,

$$A_S \geq \frac{\lambda_{l,0} - \frac{1}{2}(\lambda_{r,0})^2 - \frac{3}{8}}{\lambda_{r,0} - \frac{1}{2}} =: \underline{A}_S.$$

This condition says that the cost to do assimilation for the SoS elite must be at least as big as $\underline{A}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \underline{A}_S}{\partial(c_{D,0}/b)} = -\frac{1}{4} < 0.$$

If the SoS elite deviate to using only assimilation, they get a payoff of

$$2(\lambda_0 - \frac{1}{2}) + 2(\frac{1}{2} - \lambda_{l,0})(\frac{\frac{1}{2} + \lambda_{l,0}}{2}) - (\lambda_{r,0} - \frac{1}{2})A_S. \tag{13}$$

The deviation is unprofitable if and only if the payoff in (13) does not exceed the payoff in (10). That is,

$$\frac{c_{D,0}}{2b}A_S - P_S \geq -\frac{5}{4} + \lambda_0 + \lambda_{r,0} - \frac{1}{2}(\lambda_{r,0})^2 - \frac{1}{2}(\lambda_{l,0})^2 =: \underline{\Delta}_S.$$

This condition says that the difference between the costs to do assimilation and population control for the SoS elite must be at least as big as $\underline{\Delta}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \underline{\Delta}_S}{\partial(c_{D,0}/b)} = \frac{\partial(-1/2(\lambda_{r,0})^2 + \lambda_{r,0})}{\partial(c_{D,0}/b)} = \frac{1}{4}(1 - \frac{c_{D,0}}{b}) > 0$$

$$\frac{\partial \underline{\Delta}_S}{\partial(c_{S,0}/b)} = \frac{\partial(-1/2(\lambda_{l,0})^2) + \lambda_{l,0}}{\partial(c_{S,0}/b)} = \frac{1}{4}(1 - \frac{c_{S,0}}{b}) > 0$$

$$\frac{\partial \underline{\Delta}_S}{\partial \lambda_0} = \frac{\partial \lambda_0}{\partial(c_{S,0}/b)} = 1 > 0.$$

Under the equilibrium strategies, the DC elite's payoff is

$$\lambda_{l,0} - (\lambda_0 - \frac{1}{2}) + (\lambda_{r,0} - \lambda_{l,0})(1 - \frac{\lambda_{l,0} + \lambda_{r,0}}{2}) - P_D. \tag{14}$$

If the DC elite deviate to not using either population control or assimilation, they get

$$2(\lambda_{r,0} - \lambda_0)(1 - \frac{\lambda_0 + \lambda_{r,0}}{2}). \tag{15}$$

The deviation is unprofitable if and only if the payoff in (15) does not exceed the payoff in (14). That is,

$$P_D \leq \lambda_0 - \lambda_{r,0} - (\lambda_0)^2 + \frac{1}{2}(\lambda_{r,0})^2 + \frac{1}{2}(\lambda_{l,0})^2 + \frac{1}{2} =: \overline{P}_D.$$

This condition says that the cost to do population for the DC elite must not exceed $\overline{P}_D$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{P}_D}{\partial(c_{D,0}/b)} = \frac{\partial(-\lambda_{r,0} + \frac{1}{2}(\lambda_{r,0})^2)}{\partial(c_{D,0}/b)} = \frac{1}{4}(1 + \frac{c_{D,0}}{b}) > 0$$

$$\frac{\partial \overline{P}_D}{\partial(c_{S,0}/b)} = \frac{\partial \frac{1}{2}(\lambda_{l,0})^2}{\partial(c_{S,0}/b)} = -\frac{1}{4}(1 - \frac{c_{S,0}}{b}) < 0$$

$$\frac{\partial \overline{P}_D}{\partial \lambda_0} = -2\lambda_0 + 1 < 0.$$

If the DC elite deviate to using both population control and assimilation, they get

$$\frac{1}{2} - (\lambda_0 - \frac{1}{2}) + (\lambda_{r,0} - \frac{1}{2})(1 - \frac{\frac{1}{2} + \lambda_{r,0}}{2}) - P_D - (\frac{1}{2} - \lambda_{l,0})A_D. \tag{16}$$

The deviation is unprofitable if and only if the payoff in (16) does not exceed the payoff in (14). That is,

$$A_D \geq \frac{-\frac{1}{2}(\lambda_{l,0})^2 + \frac{1}{8}}{\frac{1}{2} - \lambda_{l,0}} =: \underline{A}_D.$$

This condition says that the cost to do assimilation for the DC elite must be at least as big as $\underline{A}_D$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \underline{A}_D}{\partial(c_{S,0}/b)} = -(\frac{c_{S,0}}{b})^{-2} < 0.$$

Finally, since not using either population control or assimilation is not a profitable deviation for the DC elite, using assimilation only would also not be a profitable deviation for the DC elite. This is because $\lambda_0 > \frac{1}{2}$, without doing population control, moving $\lambda_{l,0}$ to $\frac{1}{2}$ would only incur a cost for the DC elite but not increase their gains.

(ii) When $\lambda_{l,0} + \frac{1}{2} < \lambda_0 < 1$, the SoS elite use only assimilation and the DC elite use both population control and assimilation in equilibrium. Under the equilibrium strategies, the SoS elite's payoff is

$$2(\lambda_0 - \frac{1}{2}) - A_S(\lambda_{r,0} - \frac{1}{2}). \tag{17}$$

If the SoS elite deviate to using neither population control nor assimilation, their payoff is

$$2(\lambda_0 - \lambda_{r,0}) + 2(\lambda_{r,0} - \frac{1}{2})\frac{(\frac{1}{2} + \lambda_{r,0})}{2}. \tag{18}$$

The deviation is unprofitable if and only if the payoff in (18) does not exceed the payoff in (17). That is,

$$A_S \leq \frac{-\lambda_{r,0}^2 + 2\lambda_{r,0} - \frac{3}{4}}{\lambda_{r,0} - \frac{1}{2}} =: \overline{A}_S.$$

This condition says that the cost to do assimilation for the SoS elite must not exceed $\overline{A}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{A}_S}{\partial(c_{D,0}/b)} = -\frac{1}{2} < 0.$$

If the SoS elite deviate to using only population control, their payoff is

$$(\lambda_{r,0} - \frac{1}{2})(\frac{\frac{1}{2} + \lambda_{r,0}}{2}) + (\lambda_0 + \frac{1}{2} - \lambda_{r,0}) - P_S. \tag{19}$$

The deviation is unprofitable if and only if the payoff in (19) does not exceed the payoff in (17). That is,

$$P_S - \frac{c_{D,0}}{2b} A_S \geq \frac{\lambda_{r,0}^2}{2} + \lambda_{r,0} - \lambda_0 + \frac{11}{8} =: \underline{\Delta}_S.$$

This condition says that the difference between the costs of doing population control and assimilation for the SoS elite must be at least as big as $\underline{\Delta}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \underline{\Delta}_S}{\partial (c_{D,0}/b)} = \frac{\partial (\frac{\lambda_{r,0}^2}{2} + \lambda_{r,0})}{\partial (c_{D,0}/b)} = \frac{1}{4}(3 + \frac{c_{D,0}}{b}) > 0$$

$$\frac{\partial \underline{\Delta}_S}{\partial \lambda_0} = -1 < 0.$$

If the SoS elite deviate to using both population control and assimilation, they get a payoff of

$$(\lambda_0 + \frac{1}{2} - \frac{1}{2}) - P_S - A_S(\lambda_{r,0} - \frac{1}{2}). \tag{20}$$

The deviation is unprofitable if and only if the payoff in (20) does not exceed the payoff in (17). That is,

$$P_S \geq 1 - \lambda_0.$$

However, as can be shown, this inequality is redundant once the two inequality above are satisfied.

Under the equilibrium strategies, the DC elite's payoff is

$$2(\frac{1}{2} - (\lambda_0 - \frac{1}{2})) - A_D(\frac{1}{2} - \lambda_{l,0}) - P_D. \tag{21}$$

If the DC elite deviate to not using either population control or assimilation, the DC elite's payoff is 0. The deviation is unprofitable if and only if the payoff in (21) is at least as big as 0. That is,

$$P_D + \frac{c_{S,0}}{2b} A_D \leq 2(1 - \lambda_0) =: \overline{\Delta}_D.$$

This condition says that the sum of the costs of doing population control and assimilation for the DC elite must not exceed $\overline{\Delta}_D$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{\Delta}_D}{\partial (c_{S,0}/b)} = -2 < 0.$$

If the DC elite deviate to using only population control, the DC elite's payoff is

$$2(\lambda_0 - \frac{1}{2} + \frac{1}{2})(1 - \frac{\lambda_0 - \frac{1}{2} + \frac{1}{2}}{2}) - P_D. \tag{22}$$

The deviation is unprofitable if and only if the payoff in (22) does not exceed the payoff in (21). That is,

$$A_D \leq \frac{\lambda_0(1-\lambda_0)}{\frac{1}{2} - \lambda_{l,0}} =: \overline{A}_D.$$

This condition says that the cost of doing assimilation for the DC elite must not exceed $\overline{A}_D$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{A}_D}{\partial \lambda_0} = 1 - 2\lambda_0 < 0.$$

$$\frac{\partial \overline{A}_D}{\partial (c_{S,0}/b)} = -\frac{1}{2}\lambda_0(1-\lambda_0)(\frac{c_{S,0}}{2b})^{-2} < 0.$$

Finally, since not using either population control or assimilation is not a profitable deviation for the DC elite, using only assimilation would not be a profitable deviation for the DC elite either. This is because when $\lambda_0 > \frac{1}{2}$, without doing population control, moving $\lambda_{l,0}$ to $\frac{1}{2}$ would only incur a cost for the DC elite but not increase their gains.

(iii) When $\lambda_{l,0} + \frac{1}{2} < \lambda_0 < 1$, the DC elite use both population control and assimilation while the SoS elite only use population control. Under the equilibrium strategies, the SoS elite's payoff is

$$(\lambda_0 + \frac{1}{2} - \lambda_{r,0}) + \frac{\frac{1}{2} + \lambda_{r,0}}{2}(\lambda_{r,0} - \frac{1}{2}) - P_S. \tag{23}$$

If the SoS elite deviate to using neither population control nor assimilation, their payoff is

$$2(\lambda_0 - \lambda_{r,0}) + 2((\lambda_{r,0}) - \frac{1}{2})(\frac{\frac{1}{2} + \lambda_{r,0}}{2}). \tag{24}$$

The deviation is unprofitable if and only if the payoff in (24) does not exceed the payoff in (23). That is,

$$P_S \leq -\frac{1}{2}\lambda_{r,0}^2 + \lambda_{r,0} - \lambda_0 + \frac{5}{8} =: \overline{P}_S.$$

This condition says that the cost of doing population for the SoS elite must not exceed $\overline{P}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{P}_S}{\partial (c_{D,0}/b)} = \frac{\partial(-\frac{1}{2}\lambda_{r,0}^2 + \lambda_{r,0})}{\partial (c_{D,0}/b)} = \frac{1}{4}(1 - \frac{c_{D,0}}{b}) > 0$$

$$\frac{\partial \overline{P}_S}{\partial \lambda_0} = -1 < 0.$$

If the SoS elite deviate to using assimilation only, they get a payoff of

$$2(\lambda_0 - \frac{1}{2}) - A_S(\lambda_{r,0} - \frac{1}{2}). \tag{25}$$

The deviation is unprofitable if and only if the payoff in (25) does not exceed the payoff in (23). That is,

$$\frac{c_{D,0}}{2b}A_S - P_S \geq -\frac{1}{2}(\lambda_{r,0})^2 + \lambda_{r,0} + \lambda_0 - \frac{11}{8} =: \underline{\Delta}_S.$$

This condition says that the difference between the costs of doing assimilation and population control for the SoS elite must be at least as big as $\underline{\Delta}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{\Delta}_S}{\partial c_{D,0}/b} = -\frac{1}{2} < 0.$$

If the SoS elite deviate to using both population control and assimilation, they get a payoff of

$$(\lambda_0 + \frac{1}{2} - \frac{1}{2}) - P_S - A_S(\lambda_{r,0} - \frac{1}{2}). \tag{26}$$

The deviation is unprofitable if and only if and only if the payoff in (26) does not exceed the payoff in (23). That is,

$$A_S \geq \frac{-\frac{1}{2}(\lambda_{r,0})^2 + \lambda_{r,0} - \frac{3}{8}}{\lambda_{r,0} - \frac{1}{2}} =: \underline{A}_S.$$

This condition says that the cost of doing assimilation for the SoS elite must be at least as big as $\underline{A}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \underline{A}_S}{\partial(c_{D,0}/b)} = -\frac{1}{2} < 0.$$

Under the equilibrium strategies, the DC elite's payoff is

$$(\frac{1}{2} - (\lambda_0 - \frac{1}{2})) + (\lambda_{r,0} - \frac{1}{2})(1 - \frac{\frac{1}{2} + \lambda_{r,0}}{2}) - P_D - A_D(\frac{1}{2} - \lambda_{l,0}). \tag{27}$$

If the DC elite deviate to using neither population control nor assimilation, they get a payoff of 0. The DC elite do not have an incentive to make such a deviation if and only if the payoff in 27 is at least as big as 0. That is,

$$P_D + \frac{c_{S,0}}{2b} A_D \leq -\frac{1}{2}\lambda_{r,0}^2 + \lambda_{r,0} + \lambda_0 - \frac{11}{8} =: \overline{\Delta}_D.$$

This condition says that the sum of the costs of doing population control and assimilation for the DC elite must not exceed $\overline{\Delta}_D$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{\Delta}_D}{\partial c_{D,0}/b} = \frac{\partial(-\frac{1}{2}\lambda_{r,0}^2 + \lambda_{r,0})}{\partial(c_{D,0}/b)} = \frac{1}{4}(1 - \frac{c_{S,0}}{b}) > 0$$

$$\frac{\partial \overline{\Delta}_D}{\partial \lambda_0} = 1 > 0.$$

If the DC elite deviate to using only population control, their payoff is

$$(\lambda_{r,0} - (\lambda_0 - \frac{1}{2}))(1 - \frac{\lambda_0 - \frac{1}{2} + \lambda_{r,0}}{2}) - P_D. \tag{28}$$

The deviation is unprofitable if and only if and only if the payoff in (28) does not exceed the payoff in (27). That is,

$$A_D \leq \frac{\frac{1}{2}(1 - \lambda_0)\lambda_0}{\frac{1}{2} - \lambda_{l,0}} =: \overline{A}_D.$$

This condition says that the cost of doing assimilation for the DC elite must not exceed $\overline{A}_D$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{A}_D}{\partial(c_{S,0}/b)} = -(1 - \lambda_0)\lambda_0(\frac{c_{S,0}}{b})^{-2} < 0$$

$$\frac{\partial \overline{A}_D}{\partial \lambda_0} = 1 - 2\lambda_0 < 0.$$

Finally, since it is not a profitable deviation for the DC elite to use neither population control nor assimilation, it would not be a profitable deviation for the DC elite to use assimilation only. This is because under $\lambda_0 > \frac{1}{2}$, without doing population control, moving $\lambda_{l,0}$ to $\frac{1}{2}$ would only incur a cost for the DC elite but not increase their gains.

(iv) When $\frac{1}{2} < \lambda_0 < \lambda_{r,0}$, the DC elite use neither population control nor assimilation while the SoS elite only use assimilation. Under the equilibrium strategies, the SoS elite's payoff is

$$1 - A_S(\lambda_{r,0} - \frac{1}{2}). \tag{29}$$

If the SoS elite deviate to using neither population control nor assimilation, their payoff is λ_0. Therefore, the deviation is unprofitable if and only if λ_0 does not exceed the payoff in (29). That is,

$$A_S \leq \frac{1 - \lambda_0}{\lambda_{r,0} - \frac{1}{2}} =: \overline{A}_S.$$

This condition says that the cost of doing assimilation for the SoS elite must not exceed $\overline{A}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{A}_S}{\partial \lambda_0} = -\frac{1}{\lambda_{r,0} - \frac{1}{2}} < 0$$

$$\frac{\partial \overline{A}_S}{\partial (c_{S,0}/b)} = -1(1 - \lambda_0)(\frac{c_{S,0}}{b})^{-2} < 0.$$

The SoS elite does not have an incentive to deviate to using both population control and assimilation, because the SoS elite do not gain additional utility by using population control yet have to subtract the cost of doing population control.

If the SoS elite deviate to using only population control, they get a payoff of

$$2(\lambda_{r,0} - \lambda_0)(\frac{\lambda_0 + \lambda_{r,0}}{2}) + 2(\lambda_0 + \frac{1}{2} - \lambda_{r,0}) - P_S. \tag{30}$$

The deviation is unprofitable if and only if and only if the payoff in (30) does not exceed the payoff in (29). That is,

$$P_S - \frac{c_{D,0}}{2b} A_S \geq (\lambda_{r,0})^2 - 2\lambda_{r,0} - \lambda_0^2 + 2\lambda_0 =: \underline{\Delta}_S.$$

This condition says that the cost of doing population control for the SoS elite must be greater than the scaled cost of doing assimilation by at least $\underline{\Delta}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \underline{\Delta}_S}{\partial (c_{D,0}/b)} = \frac{\partial ((\lambda_{r,0})^2 - 2\lambda_{r,0})}{\partial (c_{D,0}/b)} < 0$$

$$\frac{\partial \underline{\Delta}_S}{\partial \lambda_0} = -2(1 - \lambda_0) < 0.$$

Under the equilibrium strategies, the DC elite's payoff is 0.

The DC elite do not have an incentive to deviate to using assimilation only, because such a deviation does not allow the DC elite to gain additional payoff yet generates a cost of doing assimilation.

If the DC elite deviate to using only population control, their payoff is

$$2(\lambda_{l,0} - \lambda_0 + \frac{1}{2}) + 2(\frac{1}{2} - \lambda_{l,0})(1 - \frac{\lambda_{l,0} + \frac{1}{2}}{2}) - P_D. \tag{31}$$

The deviation is unprofitable if and only if and only if the payoff in (31) does not exceed 0. That is,

$$P_D \geq (\lambda_{l,0})^2 - 2\lambda_0 + \frac{7}{4} =: \underline{P}_D.$$

This condition says that the cost of doing population control for the DC elite must be at least as big as $\underline{P}_D$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \underline{P}_D}{\partial \lambda_0} = -2 < 0$$

$$\frac{\partial \underline{P}_D}{\partial (c_{S,0}/b)} = \frac{\partial (\lambda_{l,0})^2}{\partial (c_{S,0}/b)} < 0.$$

If the DC elite deviate to using both population control and assimilation, their payoff is

$$2(\frac{1}{2} - (\lambda_0 - \frac{1}{2})) - P_D - (\frac{1}{2} - \lambda_{l,0}) A_D. \tag{32}$$

The deviation is unprofitable if and only if and only if the payoff in (32) does not exceed 0. That is,

$$P_D + \frac{c_{S,0}}{2b} A_D \geq 2 - 2\lambda_0 =: \underline{\Delta}_D.$$

This condition says that the sum of the costs of doing population control and assimilation for the DC elite must be at least as big as $\underline{\Delta}_D$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \underline{\Delta}_D}{\partial \lambda_0} = -2 < 0.$$

□

C. Pre-1975 Catalonia

Proposition A.1 *Suppose $\lambda_{l,0} + \frac{1}{2} < \lambda_0 < 1$. Then there exist thresholds $\underline{A}_S$, $\underline{P}_S$, $\underline{\Delta}_S$, $\overline{A}_D$, and $\overline{\Delta}_D$, such that the DC elite uses population control and assimilation and the SoS elite use neither policy if and only if:*

$$A_S \geq \underline{A}_S,\ P_S \geq \underline{P}_S,\ P_S + \tfrac{c_{D,0}}{2b} A_S \geq \underline{\Delta}_S,\ A_D \leq \overline{A}_D, \text{ and } P_D + \tfrac{c_{S,0}}{2b} A_D \leq \overline{\Delta}_D.$$

Moreover, $\underline{A}_S$ is decreasing in $c_{D,0}/b$ and increasing in λ_0, $\underline{P}_S$ is increasing in λ_0 and decreasing in $c_{D,0}/b$, $\underline{\Delta}_S$ is decreasing in $c_{D,0}/b$ and increasing in λ_0, $\overline{A}_D$ is increasing in λ_0 and decreasing in $c_{S,0}/b$ and $\overline{\Delta}_D$ is increasing in $c_{D,0}/b$.

Proof: Under the conjectured strategies the SoS elite's payoff is

$$2(\lambda_{r,0} - \frac{1}{2})(\frac{\lambda_{r,0} + \frac{1}{2}}{2}). \tag{33}$$

If the SoS elite deviate to using neither population control nor assimilation, their payoff is

$$(\lambda_{r,0} - \frac{1}{2})(\frac{\lambda_{r,0} + \frac{1}{2}}{2}) + (\lambda_0 + \frac{1}{2} - \lambda_{r,0}) - P_S. \tag{34}$$

The deviation is unprofitable if and only if the payoff in (34) does not exceed the payoff in (33). That is,

$$P_S \geq -\frac{(\lambda_{r,0})^2}{2} - \lambda_{r,0} + \lambda_0 + \frac{5}{8} =: \underline{P}_S.$$

This condition says that the cost of doing population control for the SoS elite must be at least as large as $\underline{P}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \underline{P}_S}{\partial \lambda_0} = 1 > 0$$

$$\frac{\partial \underline{P}_S}{\partial (c_{D,0}/b)} = \frac{\partial (-\frac{(\lambda_{r,0})^2}{2} - \lambda_{r,0})}{\partial (c_{D,0}/b)} = -\frac{1}{4}(3 + \frac{c_{D,0}}{b}) < 0.$$

If the SoS elite deviate to using both population control and assimilation, their payoff is

$$(\lambda_0 + \frac{1}{2} - \frac{1}{2}) - P_S - (\lambda_{r,0} - \frac{1}{2})A_S. \tag{35}$$

The deviation is unprofitable if and only if the payoff in (35) does not exceed the payoff in (33). That is,

$$P_S + \frac{c_{D,0}}{2b}A_S \geq -(\lambda_{r,0})^2 + \lambda_0 + \frac{1}{4} =: \underline{\Delta}_S.$$

This condition says that the sum of the costs of doing population control and assimilation for the SoS elite must be at least as large as $\underline{\Delta}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \underline{\Delta}_S}{\partial \lambda_0} = 1 > 0$$

$$\frac{\partial \underline{\Delta}_S}{\partial (c_{D,0}/b)} = \frac{\partial (-(\lambda_{r,0})^2)}{\partial (c_{D,0}/b)} = -(\frac{1}{2} + \frac{c_{D,0}}{b}) < 0.$$

If the SoS elite deviate to using assimilation only, they get a payoff of

$$2(\lambda_0 - \frac{1}{2}) - (\lambda_{r,0} - \frac{1}{2})A_S. \tag{36}$$

The deviation is unprofitable if and only if the payoff in (36) does not exceed the payoff in (29). That is,

$$A_S \geq \frac{-(\lambda_{r,0})^2 + 2\lambda_0 - \frac{3}{4}}{\lambda_{r,0} - \frac{1}{2}} = \underline{A}_S.$$

This condition says that the cost of doing assimilation for the SoS elite must be at least as large as $\underline{A}_S$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \underline{A}_S}{\partial (c_{D,0}/b)} = 2(1 - 2\lambda_0)(\frac{c_{D,0}}{b})^{-2} - \frac{1}{2} < 0$$

$$\frac{\partial \underline{A}_S}{\partial \lambda_0} = 4(\frac{c_{D,0}}{b})^{-1} > 0.$$

Under the equilibrium strategies, the DC elite's payoff is

$$2(\frac{1}{2} - (\lambda_0 - \frac{1}{2})) + 2(\lambda_{r,0} - \frac{1}{2})(1 - \frac{\frac{1}{2} + \lambda_{r,0}}{2}) - P_D - (\frac{1}{2} - \lambda_{l,0})A_D. \tag{37}$$

If the DC elite deviate to using neither assimilation nor population control, they get a payoff of 0. The deviation is unprofitable if and only if 0 does not exceed the payoff in (37). That is,

$$P_D + \frac{c_{S,0}}{2b}A_D \leq -(\lambda_{r,0})^2 + 2\lambda_{r,0} - 2\lambda_0 + \frac{5}{4} =: \overline{\Delta}_D.$$

This condition says that the sum of the costs of doing assimilation and population control for the SoS elite must not exceed $\overline{\Delta}_D$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{\Delta}_D}{\partial (c_{D,0}/b)} = \frac{\partial(-(\lambda_{r,0})^2 + 2\lambda_{r,0})}{\partial (c_{D,0}/b)} = 1 - \frac{c_{D,0}}{2b} > 0.$$

The DC elite would not deviate to using assimilation only as long as they do not have an incentive to deviate to using neither population control nor assimilation, which gives a payoff 0. Comparing to the latter case, by using assimilation the DC elite would not gain additional payoffs but generate a cost of doing assimilation.

If the DC elite deviate to using only population control, their payoff is

$$2(\lambda_{r,0} - (\lambda_0 - \frac{1}{2}))(1 - \frac{\lambda_0 - \frac{1}{2} + \lambda_{r,0}}{2}) - P_D. \tag{38}$$

The deviation is unprofitable if and only if and only if the payoff in (38) does not exceed the payoff in (37). That is,

$$A_D \leq \frac{\lambda_0 - \lambda_0^2}{c_{S,0}/b} =: \overline{A}_D.$$

This condition says that the cost of doing assimilation for the DC elite must not exceed $\overline{A}_D$ for the equilibrium to sustain. The comparative statics are:

$$\frac{\partial \overline{A}_D}{\partial \lambda_0} = \frac{2\lambda_0 - 1}{c_{S,0}/b} > 0$$

$$\frac{\partial \overline{A}_D}{\partial (c_{S,0}/b)} = -\lambda_0(1 - \lambda_0)(\frac{c_{S,0}}{b})^{-2} < 0.$$

□

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