Institutions and Leaders in Hispaniola:
The Disparity in Economic Development between Haiti and the Dominican Republic

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Economics 4960H

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December 16th, 2015

Abstract

We examine the relatively recent disparity in economic development between Haiti and the Dominican Republic. Arguing that the divergence is due to factors that occured post 1950, we analyze the policy decisions of autocrats in both countries using a formal game-theoretic model and determine their implications for economic growth.

The organization of the paper is as follows; Section 1 is the introduction, we discuss the institutional background of both countries in Section 2, present the theoretical model in Section 3, and discuss implications of the model in Section 4. Section 5 concludes.

1   Introduction

Haiti and the Dominican Republic occupy the island of Hispaniola, between the North Atlantic Ocean and the Caribbean Sea, although the Dominican Republic is almost twice the size in area. Haiti has just over ten million people and the DR has slightly under ten million with many ethnicities found in both countries. Both have historically relied on sugarcane and coffee as economic drivers. Both have an executive ruler with a bicameral legislation and a civil court system. The shared tropical climate of Haiti and the DR makes them prone to hurricanes and severe storms with flooding. The mountainous terrain of both is subject

to earthquakes. Finally, both of their capital cities have approximately two million people today (CIA World Factbook).

Although the two countries both share the island of Hispaniola, in October 2015 the International Monetary Fund World Economic Outlook estimated that the Dominican Republic has a per capita GDP of $6,663, compared to Haiti's $830 (USD). This eightfold difference is striking: Haiti is the poorest country in the Western Hemipshere, while the Dominican Republic has a robust economy. Today, the demographics of the people vary significantly - the infant mortality rate of Haiti is 49 deaths/1000 live births versus 19 in the Dominican Republic: similarly, life expectancy is 63 years versus 79 years, the rate of AIDS infection is 2.1% versus 0.7%, and the literacy rate is 48% of the population versus 90% (CIA World Factbook). However, other parameters comparing the two countries show similarities. This is further complicated by the fact that the income disparity between the two is relatively recent; the two countries had roughly the same national income in 1950 (Bolt & van Zanden, 2013). Explaining this recent divergence is difficult, and many have offered, at times, wildly differing theories. We, however, side with several others in arguing that the policies of the respective leaders of both countries played a large role in their comparative development.

The role of individuals and their ability to influence history has long been debated among economists, political theorists, historians, and philosophers. Authors who prescribe to the so-called "Great Man" view of history have tended to focus upon the idiosyncrasies of world leaders and argue that many events in history can be explained by the motivations and actions of such leaders. Others, such as Karl Marx and Thorstein Veblen, have adopted the view that events in history can be largely seen as the culmination of overarching, deterministic social processes. Jones and Olken (2005) posit that researchers should adopt a view between these two extremes, and demonstrate that leaders have a large causative influence on the economic outcomes of their nations, particularly in autocratic settings, but less so in democracies. In the context of the autocratic setting of Haiti and the Dominican Republic during the latter half of the 20th century, it is clear that the leaders of each country had the

potential to help determine each country's path of development.

But what is to make of other factors that might explain the divergence in Hispaniola? Arguing for the role of geography, some interpret the national divergence as due to differences in rainfall and environmental policies (Diamond, 2005). However, this seems unlikely – the two countries share the same island and a similar climate. Sayre (2014) finds that Haiti received slightly more rainfall than Dominican Republic from the period of 1950-2010, evidence that should suggest that Haiti's highly denuded environment is the result of human, rather than geographic factors. Similarly, the island shares a common history, which rejects the "settler mortality" hypothesis as a source of their differences (Acemoglu, Johnson, and Robinson, 2001). Furthermore, before the 1950s, the countries produced similar exports; both primarily exported coffee, cacao, cotton, wood, sugar, molasses, and goatskins. As measured in 1925 by occupying forces of the United States, Haiti had a total export value of \$20,184,005, to the Dominican Republic's \$26,770,611[1]. Although the two countries are culturally distinct, much of their history suggests their drift apart was far from inevitable.

Similarly, Khan (2010) concludes that "the sharp contrast in economic performance between [the] two countries was rooted, not in immutable factors such as geography, the weight of history, or climate, but originated in the varying impacts of the rent-seeking strategies of the ruling elites in the Dominican Republic. . . and in Haiti". By reviewing historical data, Khan posits that the divergence occured after the 1950's, and examines the role of leaders and policy choices until the mid-1980s. He concludes that varying rent-seeking strategies, a wandering predatory bandit strategy versus a stationary bandit strategy, contributed to the long-term economic growth of the two nations. The wandering predatory bandit approach follows receipt of money and profit immediately, whereas, a stationary bandit waits to receive money and profit over a longer period of time. The former can have a devastating impact upon the economy, as it did in Haiti.

[1]Measured in 1925 United States Dollars, Source: 1925 Annual Report of United States Financial Adviser to Haiti, General Receiver of Dominican Customs Report to the United States, 1925

2 Institutional Background

Of course, there are complex reasons behind the different choices of strategies and policies. Although there were many autocrats in both Haiti and the Dominican Republic, Khan focuses mainly on just two ruling families. A complete analysis would require analyzing the actions of all the leaders in both countries in the latter part of the 20th century, however, these two can be said to be more or less indicative of the differences in goverance between Haiti the Dominican Republic. Therefore, we view leadership in both countries through the lens of two dynasties, knowing that this is a slight abstraction.

Rafael Trujillo was the dictator of the Dominican Republic from 1930 to 1961 and François Duvalier, also known as Papa Doc, was the President of Haiti from 1957 to 1971. According to Khan, the insecurity of Duvalier about his power – a result of the historic failure to create a widely accepted Haitian national ideology, caused him to choose a predatory strategy. François Duvalier, a *Vodou* master and a black nationalist, was treated as an outsider by the Haitian elite mulatto (individuals of mixed race heritage), as Duvalier believed that Africa should be the authentic source of Haiti's identity, instead of Europe. The minority rich mulattoes, protected by the military and supported by the Catholic Church controlled the country and threatened Duvalier. Even though Duvalier had the support of the poor majority, his position was always threatened and there were at least six attempts to overthrow him from 1958 to 1970. Therefore, it is not surprising to find that both Papa Doc and his son, Jean-Claude Duvalier, nicknamed "Baby Doc", who succeeded him as president adopted short term plunder as the path to self-enrichment in uncertain political circumstances.

In contrast to Duvalier, Trujillo, the dictator of the Dominican Republic, chose a long term rent seeking strategy as he felt more secure with his power. Trujillo used *antihaitian-ismo*, or hatred of Haitian language, culture, or race, as the nation-building ideology, and this provided Dominicans with a cultural superiority over the Haitians. This exclusive identity enhanced the level of national cohesion and therefore the security of Trujillo and influenced his choice of a very different rent seeking strategy. Instead of just plundering, Trujillo created

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conditions of economic expansion and implemented a stationary rent seeking strategy. Trujillo gave formal titles as well as regime support to the Dominican farmers, which motivated the farmers and in return, productivity increased. In addition, taxes were collected and this dramatic growth in agriculture boosted trade and contributed to the economic development of the country. Examining these two leaders, we, as does Khan, argue that these differences in rent seeking and investment made large impacts upon economic growth.

But what is the concept of rent-seeking? According to Francis Fukuyama, this idea comes from the French word *rente.* In French society, the elites spend all of their time trying to capture public office in order to secure a rent for themselves - a legal claim to a specific revenue stream that could be appropriated for private use (Fukuyama, 2011). As both of the countries of Hispaniola are former Spanish colonies, it is not surprising that the leaders of those two countries inherited this similar system [of rent seeking] created by the old regime in Spain, which... was exported to Latin America (Fukuyama, 2011). Both leaders, Rafael Trujillo in the Dominican Republic and the Duvalier family in Haiti, ruled their respective countries harshly and were extremely exploitative in their rent-seeking strategies. In the D.R., Trujillo dominated the nation from 1930-1961, turning it into his personal fiefdom amassing a fortune of more than 300 million dollars. Alongside his family and allies, he came to control nearly sixty percent of the country's assets; and approximately sixty percent of the Dominican labor force worked for Trujillo, either directly or indirectly. Things were even worse in Haiti, as the Duvalier family not only controlled the national wealth in a similar fashion, they siphoned international aid money given to Haiti for themselves; it is estimated they allocated almost 800 million for themselves and their cronies.

So why would rent seeking be a problem for the economic growth of a country? Simply, it is because such action is against the political development of a nation. Fukuyama provides three components of political development: the state, rule of law, and accountability. Recalling Fukuyama's definition of accountability: the government is responsive to the interests of the whole society . . . rather than to just its own narrow self-interests (Fukuyama, 2014). The

key word here is self-interest. According to Fukuyama, officeholders have little empathy for anyone but themselves but the interests of the party prevail. (Fukuyama, 2011). When the rulers are rent seekers, they have no interest in others wellbeing, therefore, the accountability in these countries is low.

Even though both dictators were greedy, there was a key difference. According to Khan, Trujillo, more secure in his position as a dictator, established a longer term rent seeking strategy - the stationary bandit strategy. Fukuyama uses the Ming Dynasty in China as an example to explain why the stationary bandit strategy exists and how it works. He argues that there are three basic constraints to why leaders choose the stationary bandit strategy instead of a predatory strategy, "The first was a simple lack of incentives to create the administrative capacity to carry out orders and in particular to extract a high level of taxes." This justification does not seem helpful to explain the situation in the Dominican Republic because it is a country much smaller than China, so the difficulty in administration cannot be expected as in the Ming case. There were also "limitations to the amounts of revenues demanded by different emperors", this can be a theoretical support for the D.R.. A third limitation on the power of Chinese emperors "operated in domains well beyond taxation and fiscal policy, which was the need for delegation" (Fukuyama, 2011). This does not help to explain Trujillo's behavior as he was a dictator who controlled everything. And again, as the Dominican Republic was a small country, the need for delegation may not be as much of a need as for the Chinese emperors. From the previous discussion, Trujillo had incentives to pursue a long term rent- seeking strategy, and to achieve this, he put efforts into developing the national economy. He did things not only for his own interest, such as building many statues of himself, but for the entire society. For instance, he helped the Dominican Republic take ownership of custom duties, which created fiscal revenues as the tariff income was considerable. He undertook other economic reforms such as supporting the infrastructure of the country by building roads. Also, he supported exports to pay back the foreign debt and encouraged industrialization. In 1955, the investment into industrial companies

doubled from the amount in 1954. Consequently, under his reign, the Dominican Republic developed at a much faster rate economically than other countries in the Caribbean. In contrast, both Duvalier leaders felt less secure in their tenure. They did little to support the infrastructure of the country, and in the power vacuum created after the end of the United States occupation of Haiti from 1915-1934, consolidated military power quickly. François Duvalier made little to no efforts to improve the lives of his people, instead spending lavish sums on himself mostly from international aid. The horrible corruption further worsened the relationship between the U.S. and Haiti; the U.S. stopped aid to Haiti during Duvalier's term. Fukuyama gives a theoretical interpretation on the impact of corruption on an economy. Simply speaking, corruption centers around the appropriation of public resources for private gain (Fukuyama, 2014). How can corruption harm economic growth? Fukuyama suggests there are three primary reasons. First, it distorts economic incentives by channeling resources not into their most productive uses but rather into the pockets of officials extracting bribes. Gaming the political system for private gain is what economists label rent seeking (Fukuyama, 2014). Again, this relates to the accountability of the government. In a highly corrupted government, all are rent seekers from low level public officials to the highest ruler, and the market would be abnormal under such unreasonable circumstances. From this analysis, one can conclude that the leaders in both countries were rent-seekers, but Trujillo's government in the Dominican Republic achieved relatively higher accountability than the Duvaliers government in Haiti. This is a crucial reason which explains the divergent performance in the economy of the two nations. Recall from Fukuyama's work, to achieve an ideal political order for a country to develop, there are three basic components: the state, the rule of law, and the accountability. The "state" part is more or less satisfied in both countries as they both have centralized governments. As both rulers were dictators, the development of "the rule of law" in both countries is relatively low. As these two factors are relatively insignificant, we argue that the different levels of accountability resulted in the differences in the political order, and therefore, resulted in the different economic performance between

Haiti and the Dominican Republic after the 1950s.

3 Model

Following from the institutional background presented for both countries, we develop a model that can be used to individually explain the development of the Dominican Republic and Haiti. Initially, the conditions for both countries are similar, so we assume both are located in similar production equilibria. Although interactions between the two countries may have had significant impacts upon their comparative development, the model does not consider any interactions between Haiti and the Dominican Republic. From this, we only let the countries differ in one respect – the country specific risk of a dictator being overthrown. The risk of being overthrown, α_c follows the normal distribution, or $\alpha_c \sim N(0, \sigma_\alpha^2)$. This implies that depending on the country, the risk of being overthrown can either be positive or negative with respect to the expectation of an autocrat's time in power for both Haiti and the Dominican Republic. Although the risk of being overthrown is endogenous to a leader's choices, we let α_c be the exogenous determinant of an autocrat's time in power, which is set at the beginning of their tenure. Furthermore, both leaders and citizens are perceptive, so they have full information about this value.

The model has two stages. In the first stage, a dictator, who has recently assumed power, surveys the institutional climate (α_c), which includes both political and economic institutions, and chooses the level of rents (τ) to extract from their citizens, similar to a tax. The second stage then focuses on the response of the citizens. Depending upon the level of rent extraction, individuals choose a certain level of production. For simplicity, we assume that every individual acts as their own firm, and produces one standard good, the price of which we normalize to one. Additionally, the citizens can also decide whether or not to attempt to oust the dictator, a choice that must be made jointly by a certain fraction of the population in order to be successful. After these decisions are made, the game then plays out according to the respective choices of the citizens and dictator: if a large enough share of

the population wishes to oust the autocrat, the autocrat is thrown out, almost immediately. If the autocrat is not thrown out, citizens go to work and produce their chosen amount of output, and then rents are extracted as a portion of that output. This timing is crucial, because it implies that if the dictator is thrown out, they do not receive any of the rents they could have potentially extracted during the period. We now define the game formally.

Players: Dictator and N number of citzens.

Strategies: In the first period, dictator chooses $\tau \in [0, 1]$, the rate of rent extraction from citizens, essentially somewhere from 0% to 100% of their output. In the second period, each citizen chooses the amount of personal production of a good (say sugar), call it q_i. Each citizen also chooses whether or not to attempt to oust the dictator.

Payoffs: Given by the respective utility functions of the dictator and the citizens.

$$\text{Dictator:} \quad U_D = \begin{cases} \sum_{i=1}^{N} \tau q_i & \text{if not overthrown} \\ 0 & \text{if overthrown} \end{cases}, \quad \text{Citizen:} \quad U_i = (1-\tau)\sqrt{q_i} - cq_i.^2 \quad (1)$$

Where q_i is the quantity of output produced by citizen i, the citizen's utility function has decreasing returns to scale and a constant marginal cost, c. Further, notice that the dictator takes τ proportion of a citizen's output, and the citizen keeps $(1 - \tau)$ of their output. By this construction, observe that citizens' utility is decreasing in τ, and so they prefer a lower amount of rent extraction.

To begin, we consider the conditions under which citizens will attempt to overthrow a autocrat. Imagine a scenario where a dictator chooses a level of rent extraction based upon their fixed level of altruism, which is fixed at birth. Assuming that an individuals' level of altruism is orthogonal to the chances of them gaining power, we assume that different autocrats' choices of rent extraction are distributed according to $\tau \sim \text{Uni}[0, 1]$.If the distribution

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[2]If the dictator is overthrown, the game immediately ends, and the citizen does not receive any payoff. The logic here is that if a dictator is overthrown, a new leader will take their place, and then the citizen's payoffs will be based upon that new game.

of potential autocrats and their respective rent seeking strategies is known to citizens, then this provides them information on whether to rise up against a particularly greedy leader. Then, if the current leader chooses to extract rents at the level of τ', they can compare this to the expected level of extraction under any other leader, given by $E[\tau]$. Since citizens know the distribution of τ, we have $E[\tau] = 1/2$. Therefore, citizens will choose to stage a coup if the current level of extraction exceeds the expected level of extraction, plus the country specific risk of a leader remaining in power. This implies that citizens will stage a coup if: $\tau > E[\tau] + \alpha_C = 1/2 + \alpha_C$. Therefore, risk of revolt provides an upper bound for rent extraction, $\overline{\tau} = 1/2 + \alpha_c$, which any given leader cannot exceed if they wish to remain in power.

Following from this, we can now analyze the game, given that we know the conditions under which a leader will be overthrown. From before, we see that citizens have equal preferences, so we can analyze them as one cohesive group of N members. Therefore, the game can be modeled as a regular two-player game. As in most extensive form games, we can use the method of backward induction to solve for the subgame perfect Nash equilibrium. By logic given above, the citizens will always choose to overthrow a dictator if $\tau > \overline{\tau}$, so as long as that isn't the case, we begin by only examining their optimal production choices, given a previously set level of $\tau \in [0, 1]$.

To begin, start with the citizen's utility function in equation 1. Then note that an interior solution to the utility maximization problem is assured since $U_i'' = -(1 - \tau)/4q^{-3/2} < 0$, which implies that U_i is concave. Therefore, taking the first order condition of the utility function with respect to q_i, we obtain: $\dfrac{\partial U_i}{\partial q_i} = \dfrac{(1 - \tau)}{2\sqrt{q_i}} - c$. Setting this equal to zero and solving algebraically yields the best response function for individual i of

$$B(\tau) = q_i^* = \frac{(1 - \tau)^2}{4c^2}. \tag{2}$$

As we will come back to later, note that an individual's production is decreasing as rent

extraction increases, as expected. Next, now that we know the citizen's best response func-
tion, we can analyze the optimal choices for dictator. Their utility maximization problem is
as follows:

$$\max_{\tau} \; U_D = \sum_{i=1}^{N} \tau q_i^* = N \tau q^* = \frac{(1-\tau)^2}{4c^2} N \tau \;\; \text{such that} \;\; \tau \leq \bar{\tau}. \tag{3}$$

The simplification above is due to the fact citizens have identical preferences, and so $\forall i, q_i^* = q^*$. Further, notice that U_D is concave since $U_D'' = \frac{N}{4c^2}(6\tau - 4) < 0$ for $\tau < 2/3$, and therefore can be solved using first order conditions. First, we consider the unconstrained maximization problem, and take first order conditions with respect to τ. This is $\frac{\partial U_D}{\partial \tau} = \frac{N}{4c^2}(3\tau^2 - 4\tau + 1) = 0$. Setting this equal to zero, and solving for algebraically, I get that the roots of $3\tau^2 - 4\tau + 1$ are $\tau = 1/3, 1$. Notice that $2/3 < 1$, so $\tau = 1$ will not maximize the dictator's utility. Therefore, we obtain the optimal rent extraction regime of $\tau^* = 1/3$, which the leader will choose if $\bar{\tau} \geq 1/3$, or the constraint is not binding. Otherwise, if $\bar{\tau} < 1/3$, we show that the constraint $\tau = \bar{\tau}$ will bind. For proof of this, notice that U_D increasing in τ, since $U_D' = \frac{N}{4c^2}(3\tau^2 - 4\tau + 1) > 0$ for $\tau < 1/3$. Assume by contradiction that $\tau < \bar{\tau}$. But then, dictator could increase rent extraction by a small $\epsilon > 0$ and increase their utility, without being overthrown. Therefore, they will do this, until $\tau^* = \bar{\tau}$, as desired. Assuming that the constraint does not hold, or $\tau^* = 1/3$, we can now consider the total output of the nation, given by the sum of each citizen's production decisions. Substituting in for τ^* into each citizen's best response function, we obtain the total output of the nation to be

$$\sum_{i=1}^{N} q_i = N \frac{(1-\tau^*)^2}{4c^2} = \frac{N}{9c^2} = \frac{N_0 + N_1}{9c^2}. \tag{4}$$

Next, consider a variant of the same game where there are now two groups in society: G_0 and G_1. In this society, G_0 is the group with power in society, whereas G_1 is a subjugated group. With regard to demographics, assume there are N_0 members of G_0 and N_1 members of G_1, where the two groups add up to the entire population, so $N_0 + N_1 = N$. G_0 is the only group with political power in the nation, and so we assume that only members of G_0 can

stage coups. Diametrically, members of G_1 cannot amass effort support to make meaningful political changes, unless their political choices coincide with members of G_0. Now, within groups, individuals are still identical, but across groups we assume that they can differ. According the two groups in society, the autocrat can now set different rates of extraction for members of G_0 and G_1. Members of G_0 face a rate of rent extraction of τ_0, whereas members of G_1 face a "tax" of τ_1. Given the setup of this revised extensive form game, we can again solve for the equilibrium using backwards induction.

Given the choice of an arbitrary rate of extraction $\tau_G \in [0, 1]$, where $G \in \{G_0, G_1\}$, the citizen in group G's best response function is the same as in equation 2, except for replacing τ with τ_G, so $B(\tau_g) = \frac{(1-\tau_g)^2}{4c^2}$. As before, now that we know a citizen in group G's best response function, where $G \in \{G_0, G_1\}$, we can analyze the optimal choices for dictator. Before doing so, we first make a modification to the dictator's utility function in equation 1, replacing the utility function in the case where they remain in power with

$$U_D = \sum_{i \in G_0} \sqrt{\tau_0} q_{i0} + \sum_{i \in G_1} \tau_1^{3/2} q_{i1}. \tag{5}$$

Here, notice that the exponent of τ_G represents relative bias of dictator to one group, if the exponent is less or equal than one, the dictator is biased in favor of that group. If the exponent is greater than one, then the dictator is biased against the that group, in this case G_1. Despite this modification, the autocrat's utility maximization problem should otherwise be roughly analogous to equation 3, where plugging in for the best response functions of each group we obtain the constrained optimization problem

$$\max_{\tau_0, \tau_1} U_D = N_0 \sqrt{\tau_0} q_0^* + N_1 \tau_1^{3/2} q_1^* \text{ subject to the constraint } \tau_0 \leq \bar{\tau}. \tag{6}$$

From this, I first verify that an interior solution to the maximization problem is guaranteed. But notice that $\frac{\partial^2 U_D}{\partial \tau_0^2} < 0$ for $\tau_0 < 1/2$ and $\frac{\partial^2 U_D}{\partial \tau_1^2} < 0$ for $1/8 < \tau_1 < 3/4^3$, so U_D is concave

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[3] The inequalities here are close approximations.

with respect to τ_G on the intervals above. Assuming the problem is unconstrained, solving for the first order conditions and setting each equal to zero [4], I obtain an optimal rent extraction regime of $\tau_0^* = 1/5$ and $\tau_1^* = 3/7$. Similar to the logic presented in the previous game, if $\overline{\tau} < 1/5$, then this constraint will bind, or $\tau_0^* = \overline{\tau}$, but only for G_0, members of G_1 have no such upper bound on the level of rents that can be extracted from them. Furthermore, note that in the previous problem, $\tau^* = 1/3$. Therefore, members of G_0 face a lower level of rent extraction than before, since $\tau_0^* = 1/5 < \tau^* = 1/3$, and members of G_1 now contribute more to the autocrat's coffers, as $\tau^* = 1/3 < \tau_1^* = 3/7$. As before, if the constraint does not bind, or $\overline{\tau} \geq 1/5$, then we can analyze the total output of the nation as the sum of all individuals production functions. Since we know the best response functions for each group, given τ_G^* we can compute total output. Omitting some of the tedious algebra, this is:

$$\sum_{i \in G_0} q_i + \sum_{i \in G_1} q_i = N_0 q_0^* + N_1 q_1^* = \frac{4N_0}{25c^2} + \frac{4N_1}{49c^2}. \tag{7}$$

Knowing this, we can compare total output of the nation under the scenario where the level of rent extraction is uniform for all citizens to the situation where we have a two group society with respective extraction rates. Then, comparing equations 4 and 7, notice that total output will be larger under this scenario if

$$\frac{4N_0}{25c^2} + \frac{4N_1}{49c^2} > \frac{N_0}{9c^2} + \frac{N_1}{9c^2} \Rightarrow N_0 > \frac{325}{529}N_1 \tag{8}$$

This implies that if the majority group is larger, or $N_0 > N_1$ [5], the total output of a nation will be higher under the scenario where extraction rates are set differentially for members of G_0 and G_1.

[4] Steps omitted, this part is fairly straightforward.
[5] Noting that $N_0 > N_1 \Rightarrow N_0 > \frac{325}{529}N_1$

4 Results

We now analyze the results of the model and compare them to some of the history of institutions and leaders in Hispaniola presented in sections 1 and 2. The first result is somewhat surprising, given the seeming ability for leaders in both Haiti and the Dominican Republic to enrich themselves; even in dictatorships, citizens have some control over rent extraction, as the risk of revolt provides upper bound an the maximum amount of production a leader can allocate to themselves. This implies that in some respect, there is a lower bound on how unaccountable and extractive a society can become under any given autocrat – although even with this "lower bound", the results can certainly still be disastrous for citizens living in these societies.

Next, as expected, in our model citizens will choose to produce less output if rent extraction is higher. Since a dictator's wealth is a function of total production in the economy, increasing the level of rent extraction comes at the cost of reducing total output. This implies that a leader who is a "stationary bandit" will choose a relatively low rate of extraction to maximize their long term wealth. Therefore, leaders in both countries and their observed rent seeking strategies may differ not because of their personal characteristics, but rather as the result of maximizing their own expected long run income from graft.

Finally, consider the variant of the game with two groups in society. We argue that this variant explains many of the potential differences in extraction policy between the two countries. Hinted at by Khan, differences in the rent seeking strategies of leaders in Hispaniola may possibly be explained by their demographics. In Haiti, the leadership of the Duvalier family was threatened by a powerful minority of elites, on whom they could not levy high taxes upon without fearing a coup. On the other hand, in the Dominican Republic, black Haitians composed a large part of the ethnic minority, but were not powerful enough to rise up against Dominican leaders, who repressed them under a policy of *antihaitianismo*. Therefore, this rough evidence implies that in Haiti, $N_0 < N_1$, whereas in the Dominican Republic, $N_0 > N_1$, or the powerful group in Haiti was small, whereas in the Dominican

Republic, it was large. Comparing this with our model, we note that if society is split into two groups, if the dictator can successfully subjugate a minority group, the output of the nation will be higher than if they levied the same extraction rate upon everyone. This implies that in a powerful majority-subjugated minority society, economic output may be larger, even if one group is significantly worse off, which seems to loosely match the experience of the Dominican Republic. However, in Haiti, the Duvaliers and other leaders, fearing the length of their tenure, likely felt wary of extracting too high of rents from the elites in society, and instead extracted more from the large majority group, who had relatively less political power. By the logic presented in equation 8, this led Haiti to experience lower economic growth, since higher extraction rates, as shown above, led to disincentives for individuals to work.

5 Conclusion

We have argued that the policies of leaders in Hispaniola during the 20th century were a large contributing factor to the relative modern wealth of Haiti and the Dominican Republic. Showing that other factors such as the role of history or geography are unlikely causal factors, we formally examine the differences in rent-seeking strategies of dictators in two countries and their economic implications. Positing that the difference in rent extraction between the two countries is the result of calculated economic decision on behalf of leaders, and not a idiosyncratic process, we propose a model of a two group society, where two groups receive differential treatment from a autocrat. The demographic differences between Haiti and the Dominican Republic in terms of groups that had political power seems to explain some of the divergence in economic output from the period of the 1950s to the present.

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