

Three Essays on International Trade, Foreign Influence, and Institutions

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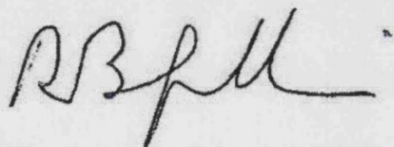
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Roberto Bonfatti

A handwritten signature in black ink, appearing to read 'RBfM', with a small dot at the end of the final stroke.

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I am deeply indebted to Tim Besley and Robin Burgess for their invaluable help and assistance over the years. I can now appreciate how long the route between my first days at LSE and this moment was. Their assistance during the years was essential to keep me on track, and taught me so much about how to do research in economics.

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Finally, I would like to dedicate this thesis to the memory of my father, whose love for knowledge has remained to animate me and so many others.

Abstract

This thesis is about the link between international trade (and the economic fundamentals that determine it) and a country's economic power. In Chapter 1 and 2, I define economic power as the capacity to impose - at little enough cost - harmful trade sanctions on other countries. I study how a "strong" country can use its economic power to influence policy and institutional change in a "weak" country. This foreign influence interacts heavily with domestic politics in Chapter 1. Here, I study how an incumbent elite that has a disproportionate stake in gains from trade may use foreign influence to entrench itself in power. I argue that this can help explain the pattern of democratization in Latin America during the Cold War. In Chapter 2, I focus instead on how changes in economic power may lead to institutional change in international relations. I study how a weak country that is under the *de jure* domination of a strong country may find it easier to re-establish its sovereignty when the economic power of the strong country decreases. This allows me to explain various decolonization episodes in terms of changes in the economic fundamentals (mainly factor endowments) that determine trade, and thus economic power. A different approach to economic power is adopted in Chapter 3. This chapter is about the allocation of oil contracts to multinational companies in developing countries, and how is this determined by inter-governmental lobbying just as well as by economic factors. In this context, the economic power of an oil-importing country is defined as its capacity to lobby an oil-exporting government into a clientelistic allocation of contracts. I construct a model where this capacity is endogenously determined by the structure of the oil trade, by technology, and by the political myopia of the oil-exporting government.

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Chapter 1

Foreign Influence and the Cold War History of Democracy in Latin America

The recent political economy literature on regime change and non-democratic politics has not paid enough attention to the role of foreign influence. I look at the Cold War history of democracy in Latin America and construct a theory of power allocation in the presence of foreign influence. In this theory, the outcome of a distributional conflict between an incumbent group and a challenger is altered by the capacity of the incumbent to obtain external support from a key trading partner. This capacity is grounded in the incumbent larger exposure to the international economy, which makes him easier to control from the exterior, using the threat of trade sanctions. I also allow for the possibility that there is international competition for the geopolitical alignment of the incumbent's country, and study how this choice of alignment

is determined by economic or political self-interest. I argue that this theory can help understand the Cold War history of democracy in Latin America, but that it is useful in a number of other contexts as well.

1.1 Introduction

In recent years, the political economy literature has put considerable effort in studying the economic determinants of regime change and non-democratic politics. For example, a series of papers have studied the transition to democracy in Western Europe and other parts of the World (e.g. Lizzeri and Persico, 2004; Llevador and Hoxoby, 2005; Acemoglu and Robinson, 2006). Other work has focused on the allocation of power within weakly institutionalized polities (e.g. Hellman and Wantchekon, 2000; Padro-i-Miquel, 2007). While some of these papers do consider the effect of changing international economic conditions on regime change and non-democratic politics (see, for example, Chapter 10 in Acemoglu and Robinson, 2006), these are normally seen as shaped by the interaction of domestic players only.¹

There is, however, considerable evidence that regime change and non-democratic politics are influenced by foreign interventions as well. Looking at democratization, for instance, one finds many examples of how the US supported coups against democracy during the Cold War: to cite but a few, the coups in Iran (1953), Guatemala (1954), and Chile (1973). That Cold War interventions were largely detrimental to democratization is established empirically by Easterly, Satyanath, and Berger (2008), who use recently de-

¹A notable exception to this is Aidt and Albornoz (2009), which I discuss below.

classified material to show that covert CIA and KGB interventions resulted in a decline in democracy both in the short and in the long run. On the other hand, recent interventions such as the war on Iraq or Afghanistan have been decisive to the current democratization attempt in these countries. Nor do foreign interventions only seem to arbitrate between democracy and autocracy: for example, the history of post-colonial Africa is full of instances in which former colonial powers supported one group or another at the lead of non-democratic regimes.² Finally, foreign intervention is not only limited to full-fledged military operations. For example, Mobutu's long permanence in power was facilitated by the timely release of economic aid in periods of economic distress; in today's Zimbabwe and Sudan, the entrenchment of the ruling elite is made easier by the diplomatic support that these countries receive from China.

In this paper, I look at the history of US interventions in Latin America to construct a theory of power allocation in the context of foreign influence. This theory helps understand the Cold War history of democracy in Latin America. At the same time, it shed lights on the reasons why, by hindering the democratization process, the US went against its long-standing foreign policy goal of supporting democracy abroad. Finally, while the theory is based on what were the key determinants of foreign interventions in Latin America - the wish to protect and promote foreign investors, and the need to secure the geopolitical alliance of intervened countries - I argue that it is general enough to be useful in other contexts as well.

²See Waisse (1998, Ch. 10), for a study of French interventions meant to prevent the spread of American influence to French Africa, or extend French influence to parts of British Africa.

The model builds on the distributional conflict between two groups, a political incumbent and a challenger, in the context of a small open economy. Part of the value of this economy relies on a peaceful trade relation with a large foreign country, and I assume that members of the incumbent group have a higher per capita stake in this part of the economy than members of the challenging group. International economic relations are shaped by reputation: in particular, a large foreign investment position may force the large country to impose costly sanctions against a government who expropriates. I construct a simple reputation game, and derive conditions under which the threat of sanctions becomes credible: when these conditions are met, the incumbent is blessed with a greater capacity to commit to protecting foreign rents, relative to the challenger. I add to this picture the international competition between two large countries (the one already mentioned, plus another one) who both care about the small country's geopolitical alignment. This is a choice over which the two groups do not have an intrinsic preference, but that can be used to secure economic support from the second large country. Thus, a key cost of sanction for the first large country lies in the risk that the sanctioned government ends up in the opponent's camp.

In this environment, if the large country has the capacity to intervene in the political life of the small country, the incumbent may want to use foreign rents strategically, so as to secure some external support. Such support is motivated by the perspective of a conflictual relation between the large country and a successful challenger: crucially, this conflict is fueled by both economic nationalism and geopolitical adversity, but this second element is entirely driven by economic motivations. I solve for the equilibrium of the model and

derive several predictions on the link between the small country's economic and political conditions and the capacity of the incumbent to entrench itself with external support. I argue that the theory can help understand why US foreign policy was largely detrimental to democracy during the Cold War, in sharp contrast with one of its most long-standing goals. I illustrate this using a few case studies. I conclude by suggesting that the model provides a good starting point for analyzing these issues in a broader context, as it lends itself to several simple extensions.

The paper adds to the political economy literature on democratization. This can be organized into two main strands, one that focuses on redistribution as a driver for democratization (e.g. Acemoglu and Robinson, 2006), another that postulates that it is economically profitable for the ruling group to share power with a broader sets of citizens, (e.g. Lizzeri and Persico, 2004).³ I borrow the basic structure of the model from papers in the first group, but innovates on these by specifically looking at the case of foreign influence. To the best of my knowledge, the only paper to have done this before is Aidt and Albornoz (2009), who adapt the Acemoglu and Robinson (2006) model to account for foreign interventions. My paper shares one key element with this paper, namely the incumbent's advantage in committing to a better treatment for foreign investors. It is however quite different in at least two important respects. First, I present an alternative mechanism for why the elite cares about foreign investors, one that puts trade and reputation at centre stage. Second, while Aidt and Albornoz (2009) only look at

³For a detailed discussion of the literature on democratization, the interested reader is referred to Acemoglu and Robinson (2006). A very concise review of the literature using formal modeling can instead be found in Ticchi and Vindigni (2009).

the protection of foreign investors as a motivation for foreign intervention, I suggest a mechanism that relates protection to a broader set of geopolitical issues. Because of these different modeling choices, the two papers offer sets of results that are largely complementary to each other.

The paper is also related to two very recent strands of literature on foreign influence. The first is an empirical literature based on declassified CIA and KGB materials. Beside the above mentioned Easterly *et Al.* (2008) paper, the two other papers in this literature are Dube, Kaplan, and Naidu (2008) - who look at the effect of covert CIA interventions on the stock market performance of companies involved in the intervened country - and Easterly, Nunn, Satyanath, and Berger (2009), who look at the consequences of CIA interventions for the intervened country's trade relations. The second (to which the paper is more loosely related) is a theoretical literature who studies the efficiency implications of cross-border lobbying (Endoh, 2005; Aidt and Hwang, 2008a, 2008b; Antras and Padro, 2009; Bonfatti, 2010).

The paper is organized as follows. Section 2 provides an historical overview of the case of Latin America and sets out the key questions that I want to address. Section 3 develops the theory. Section 4 uses the theory to provide a general interpretation of the Latin American case, and to answer the key questions. Section 5 uses country studies to further illustrate this interpretation. Section 6 summarizes, discusses possible extensions and concludes.

1.2 Stylized facts and key questions

I begin by providing some background info on the pre-1945 history of representative institutions in Latin America, and on the strengthening of US influence over this period. I then describe how democracy evolved during the Cold War, and how US influence played a role in this. I conclude by setting out the key questions that my model wants to address.

1.2.1 Historical background

Most Latin American countries established representative institutions during the course of 19th century. These, however, remained firmly in the hands of a small elite of landowners and businessmen until the middle of the 20th century. In fact, a series of electoral restrictions prevented the masses from participating in election (see Hartlyn, 1994). Furthermore, with a few exceptions (such as Chile and Uruguay), these institutions remained very weak relative to the army, and could therefore be overthrown when they did not provide sufficient guarantees of social stability.

In the first half of the 20th century, however, the pressure for social and political change became increasingly strong. On one hand, since the 1890s, labour demonstrations and strikes became widespread. These were normally put down by the army, leading to violent clashes and bloodshed. On the other, from the 1920s onwards a large number of new radical parties were founded (see Angell, 1994), which set out to conquer power through the elite's representative institutions. These parties were very diverse in nature (they were communist, socialist, radical, populist, etc) but shared

two common goals: the implementation of domestic redistributive reforms, and the adoption of a nationalistic stance towards foreign investors, which they saw as agents of foreign imperialism.

The first half of the 20th century was also the period in which the US became extremely influential in Latin American affairs. This had roots in the expansion of the US as the leading political and economic power of the Western hemisphere. On the political side, US supremacy was embedded in the two key principles leading its foreign policy. The first, established by the Monroe Doctrine of 1823, stated that any attempt by a European power to colonize or otherwise interfere with states in the Americas would be taken as act of hostility by the US government. While challenged a few times in 19th century, the Monroe doctrine became largely inviolable by the first half of the 20th century (Brzezinski, 1992, p. 39). The second principle was established by the Roosevelt Corollary to the Monroe Doctrine (1904), and attributed to the US the right to intervene in the domestic affairs of a Latin American country where its investments would come under threat.

On the economic side, US influence was first of all the result of its increasingly important role as Latin America's trade partner. Since the 1860s, the Latin American economies relied heavily on the export of agricultural and mineral commodities or, where industrialization had already taken place, on imported intermediates and machinery.⁴ In the first half of the 20th century, the US displaced Europe as Latin America's main trading partner, getting

⁴The key export commodities were temperate agricultural commodities in Argentina and Uruguay, tropical commodities such as sugar, tobacco, coffee and cocoa and bananas in Brazil, Colombia, Ecuador, Central America and the Caribbean, parts of Venezuela and Mexico. The key exporters of minerals were Mexico, Chile, Peru, Bolivia and Venezuela. Argentina, Mexico, Brazil, Chile and Colombia were the early industrializers.

to absorb more than 50% of the trade of many countries by the early 1950s.⁵ This made it very influential with the local elite, who controlled a large share of the land farmed for export agriculture and looked to foreign markets for its consumption patterns (see, for example, Feinberg, 1974, p. 31). The US also became the region's leading supplier of private capital: following two periods of buoyant growth (1914-1929 and 1945-1960) the stock of US FDI grew to US\$ 8.8bn by 1960, or almost 40% of all US direct investments outside North America.⁶ In many countries, US investments came to dominate the local economy, expanding not only in agriculture and mining but also in manufacturing and utilities. Finally, the US became a leading source of intergovernmental loans and aid.

In the first three decades of the century, the US intervened militarily in a number of Central American and Caribbean countries, to protect its investments along the lines of the Roosevelt Corollary⁷. Sometimes, these interventions were simply directed at physically protecting American investments during political turmoil. More often, however, the US participated actively in putting down rebellions, helping the local elite to maintain political stability. This pattern of interventionism came to a halt with the onset of the Great Depression, as the inflow of American investments virtually stopped and the Roosevelt Corollary was substituted by (Franklin D.) Roo-

⁵For example, the average share of the US in total exports and imports in 1950-1954 was 61% and 76% in Cuba, 66% and 45% in Ecuador, 26% and 56% in Venezuela, and 50% and 55% in Chile (Mitchell, 1989.)

⁶This share is much lower today (around 20%). Source: Historical Statistics of the United States, Millennial Edition on line.

⁷For example, the US sent troops to Cuba (1906-1909, 1912, 1917-1933), Dominican Republic (1903-1904, 1914, 1916-1924), Guatemala (1920), and more than five times in Honduras and Guatemala.

sevelt's "Good Neighbor Policy". This was just a temporary interruption, though.

1.2.2 US influence and the Cold-War history of democracy in Latin America

After 1945, two key political developments took place. On one hand, the new reformist parties managed to push through electoral reforms that greatly increased voter turnout in most Latin American countries (Hartlyn, 1994, pp. 130-131), and political mobilization increased dramatically. In several countries, the reformists were able to go to power after obtaining an electoral victory: this was for example the case of Guatemala (1945), Venezuela (1944), Costa Rica (1948) and Bolivia (1952). Because of the economic nationalism of the reformist parties, this increased electoral competition brought fresh uncertainty for American investors, and renewed tension with the US government. In Guatemala, for example, American land holdings were expropriated with little compensation. In Venezuela, the government took a series of landmark measures that reduced the privileges of the American oil companies.

On the other hand, the Cold War created a second key tension between the reformist parties and the US government. Initially, the Cold War touched Latin America only marginally, as the key front was Europe and the death of Stalin (1953) put the USSR on the defensive for a few years. With the advent of Khrushchev (1958), however, a distinctively new phase started, one in which "Eurasia was still the central stake but no longer the central front", as the Soviet leadership had decided that "Containment was to be defeated

by encirclement”, (Brzezinski, 1992, p. 38). In this crucial phase - which lasted until about 1979, when the USSR shifted its attention to Afghanistan and Eastern Europe, as well as to internal problems - superpower competition had a significant impact on political evolutions in Latin America.

As part of its plan to “encircle” the West, the USSR launched a large-scale effort to secure alliances in the region. This included the strengthening of ties with communist parties and guerrilla groups, as well as the provision of economic support to governments that rejected American influence. Just how dangerous this could be for US geopolitical interests became soon clear: within three years from the Cuban Revolution (1959) - and one year since Castro had completely nationalized American investments in the island - Soviet ballistic missiles were installed at a short distance from US territory, sparking one of the most dangerous crises of the entire Cold War. Crucially, Soviet activism increased the American diffidence for many reformist leaders with radical views. Whether they were communist or not, these came to be seen as not only a threat to American investors, but also a geopolitical threat.

As its economic and geopolitical interests came under threat, the US intervened a large number of times to tilt the local political balance in favor of conservative/centrist governments. This pattern of interventionism intensified markedly in the 1960s and 1970s, when Cold War competition was at its highest. Among the intervention tools used were aid paid to conservative/centrist governments, trade or aid sanctions against radical governments, and covert CIA interventions to influence the results of elections, support or organize military coups, fight guerrillas, etc. Because many of the

This interrupted a positive democratization trend started immediately after World War 2. This finding is consistent with the finding, by Easterly *et Al.* (2008), that CIA interventions around the world had a negative impact on democracy, both in the short run and in the long run.



Figure 1.1: CIA interventions and democracy in Latin America, 1945-1989

Sources: Polity IV (democracy), Berger *et Al.* (2010) (CIA interventions).

1.2.3 Three key questions

At least since Wilson (1913-1921), a recurrent principle of US foreign policy has been that exporting democracy is good, because it stabilizes international relations and increases business opportunities (see Smith, 1994). We would then expect that, on average, US foreign policy should be supportive of democratization attempts throughout the world. While this has been true in a number of occasions during the 20th century, the fact described above

radical reformist parties were electorally quite successful, these interventions went systematically against the consolidation of democracy. The most striking examples of this are the coups in Guatemala (1954) and Chile (1973). On the wake of American interventionism, the 1960s and 1970s witnessed a broad reversal of the pattern of democratization that had started after the war. The only three marked exceptions⁸ to this were Costa Rica, where democracy was in place since 1946, and Colombia and Venezuela, which became relatively democratic in the early 1960s and remained steadily so through the rest of the Cold War.

The pattern of US interventionism in Latin America is illustrated in the following figure, which reports the CIA intervention measure constructed by Easterly *et Al.* (2010). The authors use recently declassified CIA material to construct an indicator variable that equals one in all country-year observations where the CIA either installed or supported the leader of a foreign country in office.⁹ In the figure, I report the number of Latin American countries where this variable is one in any given year. The series clearly shows that the number of interventions jumped up after 1960, to fall significantly only towards the end of the 1970s. The figure also reports the average Polity IV democracy score for all Latin American countries. This is a variable that takes value between 0 and 10, where 0 is least democratic and 10 is most democratic. Particularly for the case of South America, the series confirms that the intensification of US interventionism in the 1960s and 1970s was matched by a sharp decline in the average level of democracy.

⁸Excluding Jamaica, who remained a British colony until 1962.

⁹They also have a more narrow measure that only looks at cases in which the CIA installed a leader. This follows a pattern similar to that of the broader measure.

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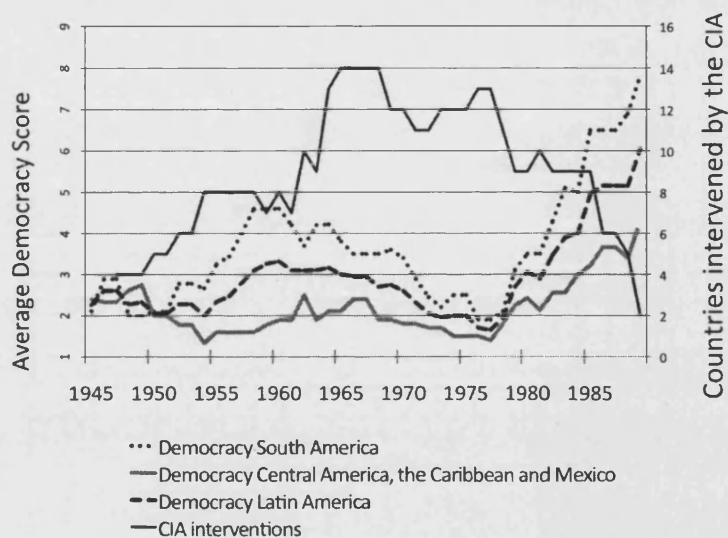


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suggest that the US went systematically *against* the democratization of Latin America in the 1960s and 1970s. The basic question that we need to address is then why was this so? In other words, why was democracy a threat to US interests in those specific circumstances?

At some level, it is clear from our previous discussion that economic nationalism had a key role. Because this happened to be very strong with the radical parties that were likely to dominate elections, democracy was a direct threat to American investments in Latin America. But this takes us to our first key question: was it just accidental that the radicals were so more nationalistic than the elite, or was this related to the underlying democratization process? And more in general, under what conditions can we expect democracy to lead to nationalistic policies against foreign investors?

Our previous discussion also highlighted the role of the Cold War. Namely, the radical parties were seen as more likely to switch side to the Soviet Union, implying a large geopolitical cost for the US. This explanation is consistent with the fact that American interventionism was most intense - and the fate of democracy bleakest - when Cold War competition was strongest (Figure 1). But then a second key question is: why were the radical parties less willing to (or able) to sign up for a geopolitical alliance with the US? After all, both proximity and for economic complementarity seemed to make this a natural alliance. Notice that ideology is all but a satisfactory answer: many of the most successful reformist parties were not communist, nor did they entertain close ties with Moscow (Angell, 1994). In fact, many of them were opposed to communism in the 1960s and 1970s.

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While American interventions in the 1960s and 1970s were mostly detri-

mental to democracy, we have mentioned a few exceptions. In Colombia, Venezuela and Costa Rica, US foreign policy actively supported the consolidation of democracy. In the case of Venezuela, this was despite the nationalism of the key reformist party (*Alianza Democratica*) which led in 1976 to the nationalization (with little compensation) of the American oil companies. My final question is then: what explains the different experience of these countries?

In the next question, I set up a model that will help us interpret the facts described in this section, and provide an answer to these questions.

1.3 Model

The section is organized as follows. I begin by modeling a distributional conflict between an incumbent group and a challenger in a small open economy (3.1). I then introduce the possibility that the incumbent may exchange rents to foreign investors for protection from the government of a large trading partner, who may also be competing with a second large country for geo-political predominance in the area (3.2). Crucially, the actions of the trading partner are constrained by the need to preserve a reputation of intransigence towards expropriation (3.3). After summarizing the timing of the model (3.4), I solve for the equilibrium (3.5), and conduct some comparative statics (3.6). I conclude the section by looking at the welfare consequences of foreign influence (3.7).

1.3.1 Domestic economy and politics

There is a small country, Home (H), which is populated by a continuum of citizens with mass 1. The economy of this country is such that it generates aggregate (transferable) utility $Y + Y^*$ for its citizens. While Y is not affected by the country's external relations ("autarchy utility"), Y^* relies on a peaceful relations with two large trade partners, A and B ("gains from trade"). I normalize Y^* to 1.

Citizens are split into two groups, called a and b . The two groups have mass δ and $1 - \delta$ respectively. Within each group, citizens are identical. In the aggregate, the two groups initially own Y_a and Y_b of autarchy utility (thus, $Y_a + Y_b = Y$), while trade utility is entirely owned by group a . Thus, group a is more "outward-oriented" than group b .¹⁰

Initially, group a is in power. However group b can overthrow a at a stochastic, aggregate cost μ . The cost μ is distributed as a uniform over the interval $[0, M]$, with M high enough (so that there is always a positive probability that a is overthrown). This cost does not depend on any other parameter in the model (but notice that I always keep the size of the economy constant at $Y + 1$). If b goes to power, it can change policy in such a way that a loses $X < Y_a$ of its autarchy utility, and its entire trade utility.¹¹ This results in a gain $\gamma(X + 1)$ for b , where $\gamma \in (0, 1)$ captures the distortions associated with redistribution. Notice that even for γ very close to 1, there is an amount $Y_a - X$ of a 's autarchy utility that is non appropriable by b .

¹⁰To assume that group b owns a share of Y^* does not change qualitatively the results of the model.

¹¹To assume that only $X^* < 1$ is lost by a would complicate the analysis without undermining the main results of the model.

This could reflect, for example, the existence of non-excludable public goods.

Before the cost of revolution is realized and b decides whether to overthrow a or not, a may decide to award rents R to investors from A . These have an equal cost for all citizens. For example, mineral concessions may be granted to companies from A at excessively favorable terms, therefore decreasing the public funds available for financing various public goods. Alternatively, companies from A may be favored in the allocation of various public contracts, from the management of utilities to the procurement of various government purchases. More in general, the government may discriminate in favor of A 's companies or goods, therefore creating a loss from reduced competition that is widely spread across the economy.

After rents have been allocated, the cost of revolution realizes. Before b makes a decision on whether to overthrow a or not, A may decide to intervene to hinder b 's ascent or consolidation into power. The most intuitive way to think about this is direct military help to the ruling government. However A 's intervention may also take the form of economic assistance, for example a loans in the middle of a crisis. I assume that if A invests c to this purpose, the cost of revolution increases to $\mu + c$.

After a revolution decision has been made, whoever is in power may decide to expropriate A by imposing a tax τ on R . For simplicity, I assume that τ is non distortionary, and that it can only take value 0 (no expropriation) or 1 (expropriation).

Assume that citizens within each group are identical. Then, if rents R have been granted, the per capita utility of the two groups in the two political regimes is:

$$\begin{aligned}
y_a(a) &= \frac{Y_a + 1}{\delta} - R[1 - \tau(a)] \\
y_b(a) &= \frac{Y_b}{1 - \delta} - R[1 - \tau(a)] \\
y_a(b) &= \frac{Y_a - X}{\delta} - R[1 - \tau(b)] \\
y_b(b) &= \frac{Y_b + \gamma(X + 1) - \mu - c}{1 - \delta} - R[1 - \tau(b)]
\end{aligned}$$

Where $y_i(j)$ denotes the per capita utility of a citizen from group i when group j is in power, and $\tau(j)$ is the expropriation level chosen by group j when in power.

The ex-ante (per capita) welfare of the two groups is:

$$W_H^a = (1 - \pi) \left(\frac{X + 1}{\delta} - R[\tau(b) - \tau(a)] \right) + y_a(b) \quad (1.1)$$

$$W_H^b = \pi \left(\frac{\gamma(X + 1)}{1 - \delta} - R[\tau(a) - \tau(b)] \right) + y_a(a) \quad (1.2)$$

where π is the (endogenous) probability that b overthrows a . Before proceeding, I make the following key assumption:

Assumption 1

$$\frac{1}{\delta} > \frac{\gamma}{1-\delta}$$

Assumption 1 requires that a successful challenger group has a lower per capita trade utility than the incumbent group had *when in power*. This could be the case for two reasons: first, group *a* may be much smaller than group *b* (δ low), so that the importance of trade utility gets diluted upon *b*'s advent to power, despite the fact that trade utility is fully re-distributed. Second, trade utility could be very inefficient to redistribute, so that not much is left for *b* to care about (γ low). Both reasons may be valid in the case of Latin America in the 1950s and 1960s. There, on one hand, the value of export crops was largely captured by a handful of landed elite, as was the gain from consumption of luxury import goods; on the other hand, the new industrial sector - that relied on imported intermediates - was probably quite hard to expropriate.

1.3.2 International economy and politics

The world outside *H* is made up of two large countries (*A* and *B*). As mentioned above, *a* can affect *A*'s payoff by awarding it rents *R*. After the revolution decision is made, however, whoever is in power may decide to re-appropriate *A*'s rents. At the same time, however, *A* can impose economic sanctions against *H*, therefore destroying its trade utility. Thus, sanctions have a cost 1 for *H*. They also have a cost $\beta > 0$ for *A*.

Besides allocating rents to *A* (and possibly expropriate them later on)

H can affect the two large countries' payoffs by choosing its geopolitical alignment σ . This is chosen after the expropriation and sanctions decision, and can be set to $\sigma = A$ (when H allies itself to A), or to $\sigma = B$ (when it allies with B). The payoffs to A (B) in the two cases are S and 0 (0 and S) where S is the strategic value of H . I assume that the alignment decision has no impact on H 's payoff.

When A imposes sanctions against H , B can alleviate their cost by $1 - \phi$, where $\phi \in [0, 1]$. Thus, by resorting to B , H can reduce the cost of sanctions to ϕ . For simplicity, I assume that B can alleviate sanctions at no benefit nor cost. I also assume that for B to be willing to alleviate the cost of sanctions, H must set $\sigma = B$. When sanctions are not imposed, on the contrary, the choice of σ has no effect on H 's payoff. There are at least two ways in which this assumption could be justified. First, it could be that H auctions off its geopolitical alignment to the highest bidder. In such an auction, no bidder could outbid the other when sanctions are not imposed, but B would certainly outbid A when sanctions are imposed. This is because B would be in the position of alleviating sanctions at no cost. Alternatively, it could be that the threat of sanction itself is what induces H to align itself with A , in that this latter country has a higher capacity than B to create trade disruption in H . Once this capacity has been used, however, B would always have the upper hand, by using the threat of not mitigating sanctions.

To summarize, the payoffs of A and B are:

$$W_A = I(\sigma = A)S + (1 - \tau)R - I(\Gamma = 1)\beta - c \quad (1.3)$$

$$W_B = I(\sigma = B)S \quad (1.4)$$

Where Γ takes value 1 if sanctions are imposed, 0 otherwise.

1.3.3 Expropriation and sanctions: a reputation game

While A can threaten sanctions against an expropriating H , the fact that $\beta > 0$ makes sure that these are never ex-post optimal. In the case of Latin American countries like Cuba or Chile, however (as in many other real world cases), US sanctions were indeed enforced because of a need by the US to build a reputation as a punisher of expropriating countries. This need was motivated by the ramification of US interests in the American continent, and the risk that other countries could follow suit had the expropriation by these countries not been punished. In this subsection, I enrich the model with a simple reputation game where the threat of sanctions may become credible. The role of this is to uncover a link between the functioning of foreign influence and the parameter β , through the credibility of sanctions.

Suppose that agents estimate that with some small probability p A is "ideological". An ideological A is identical to a "normal" A , except for the fact that it receives a high exogenous benefit $g > S$ from imposing sanctions against an expropriating H . Next, suppose that there are other n small countries, that are identical to H except for the fact that a is firmly

entrenched in power, A 's rents have been set to some value \bar{R} everywhere, and the cost to A from imposing sanctions is fixed at some low value $\bar{\beta} < g - S$. This captures well the case of Latin America, where US interests were dispersed in a series of small, elite-controlled countries, often in competition among each other to sell agricultural products on the US market.

After H has decided whether to expropriate A or not, A has decided on sanctions against H , and H has possibly secured B 's commercial support by setting $\sigma = B$, the "reputation game" takes place. This may extend over up to n periods, and unfolds as follows:¹²

- In period 1, if none of the n countries wants to expropriate, nothing happens, and the game ends. Otherwise, one of the others may expropriate, A may impose sanctions against it, and this may obtain B 's help after setting $\sigma = B$.
- In period $s = 2, \dots, n$, nothing happens if the game has ended at some earlier period. Otherwise, the same events as in period 1 take place.

1.3.4 Timing

The timing of the overall game is as follows:

1. a awards rents R to A ;

¹²I could have alternatively modeled this as a infinite horizon game, where the events that regards H take place at period t and at all subsequent periods one of the countries who has not yet expropriated may do so. This, however, would have complicated the structure of payoffs for no additional insight.

2. Nature picks the cost of revolution μ ; A observes this, and invests c to increase the cost to $\mu + c$;
3. b decides whether to overthrow a or not;
4. Whoever is in power decides whether to expropriate A ($\tau = 1$) or not ($\tau = 0$);
5. A decides whether to impose sanctions against H , and H sets σ . In the presence of sanctions, H must set $\sigma = B$ to obtain B 's help. Otherwise, the choice of σ has no consequences on H 's payoff.
6. The reputation game takes place.
7. All payoffs realize.

1.3.5 Equilibrium

I solve for the equilibrium using backward induction.

Period 6. The role of the reputation game is to derive conditions under which it is optimal for A to impose sanctions against an expropriating H . Because this part of the model has nothing innovative (being largely based on Kreps and Wilson, 1982, and Milgrom and Roberts, 1982) and its technicalities are largely extraneous to the main argument of the paper, I keep the details in the Appendix. Here, I limit myself to describing the main result of the model, and its intuition.

The key assumption of the model is the existence of an ideological version of A , which receives a high enough benefit from punishing expropriation ($g >$

S). As long as the economic cost of imposing sanctions is low (and we are assuming $\bar{\beta} < g - S$), the ideological A can be expected to impose sanctions no matter what. Given this, A may want to impose sanctions in order to build a reputation as ideological, and therefore discourage expropriation in other countries. Thus, reputation considerations increase the probability of sanctions above p ; and because the value of reputation is increasing in the number of observing countries, the probability of sanctions is highest in the case of the country who expropriates first. But when this probability is high enough - because the overall number of countries is large enough - no country ever want to *be* first, therefore creating an equilibrium where no one expropriates. If n is large enough, such an equilibrium exists no matter how small is p . This result is reported in Lemma 1:

Lemma 1 *For any arbitrarily small p , there exists a finite \bar{n} such that if $n > \bar{n}$ and no info on the type of A can be extracted from previous rounds, the reputation game ends immediately (none of the countries expropriates). In this case:*

- *If $\beta + S < g$, the unique equilibrium is one where A imposes sanctions against an expropriating H ;*
- *If $\beta + S > g$, two equilibria exists, one where A imposes sanctions against an expropriating H , one where it does not.*

The second part of Lemma 1 considers how reputation affect the attitude of A towards expropriation in H . As in the case of all countries where its actions are under scrutiny, A does not want be recognized as non ideological in its response to H . Indeed, because H comes very first in the chain

of potential expropriations, A is *always* willing to impose sanctions in this country, provided that these are needed to mask its non-ideological status. Here comes the key point, as sanctions turn out to not always be needed in the case of H . Remember that the cost of sanctions is allowed to take on different values in this country. When the cost is high ($\beta > g - S$), H is strong enough that the ideological type itself would not enjoy punishing it: this generates an equilibrium where A is able to not impose sanctions, and still defend the anonymity of its status.

Thus, the main result of the reputation game is that when enough many countries are watching, the threat of sanctions is always credible when their cost is low. When their cost is high, the threat can or cannot be credible, depending on the equilibrium we are in. In the rest of the paper, I show that the credibility of sanctions may have quite important consequences for the political economy of H . Before moving on, however, I restrict the model to focusing on the case where reputation is very important:

Assumption 2: $n > \bar{n}$.

This fits rather well the case of the US, whose investors had ramified rents in Latin America in the 1950s and 1960s. That reputation was a key element driving US policy in those years is evident from a number of facts, including the reaction to expropriation in Cuba and Chile and the passing of legislation that forced the President to cutoff aid to countries who expropriated US investments.¹³

¹³This was the famous Hickenlooper Amendment of 1962.

Period 5. Whenever sanctions are imposed, it is strictly optimal for whoever is in power to set $\sigma = B$. On the contrary, when there are no sanctions the government of H is perfectly indifferent on its choice of alignment: in this case, I assume that all governments set $\sigma = A$.¹⁴

Period 4. When we are in an equilibrium with no sanctions, it is clearly optimal for whoever is in power to set $\tau = 1$. When we are in an equilibrium with sanctions, instead, the government sets $\tau = 1$ if and only if the benefits from expropriation are higher than the cost from sanctions. If a is still in power, this requires that:

$$R > \frac{\phi}{\delta} \equiv \bar{R} \quad (1.5)$$

If, instead, b has replaced a , the requirement is:

$$R > \frac{\phi\gamma}{1-\delta} \equiv \underline{R} \quad (1.6)$$

Notice that, under Assumption 1, $\underline{R} < \bar{R}$. This implies that the two groups have a similar attitude towards expropriation for $R < \underline{R}$ and $R > \bar{R}$ - neither of them expropriates in the first case, they both do in the second case - while they differ for $\underline{R} < R < \bar{R}$, with b being pro-expropriation and

¹⁴This can be rationalized by arguing that the ideological A could also receive a benefit from punishing a country that, while not expropriating, aligns itself with B .

a pro-foreigners.

Period 3. At this stage, *b* decides whether to overthrow *a* or not by comparing the benefit and cost of this. In an equilibrium with no sanctions, the condition for revolution to take place is:

$$\gamma(X + 1) > \mu + c \quad (1.7)$$

Condition (1.7) says that *b* overthrows *a* if and only if the aggregate gain from domestic redistribution is higher than the aggregate cost from revolution. Notice that the gain from revolution does not depend on *R*, as revolution brings no policy gain in the domain of expropriation.

Consider now an equilibrium with sanctions. If $R \leq \bar{R}$ (as will be the case in equilibrium), the revolution condition becomes:

$$\gamma(X + 1) + \max[0, (1 - \delta)R - \phi\gamma] > \mu + c \quad (1.8)$$

The gain from revolution is now the sum of domestic redistribution and a potential gain from expropriation. Looking at (1.5), it is easy to see that the latter is strictly positive if and only if $R \in [\underline{R}, \bar{R}]$. This reflects the fact that, for these intermediate values of rents, revolution becomes a way to impose domestic redistribution *and* a change in policy towards foreign investors.

When the level of rents is low, on the contrary ($R < \underline{R}$), the two groups agree on a pro-foreigners stance, and revolution returns to be a purely domestic matter (as it would do when $R > \bar{R}$, as the two parties would then agree on full expropriation).

Thus, while in an equilibrium with no sanctions revolution is only motivated by redistributive considerations, in an equilibrium with sanctions it may be motivated by a conflict over policy towards foreign investors. This resonates well with the case of Latin America in the 1950s, when the key redistributive issue that motivated the opposition to the ruling elite was often intertwined with a conflicting view over economic nationalism. There, the ruling group was blamed for being, out of self-interest, too lenient towards US investors. However beside animating the opposition to the ruling elite, economic nationalism was a key source of tension between the Latin America opposition groups and the government of the United States, whose political influence played a key role in the region. To the study of this tension I now turn.

Period 2. When μ is low enough to result in a revolution, A may choose to intervene to try and keep a in power. For this to be attractive to A , however, it must have a reason to prefer the rule of a to the rule of b . Clearly, in an equilibrium without sanctions, A has no reason to do so, as both parties can be expected to expropriate. Similarly, in an equilibrium with sanctions A has no strict preference for a when $R < \underline{R}$ or $R > \bar{R}$. Thus, in all these cases A sets $c = 0$. Plugging this in (1.7) and rearranging, the condition for revolution to take place becomes:

$$\mu < \gamma(X + 1) \quad (1.9)$$

Clearly, the probability that b overthrows a does not depend on R in this case, as rents neither affect the incentives of b to revolt nor induce A to take a 's side in domestic politics.

When we are in an equilibrium with sanctions and $R \in [\underline{R}, \overline{R}]$, on the contrary, A has two good reasons to strictly prefer a to b : first, it can be expected that A 's rents are safe under a , while they would be expropriated under b 's rule. Second, because reputation obliges A to react to expropriation with sanctions, it can also be expected that b will turn its foreign policy alignment to b . The overall loss to A from a change in regime is then $R + \beta + S$, and this is also the maximum that A is willing to spend to keep a in power. Plugging $c = R + \beta + S$ in (1.8), we find the maximum μ for which revolution takes place, $\bar{\mu}$:

$$\mu < \gamma(X + 1) - \delta R - \phi\gamma - \beta - S \equiv \bar{\mu}(R) \quad (1.10)$$

Because $\bar{\mu}$ is decreasing in R , the probability that b overthrows a is now decreasing in the amount of rents granted to A . This result may be unexpected, considered that, as we saw above, rents may have an inflammatory impact on revolutionary activity. However two opposite effects are now at play. On one hand, rents do increase the prize from revolution, therefore

making revolution more attractive. On the other hand, rents increase the effort put by A in keeping a in power, making revolution harder to accomplish. Because the benefit of expropriation are not fully appropriated by b , however (they are equally spread across the population) an increase in rents increases the prize from revolution by less than it increases A 's willingness to invest in counterinsurgent activities, ensuring that the second effect always dominates.¹⁵ This result suggests that the concessions of rents to American investors could represent a tool of entrenchment for the Latin American elite, despite the fact that it created further discontent among the people.

It is useful to summarize these results in a proposition:

Proposition 1 *A helps a remain in power if and only if we are in an equilibrium with sanctions, and $R \in [\underline{R}, \bar{R}]$. In this case, the probability that b overthrows a is decreasing in R .*

Proposition 1 implies that the incumbent group may want to strategically set $R \in [\underline{R}, \bar{R}]$ when we are in the equilibrium with sanctions, so as to induce A to take its side in the domestic struggle for political power. This is possible because, under Assumption 1, a has a *commitment advantage* over b , in that it is more sensitive to the conditions of the international economy than b while in government. Having established the relation between R and the probability that a remains in power, I close the model by studying the optimal choice of R in period 1.

¹⁵Notice that, even if b was able to fully appropriate the benefit from expropriation, a 's security in power could still be higher when some rents are granted. To see this, notice that when $R = \underline{R}$ expropriation has value zero, but A is still willing to spend up to $\underline{R} + \beta + S$ to defend a .

Period 1. I begin this section by introducing a final assumption:

Assumption 3

$$\gamma(X + 1) > \phi(1 + \gamma) + \beta + S \quad (1.11)$$

The assumption asks that the redistributive considerations pushing for regime change ($\gamma(X + 1)$) are strong enough relative to the international determinants of the maximum size of A 's intervention ($\beta + S$). This seems plausible in the context of 20th century Latin America, where wealth inequality was huge and redistribution the key goal of the radical opposition parties. As I will clarify shortly, the role of Assumption 3 is to rule out an equilibrium where foreign influence leads to a zero probability that a is overthrown.

In what follows, I will show that there are two types of equilibrium path one of which has foreign influence. I begin by laying out the properties of each path and will then discuss when each of them comes about.

The first equilibrium path has no foreign influence. It has the following properties:

Equilibrium path with no foreign influence:

- a sets $R = 0$;
- A does not support a in power;

- b goes to power when $\mu < \bar{\mu}(0)$, which happens with probability $\bar{\pi} = \frac{\gamma(X+1)}{M}$;
- Whoever is eventually in power aligns itself with A .

The second equilibrium path has foreign influence, and has the following properties:

Equilibrium path with foreign influence

- a sets $R = R^*$, where:

$$R^* = \begin{cases} \underline{R} & \text{if } \tilde{R} \leq \underline{R} \\ \frac{[(1+\gamma)(X+1) - \gamma\phi - M - S - \beta]}{2\delta} \equiv \tilde{R} & \text{if } \tilde{R} \in (\underline{R}, \bar{R}) \\ \bar{R} & \text{if } \tilde{R} \geq \bar{R} \end{cases} \quad (1.12)$$

- A supports a in power whenever there is need, and up to a maximum expenditure $R^* + \beta + S$;
- b goes to power when $\mu < \bar{\mu}(R^*)$, which happens with probability $\underline{\pi} < \bar{\pi}$:

$$\pi = \begin{cases} \bar{\pi} - \frac{\phi\gamma + \beta + S}{M} & \text{if } R^* \leq \underline{R} \\ \bar{\pi} - \frac{\phi\gamma + S + \beta + (1+\gamma)(X+1) - M}{2M} & \text{if } R^* \in (\underline{R}, \bar{R}) \\ \bar{\pi} - \frac{\phi(1+\gamma) + \beta + S}{M} & \text{if } R^* \geq \bar{R} \end{cases} \quad (1.13)$$

- If a remains in power, it does not expropriate and aligns itself with A ;
if b goes to power it expropriates and aligns itself with B .

The two paths have very different properties. On the path without foreign influence, the incumbent does not seek foreign support, and regime change is not affected by external interventions. In this case, the challenger stages a revolution when the gain from domestic redistribution is larger than the cost of confronting the incumbent. This maps into a probability $\bar{\pi}$ of regime. Along this path, the international relations between H and A are always good: this is because sanctions are never an issue (there are no rents to be expropriated), and no group has any reason not to align itself with A . On the path with foreign influence, on the contrary, the incumbent awards an amount of rents (R^*) to A . This amount is such that the incumbent, but not the challenger, can commit not to expropriate rents in the future. This induces A to intervene in support of the incumbent. In this case, revolution takes place when the prize from redistribution *and* expropriation is larger than the cost of confronting the *joint* forces of the incumbent and A . As we might expect from Proposition 1, this reduces the probability of regime

change to $\underline{\pi}$. Along this path, the international relations between H and A are good if the incumbent remains in power. If the incumbent is overthrown, on the contrary, relations with A are conflictual, as the challenger is hit by trade sanctions and aligns itself with B .

Plugging Assumption 3 in the expression for $\underline{\pi}$ when $R^* = \bar{R}$ reveals that the role of this assumption is to avoid $\underline{\pi}$ going to zero, a case that I want to avoid because of its scarce realism. An obvious substitute of Assumption 3 would have been to model the return to foreign interventions as sufficiently decreasing in the size of the intervention. This, however, would have required giving up the linear structure of the model, a complication that would bring no additional insights. I thus prefer to stick to Assumption 3 in what follows.

The key results of the paper are presented in Proposition 2:

Proposition 2 *Define the following condition:*

$$\beta + S > \phi\gamma \frac{\delta M - (X + 1)(1 + \delta\gamma) + \frac{\phi\gamma\delta}{1-\delta}}{(1 - \delta)(X + 1) - \delta\phi\gamma} \quad (1.14)$$

Then, under Assumption 1-3:

1. *If condition (1.14) is not satisfied, the unique equilibrium path is without foreign influence.*
2. *If condition (1.14) is satisfied, the unique equilibrium path is with foreign influence if $\beta + S < g$; it may be with or without foreign influence if $\beta + S > g$.*

Proof. From Lemma 1, we know that equilibria can be of two types: one where A adopts a strategy of reacting to expropriation with sanctions, and one where it adopts a strategy of not reacting (notice that expropriation can remain an off-equilibrium event in both cases). Begin by considering the first type. From Lemma 1, at least one such equilibrium always exists. The first step is to show that, if the optimal choice of R is 0 or R^* , the equilibrium path look exactly like in our two cases. This follows immediately from our backward induction, and from the fact that by plugging R^* and $\bar{\mu}(\cdot)$ in:

$$\begin{aligned}\Pr\{a \text{ is overthrown}\} &= \Pr\{\mu < \bar{\mu}(R)\} \\ &= 1 - \frac{\bar{\mu}(R)}{M}\end{aligned}$$

one derives π as in equation (1.13).¹⁶ The next step is to show that, in this type of equilibrium, 0 and R^* are, indeed, the only two possible optima. Furthermore, we need to show and that R^* is the optimum when condition (1.14) is satisfied, 0 is the optimum when it's not. The maximand of a is:

$$\Delta W_H^a(R) = \begin{cases} \left(1 - \frac{\bar{\mu}(R)}{M}\right) \left(\frac{X+1}{\delta} - R\right) + y_a(b) \equiv \Phi(R) & \text{if } R \in (\underline{R}, \bar{R}) \\ \left(1 - \frac{\gamma(X+1)}{M}\right) \left(\frac{X+1}{\delta} - R\right) + y_a(b) \equiv \Psi(R) & \text{if } R \notin (\underline{R}, \bar{R}) \end{cases}$$

I will now separately derive the maximum of $\Phi(R)$ and $\Psi(R)$ and compare

¹⁶All calculations for this proof are in the Appendix.

them. Because $\Psi(R)$ is strictly decreasing in R , its unique maximum is $R = 0$. As for $\Phi(R)$, its strict concavity¹⁷ ensures that it also admits a unique maximum. Its unconstrained maximum is found by plugging in $\bar{\mu}(\cdot)$ and maximizing with respect to R . This yields:

$$\tilde{R} = \frac{1}{2\delta} [(1 + \gamma)(X + 1) - \gamma\phi - M - S - \beta]$$

The constrained maximum is then:

$$R^* = \begin{cases} \underline{R} & \text{if } \tilde{R} < \underline{R} \\ \tilde{R} & \text{if } \tilde{R} \in [\underline{R}, \bar{R}] \\ \bar{R} & \text{if } \tilde{R} > \bar{R} \end{cases} \quad (1.15)$$

Having found the two maxima, I now derive a sufficient and necessary condition for $W_H^a(R^*) > W_H^a(0)$, or $\Phi(R^*) > \Psi(0)$. Clearly, $\Phi(\underline{R}) > \Psi(0)$ is sufficient. But this condition is also necessary: this is immediately evident for the case $R^* = \underline{R}$; but when $R^* > \underline{R}$, it is always $\Phi(\underline{R}) > \Psi(0)$, as $\Phi(R^*) > \Phi(0)$ (by concavity) and $\Phi(0) > \Psi(0)$ (because $\bar{\mu}(0) < \gamma(X + 1)$). We can write the condition $\Phi(\underline{R}) > \Psi(0)$ as:

$$\left(1 - \frac{\bar{\mu}(\underline{R})}{M}\right) \left(\frac{X+1}{\delta} - \underline{R}\right) > \left(1 - \frac{\gamma(X+1)}{M}\right) \frac{X+1}{\delta}$$

¹⁷This is also shown in the Appendix.

Plugging in $\bar{\mu}(\cdot)$ and \underline{R} , this becomes:

$$\beta + S > \phi\gamma \frac{\delta M - (X + 1)(1 + \delta\gamma) + \frac{\phi\gamma\delta}{1-\delta}}{(1 - \delta)(X + 1) - \delta\phi\gamma}$$

which is the same as condition (1.14). Thus, we have shown that an equilibrium of the first type - where A adopts a strategy of reacting to expropriation with sanctions - always exists, and this generates our equilibrium path with foreign influence if condition (1.14) is satisfied, without foreign influence otherwise.

From Lemma 1, an equilibrium of the second type - where A adopts a strategy of not retaliating - exists iff $\beta + S > g$. Clearly, in any such equilibrium the equilibrium path must be identical to our equilibrium path without foreign influence. Thus, even if condition (1.14) is satisfied the equilibrium path without foreign influence may realize, if $\beta + S > g$. This completes the proof. ■

Proposition 2 admits an intuitive explanation. The key decision for the incumbent is whether to seek foreign protection, or not. From our previous discussion, we know that foreign protection can be obtained if and only if A has a strategy of retaliating to expropriation, and rents have been set in the interval $R \in [\underline{R}, \bar{R}]$. While an equilibrium where A retaliates to expropriation always exists (Lemma 1), a may or may not want to seek foreign protection

depending on its cost. It turns out that the optimal way of securing foreign protection is to set $R = R^*$, and that this leaves the incumbent better off than without foreign protection if and only if condition (1.14) is verified. In other words, there always exists an equilibrium where a may obtain foreign protection, and this puts the country under foreign influence if and only if a *wants* foreign protection. Such an equilibrium is not unique, however: from Lemma 1 we know that, if $\beta + S > g$, there also exists an equilibrium where A does not retaliate to expropriation. In this case, foreign protection cannot be obtained, and the equilibrium path must be without foreign influence. In other words, the incumbent is unable to put the country under foreign influence even if it would like to do so.

Many Latin American countries during the Cold War fit rather well the conditions for a country to fall under foreign influence. On one hand, the conditions for the ruling elite to seek foreign protection (as outlined in conditions (1.14)) were largely in place. First, the elite could rely on a large strategic importance of their countries, at a time when protection of the Americas from a Soviet penetration was a key geopolitical goal for the US. Second, the elite was increasingly under the siege of a rising leftist opposition, had immense fortunes to be lost in a political transition, and was almost always very small. On the other hand, the weak relative economic positions of most Latin American countries - as well as the actual experiences of few of them - suggest that US-Latin America relations were characterized by the need for the US to impose sanctions against expropriation. Thus, if this model is correct, we would expect the Cold War experience of democratization in Latin America to be described by the equilibrium path with foreign influence.

Indeed, this seems to fit rather well the stylized facts described in section 2. In the next section, I will bring further evidence in favor of this theory, by looking at the specific experience of a few countries. Before going to the case studies, however, I try to learn more about the equilibrium path with foreign influence by performing some comparative statics.

1.3.6 Predictions

In the previous section, I have shown that there exist two types of equilibrium path for a country like H , one of which has foreign influence. I have then derived the conditions under which each of these paths comes about or, equivalently, the country falls under foreign influence. In this section, I look at these conditions more closely, as well as at what determines the shape of foreign influence.

The incumbent group is strictly better off by putting the country under foreign influence when condition (1.14) is satisfied. This is the case when the amplification effect, $\beta + S$ - the extra support that a can expect to receive, on top any value of rents - is high enough. The critical threshold for the amplification effect is increasing in the size of the incumbent group and in the expected cost of revolution for the challenger (M), and increasing in the prize from domestic redistribution ($X + 1$). Notice that the threshold can be negative, in which case the incumbents asks for foreign support even if the amplification effect is zero. Because the country never falls under foreign influence when condition (1.14) is not satisfied, we can then write our first prediction:

Prediction 1 - *A country like H is more likely to fall under foreign influence when the size of the incumbent group is small, the challenger has a low expected cost from revolution, and the prize from domestic redistribution is high.*

When condition (1.14) is satisfied, the country may still not fall under foreign influence if the cost of imposing sanctions against it is too enough ($\beta + S > g$). This yields our second prediction:

Prediction 2 - *A country that would otherwise fall under foreign influence may not do so if the economic cost of imposing sanctions against it increases.*

The shape of foreign influence is defined by the amount of rents paid to foreign investors (R^*), the probability of foreign interventions ($\frac{R^* + \beta + S}{M}$), and the probability that the challenger goes to power and puts the country on a different geopolitical alliance (π). Using equations (1.12) and (1.13), we can now easily work out how this shape depends on the key parameters of the model (S , M , X and ϕ).

An increase in S always increases the probability of foreign interventions and decreases the probability that the challenger goes to power. It also decreases the optimal rent if $R^* \in [\underline{R}, \bar{R}]$. Thus, our third prediction is:

Prediction 3 - *When a country is under foreign influence, a higher strategic value of the country implies a higher probability of foreign interventions, and a higher entrenchment of the incumbent group. Furthermore, it may imply lower rents for foreign investors.*

A lower expected cost of revolution (M) and the higher prize from domestic redistribution ($X + 1$) have the quite standard effect of making the incumbent less entrenched if $R^* \notin (\underline{R}, \bar{R})$. The opposite holds if $R^* \in (\underline{R}, \bar{R})$, however. This can be seen by working out the first derivatives of π in this case:

$$\begin{aligned}\frac{\partial \pi}{\partial (X + 1)} \Big|_{R \in [\underline{R}, \bar{R}]} &= -\frac{1 - \gamma}{2M} < 0 \\ \frac{\partial \pi}{\partial M} \Big|_{R \in [\underline{R}, \bar{R}]} &= \frac{(1 - \gamma)(X + 1) + \phi\gamma + \beta + S}{2M^2} > 0\end{aligned}$$

This result is due to the role of rents in altering the political equilibrium in H . An incumbent that faces a higher revolutionary threat (because of a higher $X + 1$ or lower M) and has more to lose from revolution (higher $X + 1$), is more willing to buy external support for two reasons. First, it has a higher expected benefit; second, it also has a lower expected cost, as the probability that a remains in power - therefore bearing the cost of rents - is, initially, lower. Because higher rents map into higher external support, the incumbent ends up being *more* entrenched in equilibrium. Crucially, the benefit of this entrenchment are partly shared with A 's investors, as witnessed by the increase in rents. We can summarize this in our fourth prediction:

Prediction 4 - *When a country is under foreign influence, a lower expected cost of revolution and a higher prize from domestic redistribution make*

the incumbent more entrenched if they also result in higher rents to foreign investors, less entrenched otherwise.

The parameter ϕ measures the capacity of A to impose *effective* sanctions on A : when this parameter is low, B 's intervention can largely outweigh any trade disruption that A is able to inflict. A look at equation (1.13) reveals that a higher ϕ always result in a higher entrenchment of a . Intuitively, a higher ϕ puts a nationalistic opposition in a more difficult position, in that it increases the cost of expropriating A - therefore decreasing the attractiveness of revolution. Thus, an increase in A 's economic power (relative to B) makes the effect of foreign influence larger. This leads to our final prediction:

Prediction 5 - *When a country is under foreign influence, a lower relative importance of the foreign country as a trade partner implies a lower entrenchment of the incumbent.*

1.3.7 Welfare

In this section, I want to analyze the welfare consequence of foreign influence. My approach is to compare the equilibrium of the game described above to the equilibrium of a different game, where A does not have the capacity to intervene in H . This is a relevant exercise, because it can provide at least some indication on the welfare consequences of explicitly adopting a policy of interventionism, such as that announced by Teddy Roosevelt in 1904. At the same time, it can shed some light on the role of international organizations such as the United Nations or the Organization of American States, which put some constraints on the foreign military activity of their members.

If A does not have the capacity to intervene in H , a is overthrown with probability $\bar{\pi}$ independently on any rent awarded; thus, the equilibrium amount of rent must be zero, and because expropriation is not an issue, the group who rules H must always align itself with A . Define ΔW_j^i as the expected welfare gain to group i in country J from A being endowed with the capacity to intervene. Because this capacity can only affect payoffs if it results in positive rents, or if it is actually used, welfare must be unchanged when the game ends on the equilibrium path with no foreign influence. Thus, $\Delta W_j^i = 0$ for all J and i in this case. When instead the game ends on the equilibrium path with foreign influence, we can write:

$$\Delta W_H^a = [\bar{\pi} - \underline{\pi}(R^*)] \frac{X+1}{\delta} - [1 - \underline{\pi}(R^*)]R^* \quad (1.16)$$

$$\Delta W_H^b = -[\bar{\pi} - \underline{\pi}(R^*)] \frac{\gamma(X+1)}{\delta} - [1 - \underline{\pi}(R^*)]R^* - \underline{\pi}(R^*)\phi\gamma \quad (1.17)$$

$$\Delta W_A = -\underline{\pi}(R^*)(\beta + S) + [1 - \underline{\pi}(R^*)]R^* - [1 - \underline{\pi}(R^*)]\Lambda - \int_0^{R^*-\Lambda} \frac{c}{M} dc \quad (1.18)$$

$$\Delta W_B = \underline{\pi}(R^*)S \quad (1.19)$$

where $\Lambda \equiv \max[\gamma(X+1) + (1-\delta)R^* - \phi\gamma - M, 0]$. A 's capacity benefits a by giving it a higher chance to remain in power. This however comes at a cost, as A 's support can only be obtained by granting positive rents to A 's investors. For b , both of these elements are a cost; in addition, this group suffers from A 's capacity as this disrupts the relations that it has with

this country when it goes to power. A benefits from its capacity to intervene because this awards it positive rents when a remains in power (second term on the RHS of (1.18)). However this comes at the cost of greater geopolitical uncertainty (first term) and at a positive expected cost of intervention (last two terms). In fact, when Λ is positive this latter cost is strictly positive whenever a remains in power. Finally, for B , foreign influence implies a higher probability of securing H 's geopolitical alliance, in that when A cannot intervene no group has ever a reason not to align itself with A .

A closer look at the signs of (1.16)-(1.19) allow us to summarize the welfare consequences of foreign influence as follows:

Proposition 3 *Endowing A with the capacity to intervene in H has no impact on welfare when the country does not fall under foreign influence. When it does, on the contrary, the welfare effect is the following:*

- a and B always gain;
- b always loses;
- A always gains if $\beta + S = 0$; may gain or loose if $\beta + S > 0$.

Proof. The first sentence is proved by the fact that equilibrium path with no foreign influence is identical to the equilibrium path in the case where A cannot intervene. Next, let's consider the equilibrium path with foreign influence. That ΔW_H^a must be positive follows from the fact that a can always obtain the same payoff as with no foreign protection. The RHS of equations (1.19) and (1.17) contain, respectively, only positive and negative terms: thus, ΔW_B must be positive, and ΔW_H^b negative. That ΔW_A must

be positive when condition $\beta + S = 0$ holds can be seen from plugging this in (1.18) and rearranging:

$$\begin{aligned}
\Delta W_A|_{\beta+S=0} &= (1 - \pi)R^* - (1 - \pi)\Lambda - \int_0^{R^*-\Lambda} \frac{c}{M} dc \\
&> (1 - \pi)(R^* - \Lambda) - \frac{R^* - \Lambda}{M}(R^* - \Lambda) \\
&= (1 - \pi)(R^* - \Lambda) - \min[1 - \pi, R^*](R^* - \Lambda) \\
&\geq 0
\end{aligned}$$

where the latter inequality comes from the fact that $\Lambda < R^*$ whenever $M > \gamma(X + 1)$. This finding, together with the continuity of ΔW_A in $\beta + S > 0$, also proves that ΔW_A can be positive for some $\beta + S > 0$. Finally, to see that ΔW_A can also be negative in this case, suppose that $\beta + S = \frac{\phi}{\delta}$. From (1.12) and (1.13), it is clear that we can always find $X + 1 < M$ large enough that $R^* = \bar{R} = \frac{\phi}{\delta}$ and $\pi > \frac{1}{2}$. But for these values, the sum of the first two terms in (1.18) is negative, proving the result. ■

Thus, the fact that a large country has the capacity to intervene abroad does not necessarily affect welfare, as this capacity may simply remain unused. From Proposition 2, this is likely to be the case when the elite is sufficiently entrenched, or geopolitical competition is low. Alternatively, it may also be the case for those countries where the cost of sanctions is very high.

Consider now the welfare effect when the capacity to intervene is actually used, and country H falls under foreign influence. A very intuitive result is that the incumbent always gains from disposing of this additional political tool, while the challenger always loses. More surprising may be the fact that B always gains from A being able to intervene in H . This is due to the fact that A 's intervention capacity is used strategically by the incumbent, which intentionally creates a potential geopolitical conflict between A and the challenger. This must go to the benefit of B , who would otherwise have no chance of extending its geopolitical influence to H . The consequences of this geopolitical loss are also evident in the impact on the welfare of A . On one hand, if $\beta + S$ is zero (or very small), this impact must be positive: this is because A only bears a cost from protecting rents, and this can at maximum be as high as the value of rents themselves. On the other hand, when $\beta + S$ is large, A must also intervene to protect its geopolitical alliance with H , and this is actually lost whenever the challenger goes to power. When the strategic value of H is high and the incumbent is very fragile, these additional costs may make the overall effect on A negative.

Thus, a policy of interventionism that puts H under foreign influence has the clear effect of favoring the incumbent and damaging the challenger. At the same time, it may well fire back on A , particularly when H is strategically important and the incumbent fragile. This casts a doubt about whether US interventionism in Latin America - as laid out by the Roosevelt Corollary of 1907 and resumed by Truman and Eisenhower after World War II - was ultimately beneficial to US goals, particularly at times of high political geopolitical competition as the Cold War. To the extent that it allowed the local

elite to boast the anti-Americanism of the Latin American left, it certainly contributed to inflating the US military budget, entailing at times a large geopolitical risk (as the case of Cuba well illustrates). This is, of course, on top of any human right cost generated by favoring the entrenchment of autocratic regimes.

1.4 An interpretation

I now use the results of the model to provide an interpretation of the Latin American case, and answer the questions that I posed in section 2. Because of its involvement in trade, the Latin American elite could be trusted to respect investments from the US, a vital trade partner and a country that could credibly threaten to retaliate to expropriation. When the US became openly interventionist in early 20th century, the elite sought to entrench itself by putting their countries under US influence. Prediction 1 suggests that the small size of the elite, the increasing pressure for social change, and a huge wealth inequality all contributed to making this the optimal choice. This may contribute to explain the large inflow of US investments in 1914-1929 and 1945-1960. Furthermore, in this interpretation the large economic nationalism of the masses and the US attachment to the status quo can be explained as a result of the elite's political maneuvering.

As the Cold War opened up the Western Hemisphere for superpower competition in 1959-1979, the geopolitical value of the Latin American countries (S in the model) increased. As in Prediction 3, this increased the frequency of US interventions, and made it harder for the reformist parties to achieve

power. Because the reformists, who enjoyed vast popularity, aimed for achieving power through democratic means, this led to the reversal of democracy in many countries. Thus, Prediction 3 is consistent with the pattern described in Figure 1. At the same time, it is broadly consistent with the fact that many elite-controlled governments (such as Peru') scaled down the amount of US rents through compensated nationalizations in the 1960s and 1970s.

In this interpretation, the fact that the reformists were penalized by geopolitical competition is the result of two elements. First, being accountable to the masses, the reformists had the expropriation of US rents as a top priority. Second, because of a large investment position in Latin America, the US was in no position to accommodate on nationalistic policies. But because sanctions created the need for alternative external support, the reformists could be expected to seek a Soviet alliance out of sheer economic need. Paradoxically, by making it harder for the US government to accommodate, US economic power strengthened this mechanism.

If this interpretation is correct, the initial distribution of gains from trade and US interventionism in early 20th century are the two fundamental reasons why the US ended up opposing political change and democracy in Latin America. This became particularly bad during the Cold War, when geopolitical competition magnified the interests at stake. Notice that, in this interpretation, the accumulation of US rents in Latin America had costs as well as benefits. Beside the cost from violating a long-cherished principle (and the human rights violations attached to this), it contributed to foster the anti-Americanism of the masses, making Latin America more open to Soviet penetration in the 1960s and 1970s. This carried both a considerable

geopolitical risk (as the case of Cuba well illustrates) and a large military cost.

In the next section, I look at a few country studies that illustrate how some of the other predictions of the model may be useful. To address my third key question, I look specifically at the case of Venezuela.

1.5 Case Studies

I begin by describing the case of Cuba, which perfectly illustrates the huge potential costs of a transition to popular rule at the time of the Cold War. I then study the case of Chile and Venezuela, whose opposite experiences clearly illustrate both the importance of US influence, and its determinants.

1.5.1 Cuba

The island of Cuba became independent from Spain after a bloody revolution (1895) and a short war between Spain and the United States (1898-1899). Over the next half a century, the economic ties between Cuba and the United States became very strong. On one hand, the US steadily absorbed around 75% of Cuban exports in 1910-1950¹⁸. Key to this result was the preferential tariff (later, a quota) accorded to Cuban sugar on the US market. Because of the high price commanded by sugar in the US, this was a very important prize for competing sugar exporting countries in this area. On the other hand, a series of pro-American conservative governments (such as that of Gerardo Machado, 1925-1933, and Fulgencio Batista, 1934-1959) welcomed

¹⁸This percentage dropped to around 60% in 1945-1960, see Mitchell, 2003.

American investors to control, among other things, a third of the island's sugar economy, all of the country's utilities, a major railroad system, the import, refining and distribution of oil and the country's nickel reserves, most hotels and gambling and various banks. The utilities companies in particular operated in an atmosphere of general public hostility (Bonsal, 1967, p. 265). Overall, US investments stood at about US\$ 2bn in 1959 (Sigmund, 1980, p. 43).

Turning to political developments, after a period of military occupation that ended in 1903, the US granted Cuba its independence but retained the constitutional right to intervene to guarantee political stability and the respect of property. The existence of already large American investments in Cuba made the perspective of a radical government in the island very unattractive from a US point of view. In fact, one interpretation of the American-Spanish war is that the US intervened precisely to avoid that the insurgency ended up damaging its investments (Smith, 1960). While several elections took place in the first three decades of the century, opposition parties normally denounced frauds. At the same time, when the opposition outburst into strikes and open rebellion, the US military intervened to avoid a revolution or to protect American investments: this happened in 1906-9 (when the island was again occupied), 1912, 1917, 1919, and in various other occasions during the 1920s. For 20 years after Batista gained power (1934), the political situation became more stable. In the 1950s, however, widespread discontent among the population created a fertile ground for various opposition movements. In 1958, a group of armed revolutionaries led by Fidel Castro managed to stage a full-scale revolution and overthrow Batista

on January 1, 1959.

Initially, the relations between the US and Cuba remained good. Eisenhower promptly recognized the new regime, and Castro was cordially received for an unofficial visit in Washington in April 1959. This soft line was strongly supported by the American ambassador to Cuba, Philippe Bonsal. Bonsal was convinced that Castro was not a communist, and that the Cuban society would force him to install a constitutional system respectful of US interests (Bonsal, 1967). Soon, however, it appeared clear how hard would the issue of US investments make cooperation between the two countries. As Bonsal puts it, "Through all Castro's gyrations, the only constant has been his determination to free Cuba from American influence (which he equates with domination), even at the eventual cost of submitting his country to the Soviet Union" (*Ibid.*, p. 267). This determination resonated well with large sections of the Cuban society, but most crucially it cemented Castro's support by a 15-20% of unemployed, underemployed, subsistence farmers, intellectuals and students from which he drew his strength (*Ibid.*, p. 266).

Despite a May 1959 land reform that led to the confiscation of some American holdings, the US maintained an amicable approach to revolutionary Cuba until the first months of 1960. The hope for continued cooperation was rapidly fading away, however. Castro himself later declared that: "the American reaction to the agrarian reform of May 1959 made me realize that there was no chance of reaching an accommodation with the United States." (*ibid.*, p. 268). Months of escalating tension led to crisis in May 1960, when Castro nationalized the American and British oil refineries in the island. In July, going against Bonsal's advice, the US government suspended the

Cuban sugar quota: this led to the expropriation of all remaining American investments, and the formal interruption of Cuban-American relations. In February 1962, US sanctions to Cuba were scaled up to the full-scale embargo that lasts to these days.

Faced with the impossibility to sell its sugar to the US (and with a severe oil shortage), Cuba turned to the Soviet Union for commercial support. This was promptly supplied: in the words of the American ambassador, "the Soviets accomplished the task in such a manner that the Cuban consumers were hardly aware of any change in the source of supply" (*ibid.*, p. 272), and "Cuban planters, cane-cutters, sugar-mill hands, dock workers - all those involved in the industry - went to work for the Russian instead of the American consumer" (*Ibid.*, p. 273). In return for economic assistance, the USSR won an important victory in a region that had become crucial for its broader geopolitical strategy (see section 2; in terms of the model, S had increased). In the summer of 1962, Castro authorized the installation of Soviet missile bases in the island. These greatly increased the Soviet first-strike capacity, rapidly leading to a major international crisis (October 1962). When the missiles were eventually withdrawn (1963), the US had essentially accepted the establishment of a Soviet stronghold in the region (*Brzezinski*, p. 39).¹⁹ In terms of the model, it had lost S to the USSR.

The theory developed in the previous section suggests the following interpretation of the Cuban experience. Being largely dependent on the American sugar quota for its well being, the Cuban conservative elite could be expected to sympathize with even large American rents in the island. This was in con-

¹⁹This represented the most serious violation of the Monroe Doctrine since its formulation in 1823.

trast with the various opposition groups, whose lesser involvement in trade made less willing to accept any excessive American rent. To take advantage of this, the elite deliberately favored the expansion of American rents in the island. By fomenting the economic nationalism of the masses, this tied the US government to the defense of the status quo. In terms of the model, the elite chose to entrench itself in power by strengthening US influence over the island. Notice that, in this interpretation, the large flow of American investments to Cuba in 1925-1959 may in part be explained with the preference of the local elite for the country that had established itself as the region's political leader. While this preference may have had a cost for the elite itself, the fragility of its tenure in power - as suggested by the political instability of the early 20th century - may have warranted this on a strictly political ground, as of Prediction 1.

When revolution finally swept the elite away from power, the US had strong reasons to maintain friendly relations with Cuba. On one hand, enhanced Soviet assertiveness made of any Latin American country a potential Cold War battleground. On the other, the new Cuban government displayed no strong bias in favor of a geopolitical alignment with the USSR. Unfortunately, two key factors made the deterioration of US-Cuban relations unavoidable. First, the Cuban government had become accountable to new social groups, ones whose involvement in trade was much smaller. For these groups, the elimination of American privileges was more important than any cost of incurring into American sanctions. Second, the US could not afford not to retaliate against a small country like Cuba, as this would have given a signal of extreme weakness to other countries in the region. In terms of

the model, β was very small. As American investments got expropriated and Cuba lost access to the American sugar market, the economic relations between the two countries ground to a halt. Political relations broke down as a consequence of that, as Cuba's left unserved trade gave to the Soviet Union a competitive hedge in exchanging economic support for the country's geopolitical alliance.

The case of Cuba provided a clear illustration of the risks associated with a leftist shift in Latin America, in a period of intense Cold War competition. These risks induced to US to intervene in a variety of ways to prevent the left from going to power elsewhere, as we shall see for the case of Chile. Various attempts were also made to revert the political evolution in Cuba: beside the continuation of economic sanctions, the US supported an invasion attempt by anti-revolutionary Cuban groups, and various attempts to assassinate Castro. The fact that the new Cuban regime remained firmly in power had much to do with the large economic support that it received from the USSR. To the extent that this reflected a good degree of compatibility between the Cuban trade and the Soviet economy (in terms of the model, a low ϕ), the success of the Cuban revolution is broadly consistent with Prediction 5.

1.5.2 Chile

Differently from most other Latin American countries, Chile had a long history of constitutional democracy at the onset of the Cold War. With the exception of a turbulent period in 1924-1934, regular election had been held since the 1870s, and different parties had alternated in power. Nevertheless, power had generally been in the hands of the Conservative and Liberal

Parties, which represented the elite of a wheat-exporting *latifundista* agriculture, a banking/commercial sector and, later, a burgeoning industrial sector. These groups looked overseas for their markets (first for exported agricultural goods, then for the imported intermediate and capital goods needed in the industrial sector) and consumption patterns (Feinberg, 1974, pp. 31-32). After 1930, the rise of the middle class gave strength to a third party (the reformist Radical Party), who formed two governments in the 1940s without however posing a serious threat to the elite's control of power (Pike, 1963).

The US became Chile's dominant trade partner after World War I. By the early 1950s, 55% of Chilean exports went to the United States, which was also the source of 50% of its imports (Mitchell, 1998). The end of World War I also marked the end of the Chilean nitrates industry, which had been dominated by British interests for the previous half a century. As copper became the key mineral activity - and the key source of foreign exchange - in the 1920s, America displaced Britain as the key source of capital. Total American investments increased from US\$ 15 million in 1912 to US\$ 451 million in 1929, to US\$ 623 million in 1950 (United Nations, 1955, p. 159). Most of these investments went into the copper industry, which resulted extremely profitable to American investors: between 1910 and 1960, it generated an estimated US\$ 4 billion in remitted profits, out of an overall investments of about US\$ 1 billion (Cockcroft, 1996, p. 537).

Left wing agitations and strikes had been common in Chile since the 1890s, and had led to violent repression in the first two decades of the century. In 1919 and 1932, the Communist and Socialist parties were formed. Often persecuted and too small to separately stand a chance of electoral success,

these parties would often form coalition in the following decades, together with other small parties of the left and, occasionally, with the Radical party. While ideologically differentiated, the left was kept together by the desire to implement radical reforms and by a strong economic nationalism. These themes gave the left a large appeal with the masses²⁰. Thus, as a series of electoral reforms increased voter's turnout and improved the quality of the Chilean democracy in the second half of the 1950s (see Harlyn, 1994, p. 130-131, and Figure 2), the candidate of the left (Salvador Allende) got very close to winning the 1958 election.

Faced with the risk of expropriation its copper investments, the US sided clearly with the traditional forces of Chilean politics in the 1950s. Most importantly, US loans helped the rightist government of Ibanez (1952-1958) to tackle a balance of payment crisis whose economic consequences were exacerbating popular unrest. Balance of payments problems were very recurrent in Chile at that time. Because of the long-term decline in agricultural export, the country relied on copper exports to pay for the import of intermediate goods used in the industrial sector. This made the country very vulnerable to volatile copper prices.

As Cold-War competition intensified after 1960 (in terms of the model, S increased), the US effort to avoid the victory of the left in Chile (as in the rest of Latin America) was scaled up. As a result of Kennedy's Alliance for Progress, US aid to Chile increased from a total of US\$ 9.2 million in 1951-1960 to US\$ 41.4 million in 1961-1962 only. Despite its status of relatively

²⁰Together with Ecuador and Peru (which also had substantial American investments) Chile was one of the Latin American countries where economic nationalism was strongest (Taffet, 2007)

developed country, Chile was the third largest recipient of US aid in the 1960s, after Brazil and Colombia. As highlighted by Jeffrey Taffet in its recent (2007) study of the Alliance for Progress, the role of this aid was essentially to keep the Chilean left out of power. Initially, the US attempted to induce the rightist government of Alessandri (1958-1964) to implement domestic reforms. Faced with a substantial refusal, it shifted its support to Eduardo Frei, the head of a new moderately reformist Christian Democratic party. In the 1964 election, Frei defeated Allende also thanks to explicit and covert US support (see Taffet, 2007, p. 76-77; and Easterly *et Al.*, 2010, p. 5).

The hope that Frei would conquer the “votes, hearts and minds of the poor” (Taffet, 2007) went largely unfulfilled, however. While implementing a series of moderate reforms - among which, a land reform - Frei’s popularity declined rapidly. On one hand, harsh policy measures to stabilize the economy reduced the impact of Frei’s reforms. On the other, because of widespread economic nationalism, any attempt by Frei to really capture the hearts of the masses was fundamentally in contrast with the interests of its American sponsors.²¹ Despite a partial nationalization (with compensation) of the copper mines in 1966 and various attempts by Frei to symbolically flirt with domestic nationalism, the support for the left increased as the 1970 election approached. As Frei’s failure appeared clear, the American focus shifted from paying aid to strengthening relations with the military (*Ibid.*).

Allende won the 1970 election with just slightly above 30 per cent of

²¹For example, the pre-condition for further US aid that the price of copper should be kept low in 1965-1966 (when the war in Vietnam had rapidly increased US consumption of this metal) had an incalculable political cost for Frei (Taffet, 2007, p. 83-84).

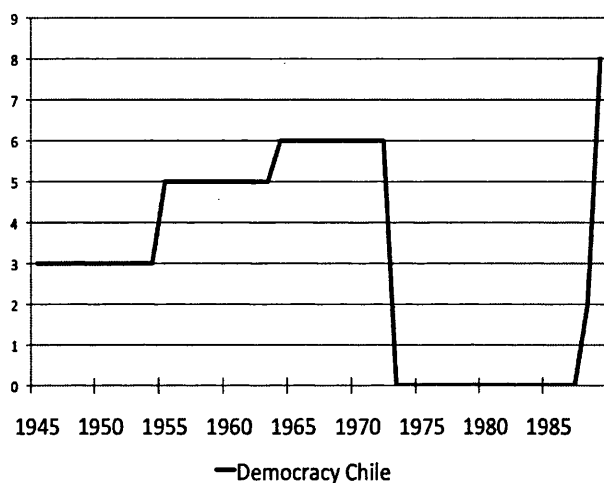


Figure 1.2: Democracy in Chile, 1945-1989

Source: Polity IV.

votes, but was then swept into power with the support of the Radical Party. This marked the first serious loss of power of the elite in the history of the country. In keeping with his electoral promises, the left implemented radical redistributive reforms and expropriated the American copper companies with very little compensation. In reaction the expropriation of American investments, the US government interrupted any aid payment, and orchestrated a credit blockade - involving bilateral and multilateral credit - that hit at the heart of Chile's chronic balance of payment problems. This was a major cause of economic distress in the first few years of the Allende government.

As trade between the US and Chile rapidly plummeted, Allende sought commercial support from various European countries and from countries in the Soviet block. While the amount of economic support that he received

from the USSR was significant, this was modest compared to the support awarded to Cuba one decade earlier (see Evanson, 1985, pp. 110-112). Still, Allende's foreign policy was one of friendship towards the USSR and its allies. For example, he resumed diplomatic relations with Cuba, breaking the *cordon sanitaire* erected by the US against this country. By 1973, however, economic distress created sharp tensions within Chile. In September, a CIA-supported coup (see, for example, Easterly *et Al.*, 2010) overthrew Allende, leading to a 15-years period of military dictatorship (see Figure 2). During this period, much of the privileges of the elite were restored, and so were the expropriated properties of the American copper companies.

Using the model to interpret these facts provides a simple explanation for the link between the Cold War and the collapse of the Chilean democracy. This link had its roots in the accumulation of US direct investments in the first half of the 20th century. Being largely dependent on international markets for its well being, the incumbent elite could commit not to expropriate large domestic rents awarded to the country's most important trade partner. This was in contrast with the left (the challenger) whose support groups, particularly in the countryside, had a more autarchic production and consumption pattern. This difference in commitment capacity created an incentive for the elite to redistribute part of the state-owned copper rents to American investors, thus fostering the economic nationalism of the left. While this could be expected to exacerbate popular discontent with the incumbent group, it would also tie the US government to the defense of the status quo. Given the growing importance of the US as a source of external economic and military help, the latter effect was strong enough to prevail.

In this interpretation, the generous copper concessions granted to American investors since the 1920s can be explained as an attempt by the incumbent elite to entrench itself in power, by putting the country under foreign influence. This can explain the very close alliance between the US government and a series of elite-controlled governments until the 1950s.

As Latin America became an active Cold War battleground after 1960 (in terms of the model, as the S of a typical Latin American country increased), the US effort to keep the left out of power (c in the model) was scaled up (prediction 3). Intuitively, the Cold War increased the cost from having the left in power. Even without assuming any ideological penchant of the left for the USSR, it could be expected that the issue of the US copper mines would make relations between the two countries inherently conflictual. On one hand, elite maneuvering had turned the expropriation of the US rents into a top priority for the groups who supported the left. On the other hand, large Latin American investments and a high economic standing would prevent the US from being able to accommodate to expropriation in a country like Chile. The perspective of conflictual relations with the US made the left very likely to side with the USSR. But this, after 1960, had a very high geopolitical cost for the US. Thus, while the alliance with the incumbent elite was signed in a period of relative quiet international relations (in the Western Hemisphere) renewed international competition strengthened the position of the elite in this alliance. Unfortunately for the fate of the Chilean democracy, this happened at a time when the challenging group was working its way to power thanks to the improvement and consolidation of the country's democratic institutions.

Initially, US effort came mostly in the form of aid, and was concentrated on trying to affect the result of elections. To this purpose, the US used aid to induce Alessandri to domestic reforms and, failing that, to support the victory of the reformist Frei in 1964. These attempts were bound to fail, however. This was for two reasons: on one hand, the elite effectively blocked domestic reforms, possibly relying on the fact that a higher geopolitical stake would help them stay in power (with US support) in any case. Interestingly, one reform that the elite did not block was the partial nationalization of the copper mines: this is very much in the spirit of the model, which predicts that, under foreign influence, the incumbent will be less lenient towards foreign investors when its entrenchment is guaranteed by strong geopolitical competition (Prediction 3). On the other hand, no democratically elected government could be successful without really bowing to domestic nationalism, but this was not something that a US-sponsored government could do.

As the left went to power and relations between the two country took a "Cuban" path, the only option left for the US was to side with the Chilean military and support the overthrowing of democracy. While the strength of the military was a key difference between Cuba and Chile, one may wonder whether the capacity of Allende to withstand a coup would have been different had the USSR provided the same amount of economic support that it had provided to Cuba. To the extent that a lower economic support was imputable to a lesser compatibility of Chilean trade with the Soviet economy, the different success of regime change in Cuba and Chile are broadly in line with the results of the model (Prediction 5).

The case of Chile offers a good example of how many Latin American countries fell under US influence in the first half of the 20th century, and where US interventions went strongly against democracy during the Cold War. In the next section, I look at a country whose early history was comparable to that of Chile, but had then a very different experience with democracy at the time of the Cold War.

1.5.3 Venezuela

Venezuela was one of the few Latin American countries (together with Colombia and Costa Rica) where democracy - installed at the end of the 1950s - remained substantially stable during the Cold War (see Figure 3).

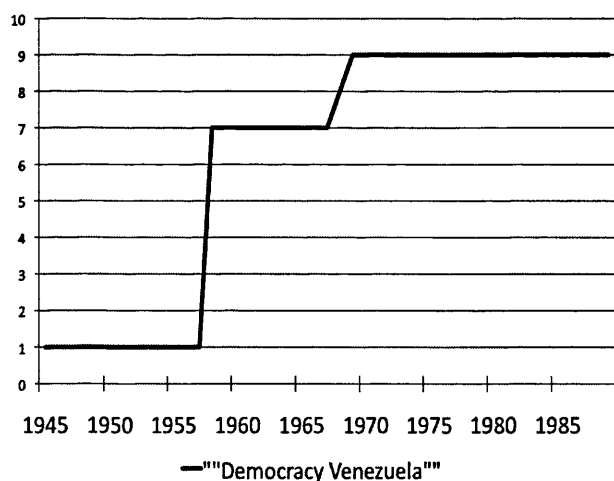


Figure 1.3: Democracy in Venezuela, 1945-1989

Source: Polity IV

The Venezuelan economy had been historically dominated by the export

of tropical agricultural commodities. In the first decades of the 20th century, however, oil became the dominant economic sector. Initially, all oil concessions went to European companies. After World War I, however, things changed, as American companies began to compete aggressively to secure overseas supplies. Their effort was strongly supported by the US government, who was increasingly worried that a growing domestic demand for this strategic commodity could not be met with domestic supplies (Venn, 1986). Differently than in other parts of the world - such as the Middle East²² - the American companies received a very warm welcome in Latin America. In Venezuela, the dictator Vicente Gomez - who ruled the country from 1908 until his death in 1935 - quickly switched its favors to American companies. Between 1925 and 1935, the dictator gave concessions to American companies even when these paid less than their competitors (Rabe, 1982, p. 34). As a result, US companies came to dominate the Venezuelan oil industry by the 1930s, paying royalties that were extremely low for international standards (*Ibid.*, p. 35).

In return for this benevolent treatment of its oil companies, the US helped support the regime of Vicente Gomez. For example, when rumor spread of an imminent revolution in 1923, the US Navy was dispatched to the port of Caracas. This turned out to be the first of a long series of Navy visits, through which the US signaled its continuous support for the dictator. As a result, the 1920s were - except for a series of student riots in 1928 - a peaceful period, and the dictator remained in power until his death in 1935.

In 1937, a group of left wingers who had participated in the 1928 ri-

²²In the Middle East, the penetration of American companies was much complicated by British influence (see Venn, 1986).

ots founded a party, *Accion Democratica* (AD), that would become a key player in the establishment and consolidation of the Venezuelan democracy, as well as a source of inspiration for reformists in other countries. Like all Latin American radical movements, AD stood for domestic reform and a nationalistic approach to foreign investors. However differently from similar movements²³ AD proved to be very successful, possibly because of its remarkable ideological flexibility. For example, many of its founders (including Romulo Betancourt, “the father of the Venezuelan democracy”) moved from leftist origins, but later became fiercely anti-Marxist.

In 1945, AD had a first opportunity after a revolution staged by junior military officer and a subsequent election swept it into power. In the three years that followed (often called *el trienio*), AD extended the franchise to universal suffrage and passed an agrarian reform. It also attacked the privileges of the oil companies, by imposing an innovative 50-50 sharing rule for profits (this spread to the Middle East in subsequent years), discontinuing the system of concessions, and taxing the companies in kind. In 1948, however, the AD government was overthrown by a military coup supported by the elite and by the US government (see Cockcroft, 1996), and a new military dictatorship was established.

In 1948-1958, general Perez Jimenez restored many of the privileges of the oil companies and adopted a liberal policy towards foreign investors. So happy were American investors with the new administration that Eisenhower decorated Perez Jimenez with the Legion of Merit for its “contribution to the free enterprise system”. In 1958, however, a popular revolution in Caracas

²³A good example of this was Peru’s APRA. While similar to AD, APRA was less ideologically flexible, and received much less support from the US.

overthrew Perez Jimenez and elections were held. Returned from a decade in exile, Betancourt won by a large majority. This marked the beginning of a period of constitutional rule that survived undisturbed through the Cold War. With governments in 1959-1964, 1964-1969 and 1974-1979, AD dominated the political life of this period. At the same time, power was handed over to the centrist Christian Democratic Party in 1969-1974 in the first democratic transition of power in the country's history.

Differently than in the *trienio*, the US provided strong support to the AD governments after 1959. In the early 1960s, AD became a darling of Kennedy's Alliance for Progress, the aid program launched in response to the Cuban Revolution and the increased Cold War competition for influence in Latin America (in terms of the model, an increase in *S*). In return for this amicable US attitude, AD adopted a strongly pro-US foreign policy, for example lending its support to the expulsion of Cuba from the Organization of American States. Interestingly, relations between the two countries remained good despite AD's strong economic nationalism. This led to increasingly harsh conditions being imposed on the American companies in the 1960s, and to AD fully nationalizing the American oil companies in 1975, granting only compensation at book value.²⁴ This level of compensation had been rejected in a number of occasions by the US government. Still, in the case of Venezuela protests were very mild, and were eventually put on a side, for "given the interest of the companies in continuing to do business with Petroven and of the United States government in a continuing and reliable source of oil, the general perception was that a stronger response was neither

²⁴This amounted to just about 20% of actual investment, and only 10% of its replacement value (Sigmund, 1980, p. 243.)

desirable nor necessary" (*Ibid.*, p. 244).

Importantly, the capacity of Venezuela to re-appropriate its oil concessions was strongly linked to the establishment and consolidation of OPEC in the 1960s. Until the 1950s, Third World oil supplies had remained firmly in the hands of American, British and Dutch oil companies, who were able to defy expropriation by exploiting their control of processing channels and the capacity to increase production elsewhere.²⁵ With the formation of OPEC, however, the bargaining power began to shift. In fact, a key achievement of OPEC in the 1960s was to agree that, in case of sanctions against one of its members, the organization would forbid the oil companies from increasing production elsewhere (Venn, 2002). This made sanctions against any OPEC members much more expensive than before, paving the way for the nationalizations of the 1970s. Understanding this, AD became a founding member of OPEC, and one of its strongest supporters.

Prediction 2 suggests that when the cost of imposing trade sanctions against H becomes high, this country may be able to escape the condition of foreign influence. The intuition for this is simple. If the cost of sanctions is high, there exist an equilibrium where A cannot credibly threaten to retaliate to expropriation. In this context, rents are at risk no matter who is in power in H ; and - what may be even more important in periods of high geopolitical competition - a nationalistic government does not need to become a geopolitical enemy. Thus, in the model's interpretation, AD's success in consolidating the Venezuelan democracy was, at least in part, a consequence of its success in strengthening OPEC. As the cost of sanctions

²⁵For example, this was the response to nationalization in Mexico (1938) and Iran (1951-1953) (see Venn, 2002).

against Venezuela increased, the question of economic nationalism became less important in the US approach to Venezuelan politics. This was for two reasons: first, nationalization was now a concrete threat independently on who ruled the country. Second, the expectation that sanctions against this country could be waived guaranteed that even a strongly nationalistic party would remain a geopolitical friend. With the hurdle of nationalism out of the way, relations between AD (or the Venezuelan democracy) and the US became much easier to sustain.

This interpretation fits nicely in the different experiences of Venezuela and Chile. Differently from oil, copper-producing countries had not created an international organization that could soften the impact of sanctions against some of its members. Thus, a drop in import from Chile could be safely substituted with imports from a variety of sources, both in developing countries (Peru, Zaire, Zambia) and in developed countries (Canada, Australia, the US itself). More in general, copper was not as important a commodity as oil, and was not so much the focus of public attention in the early 1970s. To the extent that these factors contributed to making accommodation impossible in Chile (differently from Venezuela), this may explain why the US adopted a very different approach to democracy in these two countries. Of course, the different ideological positions of Allende's UP and Betancourt's AD may also have mattered. The key point of this section, however, is that economic frictions may determine ideological frictions in the first place. Thus, AD's unique ideological flexibility - a key determinant of its success - may have been the consequence of Venezuela's unique economic position in Latin America.

1.6 Conclusions

After looking at the role of US influence on democratization in Latin America during the Cold War, I have constructed a theory of power allocation in the presence of foreign influence. In this theory, the outcome of a distributional conflict between an incumbent group and a challenger is altered by the capacity of the incumbent to exchange rents to foreign investors for external support from a key trading partner. This capacity is grounded in the incumbent larger exposure to the international economy, which makes him easier to control from the exterior, using the threat of trade sanctions.

My main results are as follows. First, rents have two key effects on the political equilibrium. On one hand, while fueling the economic nationalism of the challenger, they increase what the trade partner is ready to spend to protect its investors by keeping the incumbent in power. I show that the latter effect must dominate if rents are hard enough to expropriate. On the other hand, they create the basis for a geopolitical conflict between the challenger and the trading partner: thus, the higher the country's geopolitical importance, the higher the protection that the incumbent receives, and the lower the price it has to pay for it. Second, in a country where an incumbent does rely on external support, an increase in the country's economic standing - measured as the cost for the trading partner to impose sanctions - may make domestic regime change more likely. Third, in the presence of an external support an incumbent with more to lose and facing a larger revolutionary threat may end up being *more* entrenched, rather than less. This, however, comes at the cost of a larger portion of the domestic economy being awarded to foreigners. At the same time, the larger the importance of the country

providing external support as a trading partner, the smaller the probability of regime change. Finally, the theory predicts that the capacity to intervene in other countries' affairs may make a country worse off: this is the case when the maneuvering of the incumbent increases its geopolitical risk to a great extent.

These results can explain the generalized reversion of democratization in the 1960s and 1970s, a period where Cold War competition over Latin America was exceptionally strong. At the same time, they suggest the reason why the US interest in exporting democracy had to be put on a side during the Cold War. Because of her long-standing involvement in international trade, the Latin American elite could credibly share parts of her rents with American investors. As the US became markedly interventionist in early 20th century, the elite welcome American investors as a way to foster the nationalism of the masses, and tying the American government to the defense of the status quo. By the 1950s, economic nationalism was a key obstacle in the relation between the US and the Latin American reformists. The Cold War complicated this relation even further. Because of its large Latin American investments and the strength of its economic status, the US was in no position to accommodate over expropriation of US property. The risk that a sanctioned government would then turn for economic support to the Soviet Union amplified the diffidence of the US towards the Latin American reformists. In this interpretation, not ideology separated the US from the Latin American left, but the expectation that the left, more than the right, would need economic support from the USSR.

I have shown that the peculiar experience of Venezuela - which, differently

from most other Latin American countries, had a stable democracy in the 1960s and 1970s - can be explained with the economic standing of all oil producers in that period, which made it easier for the US to accommodate expropriation.

The two determinants of foreign influence in this model are the wish to protect foreign investors, and the need to secure a country's geopolitical alignment in the face of international competition. While typical of Latin America, these two elements were relevant in many other parts of the world at the time of the Cold War. Also, they may be relevant in the case of several former-Soviet republics, where the protection of large resource investments may be an issue and political sentiments are still marked by a clear pro-West or pro-Russia dichotomy. Finally, there is the perception that global geopolitical competition could become important again over the next decades, as China develops into a new superpower. In that is the case, many countries in Africa - where Chinese trade and investments are rapidly expanding - could also fit the assumptions of the model rather well. Thus, I believe the story I have presented in this paper is broad enough in scope, and could be useful in a number of different contexts.

The model also lends itself to a number of simple extensions. For example, I could allow for the possibility that a challenger is more outward-oriented than the incumbent, and external interventions can also *help* him go to power. Or, by allowing for an independent geopolitical position of the incumbent's country, I could explore the consequences of political nationalism. So extended, the model could be helpful to investigate the case of Iran: there, the big problem of the West seems to be that the ruling elite is too inward-

looking to give up the political nationalism common of the Iranian society, while more outward-oriented business and consumer groups are kept out of power by the current political system. I keep these and other extensions for future research.

1.7 Appendix

Proof of Lemma 1

The strategy for the proof is to show, first, that none of the other other small countries expropriates when n is high enough, if no info on the type of A can be extracted from H 's experience; next, to show that the need not to signal itself as normal induces A to react to expropriation in H as specified in Lemma 1.²⁶

Take any arbitrarily small p , and denote by n the first country who decides to expropriate after H , $n - 1$ the second, and so on. Also, denote by π_n the probability that A imposes sanctions against country n .

If $n = 1$ and this country expropriates, A has no reputation reason to behave differently from its short run optimum. Thus, because sanctions have a cost $S + \bar{\beta} > 0$ and we are working under the assumption that $\bar{\beta} < g - S$, only the crazy type finds it optimal to impose sanctions. Because no info can be extracted from H 's experience, $\pi_1 = p$ in this case. Then, country 1 expropriates iff:

$$\bar{R} - p \frac{\phi}{\delta} > 0$$

²⁶The proof is partly based on Fudenberg and Tirole (1991), pp. 369-374.

or:

$$p < \frac{\delta \bar{R}}{\phi} \equiv \bar{p} \quad (1.20)$$

Suppose now $n = 2$, and consider the choice by either country to expropriate first. The probability that A imposes sanctions against 2 (π_2) may be higher than p , because the normal type may want to mimic the crazy type to increase π_1 . Clearly, the best result that this may yield is to push 1's decision from expropriation to no expropriation: this has a value \bar{R} to A . Thus, because the cost of imposing sanctions is S , a necessary condition for the normal type to be interested in mimicking the crazy type in 2 is:

$$S + \bar{\beta} < \bar{R} \quad (1.21)$$

Suppose that (1.21) holds. We can then distinguish two cases. First, if $p > \bar{p}$, a strategy by the normal type of always imposing sanctions (therefore giving no info on its type to 1) is optimal, as it would be recognized as normal if it didn't do so.²⁷ Second, if $p < \bar{p}$, the only equilibrium is one where the normal type randomizes over whether to enact sanctions against 2 or not, and

²⁷Throughout the proof, I am using the "intuitive criterion" proposed by Cho and Kreps (1987) to rule out "unreasonable" off-equilibrium beliefs. In this case, the criterion rules out that if A does not impose sanctions, it is believed to be a the crazy type.

1 randomizes over whether to expropriate or not when sanctions are imposed. This latter fact is needed to make the normal type indifferent over whether to impose sanctions against 2 or not. For 1 to be willing to randomize, it must be the case that $\pi_1 = \bar{p}$; this in turn is only possible if the normal type mimics the crazy type with probability ζ_2 , where, using Bayesian updating:

$$\frac{p}{p + (1 - p)\zeta_2} = \bar{p} \quad (1.22)$$

or:

$$\zeta_2 = \frac{p(1 - \bar{p})}{(1 - p)\bar{p}}$$

In turn, for A to be willing to randomize, 1 must expropriate with probability ϕ , where ϕ is such that the normal type's payoff from imposing sanctions is equal to its payoff from not imposing them:

$$\begin{aligned} -\phi\bar{R} - \beta - S &= -\bar{R} \\ \phi &= \frac{\bar{R} - \beta - S}{\bar{R}} \end{aligned}$$

The probability that A imposes sanctions against 2, π_2 , is:

$$\begin{aligned}\pi_2 &= p + (1 - p)\zeta \\ &= \frac{p}{\bar{p}}\end{aligned}$$

Now suppose $n = 3$ and consider again the decision by any country to go first. From what we just said, with no info from 3's round 2 decides to expropriate iff $\frac{p}{\bar{p}} > \bar{p}$, or:

$$p > (\bar{p})^2 \tag{1.23}$$

If (1.23) is satisfied, $\pi_3 = 1$. If (1.23) is not satisfied, the only equilibrium is again one where the normal type randomizes over whether to enact sanctions against 3 or not, and 2 randomizes over whether to expropriate or not when sanctions are imposed. Following the same procedure as above, we find:

$$\pi_3 = \frac{p}{(\bar{p})^2}$$

It is now clear that, if (1.21) holds, π_n is monotonically increasing in n , reaching its maximum value of 1 for n high enough. Now suppose that (1.21)

does not hold. Then, there can be no mimicking in period 2, and both 2 and 1 expropriate as soon as $p < \bar{p}$. There can, however, be mimicking in period 3. Suppose that $\beta + S < 2\bar{R}$. Then, if $p > \bar{p}$ a strategy by the normal type of always imposing sanctions must be optimal, as it would be recognized as normal if it did so and both 2 and 1 would switch from expropriating to not expropriating. If, instead, $p < \bar{p}$, the only equilibrium is one where the normal type randomizes, and so do 2 and 1. The condition for finding ζ_3 is the same as in (1.22). As for 2 and 1, these countries must expropriate with such a probability that the normal type is made indifferent over whether to impose sanctions or not. Contrarily to before these probabilities are not uniquely defined; we can however restrict our attention to the case where 2 and 1 randomize with equal probability ϕ . The relevant condition is then:

$$\begin{aligned}
-\phi 2\bar{R} - (1 - \phi)\phi R - \beta - S &= -2\bar{R} \\
(1 - \phi)(2 - \phi) &= \frac{\beta + S}{2\bar{R}}
\end{aligned} \tag{1.24}$$

Clearly, there exist a ϕ such that equation (1.24) is satisfied. We can now see what happens if $S + \beta > 2\bar{R}$: while there is no mimicking in 3, 2 and 1, there can be mimicking in 4 if $S + \beta > 3\bar{R}$. And so on. Thus, the reputation game that we described initially starts as soon as n is high enough that $S + \beta > n\bar{R}$, which must be the case for n high enough. Notice that for such an n , as ϕ goes from 1 to 0 the gain from imposing sanctions go continuously from 0 to $n\bar{R}$, so the semi-separating equilibrium must exist.

Denote by \bar{n}^I the minimum n needed for which $\pi_n = 1$. Because $1 > \bar{p}$, it is established that, for $n > \bar{n}^I$, none of the other small countries expropriates when no info on A 's type can be extracted from H 's experience.

Let us now look at the optimal reaction by A to expropriation in H . Assume that $n > \bar{n}$, where $\bar{n} = \max[\bar{n}^1, \bar{n}^2]$ and:

$$\bar{n}^2 \equiv \arg\{\beta + S < n\bar{R}\}$$

We then distinguish two cases. If $\beta < g - S$ (as in all other small countries) the unique equilibrium is a pooling equilibrium where both types impose sanctions. To show that this equilibrium exists, notice that the normal type would lose $n\bar{R} - S - \beta > 0$ from deviating. To see that it is unique, notice, first, that there cannot exist a separating equilibrium where only the crazy type imposes sanctions, as the normal type would gain $n\bar{R} - S - \beta > 0$ from deviating. Second, there cannot exist a pooling equilibrium where neither type expropriates, as the crazy type would gain ($g - S - \beta > 0$) from deviating.

If $\beta > g - S$, on the contrary, the previous equilibrium exists alongside a pooling equilibrium where neither type imposes sanctions. Furthermore, these are the unique equilibria. The proof of existence of the previous equilibrium, as well as of non-existence of the separating equilibrium, is identical to the previous case. To show that the other pooling equilibrium also exists, notice that the crazy type now has a loss $g - S - \beta < 0$ from deviating.

Thus, it is shown that, if H expropriates, A always imposes sanctions when $\beta < g - S$, while may or may not impose sanctions when $\beta > g - S$.

■

Derivation of \tilde{R}

After plugging in (1.10), $\Phi(R)$ becomes:

$$\Phi(R) = \left(1 - \frac{\gamma(X+1) - \delta R - \phi\gamma - \beta - S}{M}\right) \left(\frac{X+1}{\delta} - R\right) \quad (1.25)$$

The first and second derivatives of (1.25) with respect to R are:

$$\begin{aligned} \frac{\partial W_H^a}{\partial R} &= \frac{\delta}{M} \left(\frac{X+1}{\delta} - R\right) - \left(1 - \frac{\gamma(X+1) - \delta R - \phi\gamma - \beta - S}{M}\right) \\ \frac{\partial^2 W_H^a}{\partial R^2} &= -2\frac{\delta}{M} \end{aligned}$$

Proving concavity. Setting the first derivative equal to zero we derive \tilde{R} .

Derivation of Proposition 2

$$\begin{aligned}
& W_H^a(\underline{R}) > W_H^a(0) \\
& \left(1 - \frac{\gamma(X+1) - \delta\underline{R} - \beta - \phi\gamma - S}{M}\right) \left(\frac{X+1}{\delta} - \underline{R}\right) > \left(1 - \frac{\gamma(X+1)}{M}\right) \frac{X+1}{\delta} \\
& \frac{\delta\underline{R} + \beta + \phi\gamma + S}{M} \frac{X+1}{\delta} - \left(1 - \frac{\gamma(X+1) - \delta\underline{R} - \beta - \phi\gamma - S}{M}\right) \underline{R} > 0 \\
& \frac{\delta\underline{R} + \beta + \phi\gamma + S}{\underline{R}} \frac{X+1}{\delta} + \gamma(X+1) - \delta\underline{R} - \beta - \phi\gamma - S > M \\
& \frac{\delta\underline{R} + \phi\gamma}{\underline{R}} \frac{X+1}{\delta} + \gamma(X+1) - \delta\underline{R} - \phi\gamma + (\beta + S) \left(\frac{X+1}{\delta\underline{R}} - 1\right) > M \\
& \frac{\delta\frac{\phi\gamma}{1-\delta} + \phi\gamma}{\frac{\phi\gamma}{1-\delta}} \frac{X+1}{\delta} + \gamma(X+1) - \delta\frac{\phi\gamma}{1-\delta} - \phi\gamma + (\beta + S) \left(\frac{X+1}{\delta\frac{\phi\gamma}{1-\delta}} - 1\right) > M \\
& \left(\frac{1+\delta\gamma}{\delta}\right) (X+1) - \phi\gamma\frac{1}{1-\delta} + (\beta + S) \left(\frac{1-\delta}{\delta} \frac{X+1}{\phi\gamma} - 1\right) > M \\
& \left[M - (X+1) \left(\frac{1+\delta\gamma}{\delta}\right) + \phi\gamma\frac{1}{1-\delta}\right] \frac{\delta\phi\gamma}{(1-\delta)(X+1) - \delta\phi\gamma} < \beta + S \\
& \frac{\delta M - (X+1)(1+\delta\gamma) + \frac{\phi\gamma\delta}{1-\delta}}{\delta} \frac{\delta\phi\gamma}{(1-\delta)(X+1) - \delta\phi\gamma} < \beta + S \\
& \phi\gamma \frac{\delta M - (X+1)(1+\delta\gamma) + \frac{\phi\gamma\delta}{1-\delta}}{(1-\delta)(X+1) - \delta\phi\gamma} < \beta + S
\end{aligned}$$

Derivation of $\underline{\pi}$:

If $R^* = \underline{R}$:

$$\begin{aligned}
\pi &= \frac{\gamma(X+1) - \delta R - \phi\gamma - \beta - S}{M} \\
&= \frac{\gamma(X+1) - \frac{\phi\gamma}{1-\delta} - \beta - S}{M} \\
&= \bar{\pi} - \frac{\frac{\phi\gamma}{1-\delta} + \beta + S}{M}
\end{aligned}$$

If $R^* \in (\underline{R}, \bar{R})$:

$$\begin{aligned}
\pi &= \frac{\gamma(X+1) - \delta \tilde{R} - \phi\gamma - \beta - S}{M} \\
&= \frac{\gamma(X+1) - \frac{1}{2}((1+\gamma)(X+1) - \gamma\phi - M - S - \beta) - \phi\gamma - \beta - S}{M} \\
&= \bar{\pi} - \frac{\phi\gamma + S + \beta + (1+\gamma)(X+1) - M}{2M}
\end{aligned}$$

Finally, if $R^* = \bar{R}$:

$$\begin{aligned}
\pi &= \frac{\gamma(X+1) - \delta\bar{R} - \phi\gamma - \beta - S}{M} \\
&= \frac{\gamma(X+1) - \phi(1+\gamma) - \beta - S}{M} \\
&= \bar{\pi} - \frac{\phi(1+\gamma) + \beta + S}{M}
\end{aligned}$$

Proof that $\frac{\partial\pi}{\partial M} > 0$ when $R \in (\underline{R}, \bar{R})$

When $R \in (\underline{R}, \bar{R})$:

$$\begin{aligned}
\pi &= \bar{\pi} - \frac{\phi\gamma + S + \beta + (1+\gamma)(X+1) - M}{2M} \\
&= \frac{2\gamma(X+1) - \phi\gamma - S - \beta - (1+\gamma)(X+1) + M}{2M} \\
&= \frac{M - \phi\gamma - S - \beta - (1-\gamma)(X+1)}{2M} \\
&= \frac{1}{2} - \frac{(1-\gamma)(X+1) + \phi\gamma + S + \beta}{2M}
\end{aligned}$$

It is now clear that $\frac{\partial\pi}{\partial M} > 0$.

Proof that $\frac{\partial\Delta W_H^a}{\partial(X+1)} > 0$:

If $R \in (\underline{R}, \overline{R})$:

$$\frac{\partial \Delta W_H^a}{\partial (X+1)} = \frac{\overline{\pi} - \pi}{\delta} + \frac{\partial \pi}{\partial (X+1)} R^* > 0$$

because $\frac{\partial \pi}{\partial (X+1)} > 0$. If $R^* \in (\underline{R}, \overline{R})$:

$$\begin{aligned} \frac{\partial \Delta W_H^a}{\partial (X+1)} &= \frac{\overline{\pi} - \pi}{\delta} + \frac{1+\gamma}{2M} \frac{X+1}{\delta} - \frac{1-\gamma}{2M} R^* + \pi \frac{1+\gamma}{2\delta} \\ &= \frac{\overline{\pi}}{\delta} + \frac{1+\gamma}{2\delta} \pi - \frac{\pi}{\delta} + \frac{1}{2M} \left[\frac{1}{\delta} (1+\gamma)(X+1) - \frac{1-\gamma}{2\delta} ((1+\gamma)(X+1) - \text{pos. const.}) \right] \\ &> 0 \end{aligned}$$

because the sum of the second and third term is positive, and so the sum of the terms within square parenthesis. ■

Proof that $\frac{\partial \Delta W_H^b}{\partial (X+1)} < 0$ if $R \in (\underline{R}, \overline{R})$

$$\begin{aligned}
\frac{\partial \Delta W_H^b}{\partial (X+1)} &= -\frac{\partial \Delta W_H^a}{\partial (X+1)} - \frac{\partial \pi}{\partial (X+1)} \phi \gamma \\
&< -\left\{ \frac{1}{2M} \left[\frac{1}{\delta} (1+\gamma)(X+1) - \frac{1-\gamma}{2\delta} ((1+\gamma)(X+1) - \text{pos. const.}) \right] + \frac{\partial \pi}{\partial (X+1)} \phi \gamma \right\} \\
&= -\frac{1}{2M} \left[\frac{1}{\delta} (1+\gamma)(X+1) - \frac{1-\gamma}{2\delta} ((1+\gamma)(X+1) - \phi \gamma (1-2\delta) - \text{pos. const.}) \right] \\
&< 0
\end{aligned}$$

(notice that the positive constant contains M , so it is always > 1 : thus, even without assuming $\delta < \frac{1}{2}$ the terms in brackets is always positive.) ■

Proof that $\frac{\partial \Delta W_A}{\partial (X+1)} > 0$ if $R \in (\underline{R}, \bar{R})$

$$\begin{aligned}
\frac{\partial \Delta W_A}{\partial (X+1)} &= -\frac{\partial \pi}{\partial (X+1)} (1+R^*) + (1-\pi) \frac{\partial R^*}{\partial (X+1)} - \frac{R^* + \beta + S}{M} \\
&= \frac{1}{2M} \left[(1-\gamma)(1+R^*) - 2R^* - 2\beta - 2S + \frac{1+\gamma}{\delta} (M - \gamma(X+1) + \delta R^* + \phi \gamma + \beta + S) \right] \\
&= \frac{1}{2M} \left[(1-\gamma) + \left(\frac{1+\gamma}{\delta} - 2 \right) (\beta + S) + \frac{1+\gamma}{\delta} (M - \gamma(X+1) + \phi \gamma) \right] \\
&> 0
\end{aligned}$$

Where the latter inequality comes from assuming $\delta < \frac{1}{2}$ and $M >$

$\gamma(X + 1)$. ■

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Chapter 2

Decolonization: the Role of Changing World Factor Endowments

European colonialism had two key economic aspects: the extraction of colonial wealth by colonizers, and the relevance of trade for colonial economies. I build a simple model of colonialism which puts these two elements at centre stage. By controlling policy in the colony, the colonizer can appropriate part of her wealth; the colony, however, can stage a successful revolution at a stochastic cost. I assume there is some exogenous, non-contractible policy gain from independence, so that the colonizer is forced to concede it when the cost of revolution is low. I incorporate this mechanism in a three-country, Heckscher-Ohlin model where countries (the colonizer, the colony and a third independent country) can decide whether to trade with each other, and the colonizer can threaten to stop trading with the colony if she rebels. Thus, the

attractiveness of revolution and the sustainability of colonial power come to depend on the capacity of the colony to access international markets against the will of the colonizer which, in turn, depends on the distribution of world factor endowments. I present historical evidence in support of my theory. My results have important implications for the debate on the economic legacy of colonialism.

2.1 Introduction

One of the striking political and economic changes of the twentieth century was the almost complete elimination of colonial power. This has naturally precipitated a large debate about the legacy of colonialism for contemporary development experiences. This has been invigorated recently among economists by the empirical study by Acemoglu, Johnson and Robinson (2001) linking settler mortality to current prosperity.

To understand the legacy of colonialism, it is important to understand the forces that led to its rise and decline. This paper studies one central aspect of this - the influence of trade. The paper begins from the observation that trade between colonial states and colonizer was at the centre of colonial relationships and a source of benefit to the colonial power. But this must be seen in the context of a global equilibrium that shapes alternative sources of trading opportunities open to the colony, which, in turn, shape the incentive to rebel and hence the sustainability of colonial power. The paper sets up a model to make these ideas precise and then relates it to the experience of decolonization in some parts of the world. It argues that the economic

forces (mainly factor endowments) that shaped the pattern of trade are key to understanding the historical experience.

Colonialism took many institutional and economic forms. However, one characteristic that, with varying intensity, was common to all European empires, was the importance of trade for colonial relationships. Soon after conquest, colonies were forced or encouraged to orientate their production towards tradable goods that could be consumed in the mother country, or sold on international markets. In some cases, these products had been produced by colonies for long time before; in others, a brand new production was implanted by colonizers, both under public and private initiative.¹ Even though, sometimes, portions of colonial population were forced to participate in this production, there were normally colonial groups that benefited from it. Thus, production resulted in trade for the colony, that is it generated exports (mainly agricultural commodities and raw materials) that were exchanged in Europe for imports (mainly manufactured goods). The result of this process was that by the time of decolonization, important segments of colonial populations were dependent on international trade for their well being.

A second key feature of European colonialism was the extraction of colonial wealth by colonizers. As I just mentioned, there existed institutions of forced labour that made sure that only a few groups, in the colonies, benefited from trade. In general, however, institutions and tools were in place that redistributed part of the value of colonial trade from colonies to colonizers.

¹An example of the first case is Peruvian and Mexican gold and silver, which the Incas and the Aztecs had produced for centuries before the arrival of the Spaniards. An example of the second case is sugar plantations, that the Portuguese imported in the Azores and Brazil.

These tools can be grouped in four broad categories: beside the institutions of forced labour, taxes, monopolies on investment, production and trade, and the allocation of public revenues to appropriately selected public goods.

Moving from these observations, I build a model which concentrates on the redistributive issue which led to decolonization. On one hand, controlling de jure political power in the colony, the colonizer can extract and appropriate part of the colony's wealth. On the other hand, the colonized have some de facto political power in that they are able to stage a successful revolution at some stochastic cost. When the de facto political power of the colonized is high, the colonizer can only avoid a revolution by reducing extraction or by conceding independence. I assume that there is some exogenous, non-contractible policy gain from independence, so that the colonizer has to concede it when the de facto political power of the colonists is high enough. I incorporate this political economy model into a three-country, Heckscher-Ohlin trade model where countries (the colony, the colonizer and a third independent country) decide whether to trade with each other, and the colonizer is assumed to be able to credibly threaten not to trade with a colony if she rebels. Thus, the colony's well being after revolution depends on her capacity to access international markets against the wish of the colonizer, and so does the sustainability of colonial power. In the model, both these elements come to depend on the distribution of world factor endowments.

I present a series of case studies to establish whether decolonization and the distribution of world factor endowments were connected in the way the model predicts. I begin by re-considering, in light of the model, the causal link between the Seven Years War (1756-1763) and the American Revolution

of 1776. I then study the decadence of the colonial power of Spain in 1590-1750, its temporary revival in 1750-1810, and its final collapse after 1810. Finally, I study the process which led Britain to concede self-government to her settler colonies of Canada and Australia in mid 19th century. In all cases, I find substantial evidence in favour of my argument.

My paper differs from previous work on decolonization in that it addresses unanswered questions using an original, formal framework. A vast literature in history, political science and law can be distilled into three main views. First, some authors emphasize the role played by nationalist movements in inducing the colonizers to concede independence. According to these authors, the reason why nationalist movements gained strength was that colonial powers treated colonies too harshly (Lynch, 1973; McMinn, 1979; Grimal, 1978). Second, other authors argue that there were factors within colonizing countries that made colonialism unattractive to domestic interests groups and constituencies (Shuler, 1945; Holland, 1985). Finally, some authors emphasise international factors, such as the diplomatic activity of Britain and the United States in early 1800s or the rise of anti-imperial powers after World War II (Kaufmann, 1951; McIntyre, 1977). Most of this literature does not study economic incentives explicitly, and none describe them in a formal way. Furthermore, a few important questions seem to remain on the ground: why would colonizers be treating colonies “too harshly”? Why would this lead to decolonization at that specific point in time? And how exactly, if in any way, did international factors shape the incentives of colonies to fight for independence?

A few papers in economics have attempted to bridge this gap. Grossman

and Iygun (1993) model optimal colonial investment by the colonizer as a function of the technology of production and rebellion, and derive a set of conditions under which it is optimal to abandon the colony. Grossman and Iygun (1997) argue that population growth increased the private returns to rebellion, thus leading to decolonization in Africa and South Eastern Asia after World War II. None of these papers, however, consider how economic incentives were shaped by current and perspective trade conditions.

The paper is structured as follows. Section 2 provides an overview of the economics of colonialism, and introduces my argument. Section 3 develops the model which makes my argument precise. Section 4 presents some historical evidence in support of my model. Section 5 concludes.

2.2 Colonialism, trade and extraction

European colonialism kicked off in XV century with the Portuguese exploration of the African coasts and the sea route to the East Indies, and strongly accelerated with the Spanish discovery of the Americas. In 17th century, the power of the early colonizers was eclipsed by the rising of France and, slightly later, the Netherlands and England. A long series of wars (1652-1763) left the latter as the most powerful colonial power, particularly after control over India was established in mid 1700s. After a period that could be said of anti-imperialism - it witnessed the American Revolution of 1776, the independence wars of Latin America in 1810-1830, and the concession of self-government to several British settler colonies in the second half of 19th

century - the imperialist momentum slowly built up again,² to eventually accelerate with the "Scramble for Africa" and the division of China and the Middle East in areas of influence. By the 1930s, European colonialism had reached its largest expansion ever.

Despite its long and complex history, two economic characteristics of European colonialism remained remarkably constant over time. The first is the importance of trade between colonies, their colonizers and the rest of the world. In the case of many colonies, trade was the purpose of military action from the very beginning. For example, England first deployed troops in the Indian ocean to protect the monopoly and trade posts of the East India Company; and when administrative control over Indian states was established in mid 18th century, this was done at the hands of the Company itself. In other colonies, where there was an abundance of mineral wealth, the first military campaigns were targeted at exacting tribute, if not at stealing and plundering; but normally, this phase was over quite rapidly. This is the case of the Spanish Empire, where the *conquistadores* first fought and plundered, then became feudal lords who produced for European markets while paying tribute to the Crown.

In fact, colonization was normally followed by a major restructuring of colonial economies. Europeans were interested in exploiting the capacity of colonies to produce goods that could be consumed in Europe. Sometimes, this simply required boosting pre-existing industries: for example, in late 16th century the Spaniards organized the Latin American economy around

²E.g., the "Great Game" between Britain and Russia for the control of Central Asia and the defence of India; the creation of a second French empire in North Africa and Indochina.

the production of Peruvian and Mexican silver, which the Incas and the Aztecs had produced long before their arrival. In India, in the first part of 18th century, the export of *calicoes* to Europe was strongly encouraged. In other cases, brand new productions were imported and established: this is the case of the sugar plantations implanted by the Portuguese in the Azores and Brazil in 16th century, or the merino sheep that the British settlers of Australia grazed after 1810. Throughout the history of colonialism, Europeans became accustomed to consume or process many other commodities that were produced in colonies, and exchanged for manufacture goods in Europe: examples are coffee, tobacco, indigo, cotton, wool, timber, etc.

Of course, not all participants in this trade had freely chosen to be so. There were cases in which trade between colonies and colonizers was on an entirely voluntary basis, such as for the so-called British "pure" settler colonies of New England, Canada, Australia and New Zealand. More frequently, however, there was a share of colonial population who was forced to work at the production of export commodities and did not obtain any part of the value created. It was the case of the Indians who worked the mines and farms of the descendents of the Spanish *conquistadores*, or the black slaves who for centuries worked the plantations of North America, the Caribbeans and Brazil. In between these two extremes, lie the case of 19th and XX-century colonies: by that time forced labour had been abolished, but the African and Asian working classes who produced for the export market were often faced with monopsonistic labour markets where they had no real choice but to accept the very little they received. If one abstracts from the specific institutional arrangements at the base of production, however, it is

clear that an element of voluntary exchange was always in place: at least, the colonial elite was part of it.

Turning to some data, one can persuade himself of the importance of trade for the economy of colonies and colonial empires by looking at the structure of trade patterns for England in 1661-1774, the period in which the country ascended to the status of world's leading colonial power. By the end of this period, there were two main colonial markets for England: the colonies of North America and the Caribbean to the West, and India to the East.³ For the former, one finds that the share of the American colonial market in English imports of foodstuff increased from an already significant 37% in 1663-1669 to 54% in 1722-1724 and 62% in 1772-1774. For raw materials, these data were 6%, 15% and 19% respectively. At the same time, the share of America in English exports of manufactures rose from 9% in 1663-1669, to 18% in 1722-1724 and 47% in 1772-1774 (Davis, 1954 and 1962).⁴ As for the Indian market, one finds that the share of English import of manufactures coming from India increased from 17% in 1663-1669 to 32% in 1722-1724 and 37% in 1772-1774. Much of this trade was *entrepot* trade: in 1772-1774, 72% of all imports of foodstuff from America were made up of sugar and tobacco: around 46% of the cost of these imports was recovered by re-exporting those commodities to continental Europe. Over the same

³During the period under consideration, British colonial power expanded in both markets. In North America and the Caribbean, a series of wars with the French yielded Canada and islands such as Martinique and Guadeloupe. In India, the first half of XVIII century was the period in which the East India Company established direct administrative rule over many Indian states.

⁴Data for 1661-1667 are for London only, but the same author shows that, for the period 1700-1702, 80% of all english imports and 62% of all english exports passed through London.

period, *calicoes* represented 88% of imports of manufactures from India: the value of re-export of *calicoes* amounted to as much as 100% of the cost of imports.

The second key characteristic of the economy of colonialism was the extraction of colonial wealth by colonizers. Because of the reforms described above, production in many colonies became extremely valuable to Europeans. Colonizers used their control of *de jure* political power in the colonies to redistribute this value to their own advantage. Redistribution, normally, had two distinct groups of beneficiaries. On one hand, the share of value that remained in the colonies was redistributed in favour of a small local elite. This was either made up of European settlers, or was an indigenous allied elite that, in some cases, had existed before colonization.⁵ A notable exception to this pattern were the British pure settler colonies mentioned above, where the predominance of European settlers in the population favoured the establishment of a more meritocratic society, at least after some point. On the other hand, a consistent share of the value produced was redistributed from colonies to colonizers. The subjects who benefited from this redistribution were different in different colonizers, but included governments, investors, consumers and tax payers in general.⁶

The tools used to redistribute the wealth of the colonies were many, and can be classified into four broad categories. First, there existed the above

⁵In some cases, colonizers established their rule without toppling the leadership of the pre-existing polities. This is typically the case of the so-called protectorates.

⁶There were of course cases in which this second type of redistribution was negative, or the colonizer paid aid to the colonies: for example, this was the case of the Australian colonies before the pastoral boom of the 1820s. In the vast majority of cases, however, redistribution was non-negative.

mentioned institutions of forced labour, that made sure that the colonial labour received the smallest possible share of the value created. Second, various types of taxes on production, consumption and trade were collected by colonial or imperial authorities. Third, monopolies over various segments of the trade lines were set up. Examples include the marketing boards of British West Africa, who acted as monopsonistic buyers of colonial produce, or the various "Companies of the Indies" to which European governments gave exclusive right of trade with the Indies. Also, independently on their internal structure, trade lines remained for centuries subject to "national monopolies". These required all commodities coming from the colonies to be trans-shipped through the colonizer, whatever their destination. Similarly, all colonial imports had to pass through the colonizer, first.⁷ Finally, the public revenues that remained in the colonies were sometimes used to finance public goods that were mainly of interest to colonizers. For example, the Indian army gave a decisive contribution in many of the wars fought by the English in 19th century, and the Australians paid the bill of British jails for many years.

A more subtle form of exploitation, the existence of which has been theorized first by Dependency Theorists (see, for example, Dos Santos, 1970, or Frank, 1971) is the manipulation of factor endowments to the purpose of alimentering trade-related extraction. According to this view, the colonizer prevented her colonies from developing their economy in the "right" way by inducing them to produce foodstuff and raw materials for export. This max-

⁷Famous examples are the Spanish monopoly over Latin American (which lasted from late 1500s to early 1800s) and the British Navigation Laws (from 1651 to 1822), but each colonizer had its own arrangements.

imised imperial trade flows, and the profit from manipulating the terms of trade in the way described above. While dependency theories are criticised by most contemporary scholars, there is much historical evidence that spontaneous forms of industrialization in the colonies were forcefully interrupted by the colonizer (see for example Frank, 1971).

Whether their factor accumulation went to the detriment of "right" economic development or not, many colonies came to be dependent on trade with the colonizer for their prosperity. This dependency was particularly intense for colonies who produced mainly for the market of the mother country, and consumed mainly goods who could be better supplied by producers of the mother country. In such colonies, an influential, if not vast, class of producers, consumers and merchants came to see the maintenance of peaceful trade relations with the colonizer as a priority. Enjoying access to often huge imperial markets, the colonizer could exercise her *de jure* political power over individual colonies from a position of advantage. And when colonies rebelled (such as, in the British case, did the Thirteen Colonies in 1776 or North Rhodesia in 1960), the colonizer did not hesitate to retaliate by denying the rebel access to imperial markets (or, at least, the preferential access they previously enjoyed).

2.3 The model

This section is divided in three subsections: 3.1 and 3.2 present, respectively, the economic model and the political model; 3.3 puts the two building blocks together and studies the equilibrium.

2.3.1 Economic model

The economic model is simple Heckscher-Ohlin model of trade. There are three countries, H , F and E . Country H is a colony, country F her colonizer, and country E a third country external to the colonial relation.⁸

Environment

Each country is inhabited by agents with unit mass. Endowments of land (L) and capital (K) are

$$L^H = 1 \quad K^H = \bar{K}$$

$$L^E = 1 \quad K^E = \bar{K}(1 + \delta)$$

$$L^F = 1 \quad K^F = \bar{K}(1 + \kappa)$$

where $\kappa, \delta > 0$ and $\delta < 2\kappa$: in words, I am assuming that F and E are more capital intensive than H , and that E is not too much capital intensive relative to F . As will become clear below, the latter assumption rules out that the colony and the colonizer are in competition for selling the same land-intensive good to the rest of the world - a case that does not seem to be historically relevant.⁹ All citizens own exactly one unit of land, and citizens

⁸One should think of F as representing the colonizer *and the rest of her empire*, and of E as the *rest of the world*.

⁹I will comment below on how my results change when $\delta > 2\kappa$.

in each country own an equal share of capital.¹⁰

Two goods are produced and consumed, x and y . Production technologies are equal across countries:

$$\begin{aligned}x &= L \\ y &= K\end{aligned}\tag{2.1}$$

Similarly, preferences are equal across countries and are described by the utility function

$$u^{iJ} = u(x^{iJ}, y^{iJ}) = (x^{iJ})^{\frac{1}{2}} (y^{iJ})^{\frac{1}{2}}\tag{2.2}$$

where iJ denotes citizen i in country J . Given that citizens within each country have homogeneous preferences and endowments, they will all have the same demand schedule: we can thus drop the upper script i from now on.¹¹

Uncompensated demand functions and indirect utility are easily found:

¹⁰Notice that I will assume κ and δ to be exogenous on policy. For a discussion of the problems that this assumption may pose, see Section 4; for a brief description of the literature on colonialism and endogenous factor endowments, see Section 2.

¹¹This is equivalent to thinking that there is only one citizen in each country.

$$x^J(p^J) = \frac{1}{2} + \frac{K^J}{2p^J}$$

$$y^J(p^J) = \frac{p^J}{2} + \frac{K^J}{2}$$

$$v^J(p^J) = \frac{p^J + K^J}{2(p^J)^{\frac{1}{2}}} \quad (2.3)$$

where $p^J \equiv \frac{p_x^J}{p_y^J}$ is the price ratio faced by country J , given that good y is the numeraire. For ease of notation, I have expressed indirect utility as a function of prices only.

Autarchy equilibrium

When country J does not trade, his equilibrium price ratio (denoted by p_A^J) is found by equating domestic demand to domestic supply:

$$\frac{1}{2} + \frac{K^J}{2p_A^J} = 1$$

$$\frac{p_A^J}{2} + \frac{K^J}{2} = K^J$$

Solving either of the two above equations yields:

$$p_A^J = K^J \quad (2.4)$$

Using equation (2.3), it is easy to check that any change (both upwards and downwards) in the price ratio away from p_A^J increases welfare in country J , and this increase is larger the larger the change. This is consistent with standard theory of the gains from trade. More formally, $v^J(p) > v^J(p_A^J) \forall p \neq p_A^J$, and $v^J(p') > v^J(p) > v^J(p_A^J) \forall p, p' \neq p_A^J$ such that either $p' < p < p_A^J$ or $p' > p > p_A^J$. In what follows, I will denote autarchy indirect utility in country J by v_A^J , i.e.

$$v_A^J \equiv v^J(K^J) \quad (2.5)$$

Trade equilibrium

Consider the case in which countries can trade. Given that there are three countries in this model, different equilibrium prices may obtain depending on which are the countries involved in the trade. I will use the notation $\{H, F, \cdot\}$ to denote the case in which countries H and F trade with each other and country E remains in autarchy. Analogously, the other two possible two-country cases will be denoted by $\{H, \cdot, E\}$ and $\{\cdot, F, E\}$; the notation $\{H, F, E\}$, instead, will represent different situations in which all countries

trade with at least one other country, but not necessarily with both. Note that, due to the absence of transport costs, the equilibrium price ratio will be the same in all the $\{H, F, E\}$ cases.

The assumption of linear production functions ensures that factor price equalization obtains (Dixit and Norman, 1980). This ensures that we can find the equilibrium prices by solving for the integrated trade equilibria, i.e. by finding the autarchy equilibrium prices a single country with endowments equal to the sum of the endowments of countries who trade. For example, equilibrium prices in the $\{H, F, \cdot\}$ case are found by equating demand and supply in the integrated setting (for example, for good x):

$$\frac{1}{2} + \frac{K^H}{2p} + \frac{1}{2} + \frac{K^F}{2p} = 2$$

Denote by $p_{\{H,F,\cdot\}}^J$ the price ratio faced by citizens in country J when only H and F trade. Solving for either of the two above equations gives:

$$\begin{aligned} p_{\{H,F,\cdot\}}^H &= \bar{K} \left(1 + \frac{\kappa}{2}\right) \\ p_{\{H,F,\cdot\}}^F &= \bar{K} \left(1 + \frac{\kappa}{2}\right) \\ p_{\{H,F,\cdot\}}^E &= p_A^E \end{aligned} \tag{2.6}$$

Equilibrium prices in all other cases are found similarly:

$$\begin{aligned}
p_{\{.,F,E\}}^H &= p_A^H & p_{\{H,.,E\}}^H &= \bar{K} \left(1 + \frac{\delta}{2}\right) \\
p_{\{.,F,E\}}^F &= \bar{K} \left(1 + \frac{\kappa+\delta}{2}\right) & p_{\{H,.,E\}}^F &= p_A^F & (2.7) \\
p_{\{.,F,E\}}^E &= \bar{K} \left(1 + \frac{\kappa+\delta}{2}\right) & p_{\{H,.,E\}}^E &= \bar{K} \left(1 + \frac{\delta}{2}\right) \\
p_{\{H,F,E\}}^H &= \bar{K} \left(1 + \frac{\kappa+\delta}{3}\right) \\
p_{\{H,F,E\}}^F &= \bar{K} \left(1 + \frac{\kappa+\delta}{3}\right) \\
p_{\{H,F,E\}}^E &= \bar{K} \left(1 + \frac{\kappa+\delta}{3}\right)
\end{aligned}$$

Given the prices in 2.6 and 2.7, together with the fact that indirect utility is monotonically increasing in a change in the price ratio, it is easy to pin down the agents' preferences over different trade outcomes. For H and F , if $\delta \in (0, \frac{\kappa}{2})$ we have:¹²

$$\begin{aligned}
\{., F, E\} &\prec^H \{H, ., E\} \prec^H \{H, F, E\} \prec^H \{H, F, .\} \\
\{H, ., E\} &\prec^F \{., F, E\} \prec^F \{H, F, .\} \prec^F \{H, F, E\}
\end{aligned}$$

If, instead, $\delta \in (\frac{\kappa}{2}, \kappa)$:

¹²Notice that $\frac{\kappa+\delta}{3} > \frac{\kappa}{2} \Leftrightarrow \delta \in (\frac{\kappa}{2}, \kappa)$. To simplify the exposition, I am not considering the case in which $\delta = \frac{\kappa}{2}$ and $\delta = \kappa$ here.

$$\begin{aligned} \{., F, E\} \prec^H \{H, ., E\} \prec^H \{H, F, .\} \prec^H \{H, F, E\} \\ \{H, ., E\} \prec^F \{., F, E\} \prec^F \{H, F, E\} \prec^F \{H, F, .\} \end{aligned}$$

Finally, if $\delta \in (\kappa, 2\kappa)$ we have¹³:

$$\begin{aligned} \{., F, E\} \prec^H \{H, F, .\} \prec^H \{H, ., E\} \prec^H \{H, F, E\} \\ \{H, F, E\}, \{., F, E\} \prec^F \{H, F, .\} \end{aligned}$$

Note that when E is relatively land intensive ($\delta \in (0, \frac{\kappa}{2})$), H prefers to trade with F alone than with F and E together, while F prefers to trade with H and E together. When E is relatively capital intensive ($\delta \in (\frac{\kappa}{2}, 2\kappa)$), the opposite is true.

For country E , there exist a $\delta^*(\kappa)$ such that, if $\delta \in (0, \delta^*(\kappa))$:

$$\{H, F, E\}, \{H, ., E\} \prec^E \{., F, E\}$$

if instead $\delta \in (\delta^*(\kappa), 2\kappa)$:

$$\{H, F, .\}, \{., F, E\} \prec^E \{H, ., E\}$$

¹³The preferences of F for δ in this range can be proved by analogy with the preferences of E , see below.

If E is land intensive ($\delta \in (0, \delta^*(\kappa))$) her citizens prefers to have a capital intensive trade partner like F . If she is capital intensive, instead ($\delta \in (\delta^*(\kappa), 2\kappa)$), they prefer to have a land intensive partner like H . In the Appendix, I show that $\delta^*(\kappa) \in (0, \frac{\kappa}{2})$ and $\frac{\partial \delta^*(\kappa)}{\partial \kappa} > 0$ for any κ .¹⁴

2.3.2 Political Model

The political model is inspired by Acemoglu and Robinson (2000, 2006). Colonialism is modelled in a very simple way: while F and E set their own policy freely, policy in H is set by F .¹⁵ In other words, F has *de jure* political power in H .

Policy

There are two policy instruments: *trade policy*, which is set in all countries, and a *transfer from H to F* , which is specific to H .

Trade policy is a set of simple 0 or 1 decisions: it specifies whether a country is closed or open to each of the other two countries. Trade between two countries takes place if and only if both countries agree. Trade policy can be described by the following matrix

¹⁴By analogy, it is possible to show that there exists $\delta^{**}(\kappa) > 2\kappa$ such that F 's first best is to trade with H alone if $\delta \in [\kappa, \delta^{**}(\kappa)]$.

¹⁵Throughout the paper, I will mostly talk about H , F and E as if they were individual agents. This is equivalent to assuming that each country is governed by a citizen selected at random within the population.

$$\mathbf{T} = \begin{bmatrix} \mathbf{T}^H & \mathbf{T}^F & \mathbf{T}^E \end{bmatrix} = \begin{bmatrix} T_H^H & T_H^F & T_H^E \\ T_F^H & T_F^F & T_F^E \\ T_E^H & T_E^F & T_E^E \end{bmatrix}$$

where $T_J^I = 1$ if country I is willing to trade with country J , $T_J^I = 0$ otherwise (of course, $T_J^J = 1 \forall J$). Thus, trade between country I and country J takes place if and only if $T_J^I = T_I^J = 1$. Mapping from \mathbf{T} to the trade equilibrium, and using the equations in (2.6) and (2.7), we can express the equilibrium price ratios as functions of \mathbf{T} , κ and δ only, $p^J(\mathbf{T}|\kappa, \delta)$. The gains from trade for country J , can then be written as:

$$\Pi^J(\mathbf{T}|\kappa, \delta) = v^J [p^J(\mathbf{T}|\kappa, \delta)] - v_A^J$$

The transfer from H to F will be denoted by the letter A . For the fact that H and F have the same indirect utility function, and that this is linear in income, we can think of A as a transfer of indirect utility from H to F . Thus, we can add it linearly to all payoff functions. The transfer A is meant to capture, in the simplest possible way, the redistributive issue between residents in the colonies and residents in the colonizer.

To capture the fact that it is not optimal for F to reduce H into starvation, I will assume that there is a minimum level of utility that H must be left with. Denote this by u , and assume for simplicity that:

$$u < v_A^H$$

Timing

The political state of the model (S) is initially colonialism: country F , the colonizer, is entitled to set policy for country H , the colony. In other words, F controls *de jure* political power in H . Before choosing policy, F decides whether to stick to colonialism or to concede independence, that is to surrender *de jure* political power. From H 's point of view, the advantages of independence are two: first, they acquire *de jure* political power, and therefore control of policy; second, they obtain exogenous benefit $B > 0$. If F does not grant independence, H can stage a revolution. The capacity to stage a revolution represents the *de facto* political power of H . Through revolution (which is always successful) they acquire *de jure* political power and an exogenous benefit b , which is randomly distributed over $(-\infty, B]$. The higher is b , the higher is the *de facto* political power of H . If H stage a revolution, T_F^H is automatically set at 0 in the next date. In words, F must refuse to trade with H any longer.¹⁶ How harmful these sanctions are for H is a measure of F 's *economic* power: the more harmful the sanctions, the largest is F 's economic power.

I will denote the three possible political states (colonialism, independence and revolution) by the notation $S = C, I, R$. The timing of the game is the

¹⁶It would be a natural extension to model trade policy as a continuous decision - with import tariffs ranging from 0 (free trade) to ∞ (no trade). In that case, punishment could simply be the loss of a preferential tariff (see the case study of Canada before) and the level of tariff itself could be endogenous to the political conditions. I keep this interesting extension for future work.

following:

1. Nature chooses b ;
2. F chooses whether to stick to colonialism or to grant independence;
3. T and A are simultaneously set: under colonialism F sets T^F , T^H and A ; under independence, instead, T^H and A are set by H ;
4. If F has granted independence, nothing happens at this stage. If the political state is still colonialism, H decide whether to stage a revolution or not;
5. If F has granted independence, or if H have not staged a revolution, nothing happens at this stage. Otherwise, all policy is reset (T_F^H is automatically set at 0);
6. Production, trade and consumption take place; all payoffs are realized.

The assumption that F sets $T_F^H = 0$ after a revolution is absolutely crucial for the results of the model. While punishment is not *ex-post* optimal in this model, it could be easily rationalized by saying that F has to defend a reputation as a punisher of rebel colonies, in the attempt to preserve discipline in the rest of the empire. In fact, there is evidence that sanctions are actually imposed in the real world.

2.3.3 Equilibrium

Let us proceed to find the equilibrium of the model by solving backwards:

Date 6

After production, trade and consumption take place, all payoffs are realized. These depend on the policy choices made in dates 3 and 5 and on world factor endowments. Denote by $V^J(\mathbf{T}, A|\kappa, \delta)$ the final payoff of a citizen of country J :

$$V^H(\mathbf{T}, A|\kappa, \delta) = v_A^H + \Pi^H(\mathbf{T}|\kappa, \delta) - A + \phi B + \theta b \quad (2.8)$$

$$V^F(\mathbf{T}, A|\kappa, \delta) = v_A^F + \Pi^F(\mathbf{T}|\kappa, \delta) + A \quad (2.9)$$

$$V^E(\mathbf{T}, A|\kappa, \delta) = v_A^E + \Pi^E(\mathbf{T}|\kappa, \delta) \quad (2.10)$$

Where ϕ (θ) is an indicator variable that takes value 1 if the political state is independence (revolution), and 0 otherwise.

Date 5

If F have conceded independence in date 2, or if H have not staged a revolution in date 4, nothing happens at this stage. Otherwise, policy is reset under the constraint $T_F^H = 0$.

The equilibrium concept for the trade equilibrium is that of *coalition-proof Nash equilibrium*. The trade equilibrium is a set of trade policies such that 1) no single country has an incentive to deviate to a different policy; and 2) no coalition of countries has an incentive to coordinate and deviate to a different policy. It can be shown¹⁷ that:

Proposition 1 *After the colony stages a revolution, the type of trade equilibrium depends on the endowments parameters (κ and δ) in the following way:*

- *If $\delta \in (0, \delta^*(\kappa))$, that is if the rest of the world is very little capital intensive, the trade equilibrium is $\{., F, E\}$: thus, the colony falls into autarchy;*
- *if $\delta \in (\delta^*(\kappa), 2\kappa)$, that is if the capital intensity of the rest of the world is intermediate, the trade equilibrium is $\{H, ., E\}$: thus, the colonizer falls into autarchy:*

The threshold $\delta^*(\kappa)$ is defined in Section 3.1 above as the relative capital intensity of country E , for which its citizens are indifferent between trading with H only and trading with F only. As for extraction, it is straightforward that:

Proposition 2 *Denote by $A(S)$ extraction under political state S : then, $A(R) = 0$.*

¹⁷Proofs of all proposition are in the Appendix. In the case where $\delta > 2\kappa$, $\{H, ., E\}$ is always E 's first best and the only trade equilibrium of the game.

Proposition 1 and 2 above, and 3 and 4 below, create a complete mapping between political states and policy. It is then possible to express equilibrium price ratios, gains from trade and payoffs as functions of political states and endowments only. Thus, we will use the notation $p^J(S, \kappa, \delta)$, $\Pi^J(S, \kappa, \delta)$ and $V^J(S, \kappa, \delta)$ from now on.

Date 4

If F has granted Independence in date 2, nothing happens at this stage. If, instead, we are still under colonialism, H decide whether to stage a revolution or not. Using 2.8, revolution is profitable if and only if:

$$\Pi^H(R, \kappa, \delta) + b > \Pi^H(C, \kappa, \delta) - A(C) \quad (2.11)$$

The above inequality has, on the left-hand side, the final payoff to H under revolution, while on the right-hand side it has their final payoff under colonialism.¹⁸ Given that H cannot be left with less than u , the maximum that can be extracted under colonialism is $A = \Pi^H(C, \kappa, \delta) + v_A^H - u$; after plugging this in 2.11, we will say that there is a *revolutionary constraint* if and only if:

$$b > - [v_A^H - u] - \Pi^H(R, \kappa, \delta) \equiv \underline{b} \quad (2.12)$$

¹⁸Autarchy utility drops from the inequality, as it appears on both sides.

If b , the exogenous benefit from revolution, is lower than the threshold \underline{b} , revolution never takes place - not even if F , the colonizer, pushes extraction to its maximum. If, instead, b is higher than \underline{b} , F is constrained to keep extraction below its maximum if she wants to stave off a revolution. The formula for \underline{b} has a simple intuition. When extraction is maximum, the gain from violently acquiring *de jure* political power is high; it is not, however, always as high as from simply resetting extraction to zero, for there may be some trade disruption following to revolution. Using the above notation, while maximum extraction is $\Pi^H(C, \kappa, \delta) + v_A^H - u$ the rebel colony is only able to appropriate $\Pi^H(R, \kappa, \delta) + v_A^H - u$, where $\Pi^H(R, \kappa, \delta) \leq \Pi^H(C, \kappa, \delta)$. The threshold \underline{b} is the value for b that exactly offsets the gain from violently acquiring *de jure* political power when extraction is maximum, therefore making H perfectly indifferent to revolution in this case.

Date 3

In date 3 there are two possibilities: either we are still under colonialism, in which case F sets policy for H , or we are under independence, and H sets policy autonomously. It is possible to show that:¹⁹

Proposition 3 *Both under colonialism and under independence, the trade equilibrium is of the type $\{H, F, E\}$ independently on the endowment parameters. Thus, all countries trade, and $p^J = \bar{K} \left(1 + \frac{\kappa + \delta}{3}\right) \forall J$ and $\forall \kappa, \delta$ such that $\kappa, \delta > 0$ and $\delta < 2\kappa$.*

¹⁹If $\delta > 2\kappa$, it may be the case that F 's first best is $\{H, ., E\}$ (and this is also the trade equilibrium). This is because F and H are competing for selling the land intensive good in this case, and restricting supply may increase their joint welfare by giving one of the two better terms of trade vis-a-vis the rest of the world. One consequence of this is that colonialism may be welfare improving in this case.

It is important to note that, while under revolution the trade equilibrium depends on δ and κ (Proposition 1) under colonialism it does not. Thus, the disruption in trade following to a revolution will depend on δ and κ as well.

As for extraction, this is obviously set at minimum ($A(I) = 0$) under independence. Under colonialism, there are two possibilities: if there is no revolutionary constraint ($b < \underline{b}$) F can impose maximum extraction ($A = \Pi^H(C, \kappa, \delta) + v_A^H - u$). If, instead, there is a revolutionary constraint ($b > \underline{b}$) F seeks to maximise extraction subject to not triggering a revolution. This is done by choosing A in such a way that 2.11 holds as an equality:²⁰

$$A = \Pi^H(C, \kappa, \delta) - \Pi^H(R, \kappa, \delta) - b$$

All this can be summarized in the following:

Proposition 4 *Denote by $A(S)$ extraction under political state S . Then, $A(I) = 0$. As for $A(C)$, this is maximum ($A(C) = \Pi^H(C, \kappa, \delta) + v_A^H - u$) if $b < \underline{b}$, less than maximum and equal to $\Pi^H(C, \kappa, \delta) - \Pi^H(R, \kappa, \delta) - b$ if $b > \underline{b}$ (where \underline{b} is defined in eq. 2.12).*

Date 1 and 2

In date 1, Nature chooses b . This is a measure of H 's *de facto* political power: the higher is b , the higher is *de facto* political power. The choice of

²⁰I am using the tie-breaking assumption that revolution does not take place when it yields just the same payoff as colonialism.

b determines F 's decision on whether to surrender or not *de jure* political power in date 2.

Inspecting equation (2.9) in light of the results of Proposition 3 immediately suggests that F finds it optimal to grant independence whenever $A(C)$ is negative. Using Proposition 4, it is easy to see that this happens if and only if:

$$b > \Pi^H(C, \kappa, \delta) - \Pi^H(R, \kappa, \delta) \equiv \bar{b} \quad (2.13)$$

If b , the exogenous benefit from revolution, is lower than the threshold \bar{b} , country F , the colonizer, can stave off a revolution by choosing the appropriate level of extraction, and this is always positive. If, instead, b is higher than \bar{b} , the level of extraction that would be needed to stave off a revolution is negative. Given that this is not optimal, F decides to concede independence when $b > \bar{b}$. Again, the formula for \bar{b} has a simple intuition. When extraction is zero, the gain from violently acquiring *de jure* political power is always non-positive and exactly equal to the trade disruption following to revolution (captured by $\Pi^H(R, \kappa, \delta) - \Pi^H(C, \kappa, \delta)$). This is because the same policy is set in H , both under colonialism and under revolution. The threshold \bar{b} is the value for b that exactly offsets the trade disruption following to revolution, therefore making H perfectly indifferent to revolution when extraction is zero.

Proposition 5 summarizes the characteristics of the equilibrium:

Proposition 5 *The political state of the model depends on the exogenous benefit from revolution, b , in the following way:*

- *If $b < \underline{b}$ there is no departure from colonialism and F , the colonizer, imposes maximum extraction;*
- *If $\underline{b} < b < \bar{b}$, there is no departure from colonialism but F imposes only partial extraction;*
- *If $\bar{b} < b < B$, the model predicts a switch from colonialism to independence.*

where \underline{b} and \bar{b} are defined in equation (2.12) and (2.13) respectively.

In what follow, I will make a distinction between colonialism when $b < \underline{b}$ (I call this "unconstrained colonialism") and when $\underline{b} < b < \bar{b}$ ("constrained colonialism"). The key point is now to understand how \underline{b} and \bar{b} depend on δ and κ , the endowment parameters.

Main result

To make the exposition simpler, I define:

$$\gamma \equiv \kappa + \delta$$

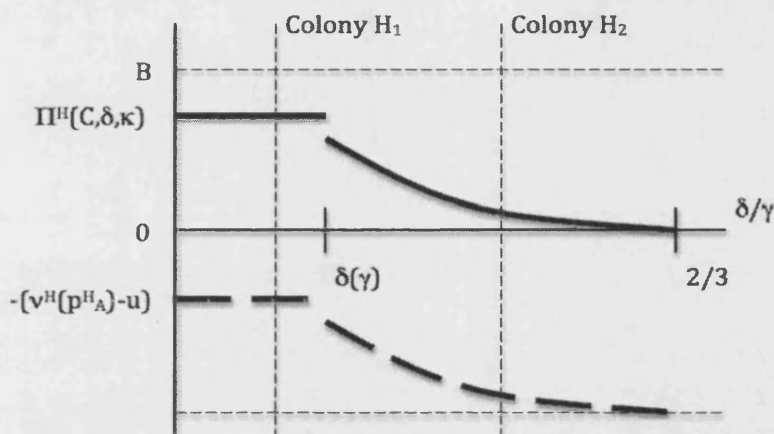


Figure 2.1: \underline{b} and \bar{b} as functions of $\frac{\delta}{\gamma}$

unconstrained as long as b is smaller than $-[v_A^H - u]$. As for independence, this is obtained when b is positive and greater than $\Pi^H(C, \kappa, \delta)$.

When $\frac{\delta}{\gamma}$ is above $\delta(\gamma)$, \underline{b} and \bar{b} are a step lower and decreasing monotonically to reach $-\left[\Pi^H(C, \kappa, \delta) + v_A^H - u\right]$ and 0 respectively. This is the case in which the rest of the world is capital-intensive and competes with the mother country in selling capital-intensive goods to the colony ($\delta^*(\kappa) < \delta < 2\kappa$). According to Proposition 1, sanctions would reduce H 's gains from trade but not drive the colony into autarchy ($0 < \Pi^H(R, \kappa, \delta) < \Pi^H(C, \kappa, \delta)$). Thus, compared to the previous case, sanctions are only partially effective, and F has a lower economic power (and decreasing in $\frac{\delta}{\gamma}$). As the revolutionnaires expect that $\Pi^H(R, \kappa, \delta)$ of their gains from trade will be recovered after revolution, colonialism is unconstrained only as long as b is smaller than

and study how \underline{b} and \bar{b} depend on $\frac{\delta}{\gamma}$, *keeping γ constant*. The measure $\frac{\delta}{\gamma}$, which takes value in $[0, \frac{2}{3}]$, captures the attractiveness of the rest of the world (as opposed to the colonizer) for the colony's trade. In other words, a value of $\frac{\delta}{\gamma}$ close to 0 means that the colony's trade is much more attracted by the colonizer than by the rest of the world, while a value of $\frac{\delta}{\gamma}$ close to $\frac{2}{3}$ means just the opposite. Here, I am fixing the total volume of the colony's trade, and study how the probability with which each political state realizes is influenced by the trade pattern, or by the distribution of world factor endowments.

Figure 1 gives a qualitative representation of \underline{b} and \bar{b} as functions of $\frac{\delta}{\gamma}$. The figure plots $\frac{\delta}{\gamma}$ on the horizontal axis and b on the vertical axis. The threshold $\delta(\gamma)$ is defined so that $\frac{\delta}{\gamma} < \delta(\gamma)$ if and only if $\delta < \delta^*(\kappa)$, where $\delta^*(\kappa)$ was defined in Section 3.1. The solid, thick line represents \bar{b} , whereas the dashed line starting at $-(v^H(p_A^H) - u)$ represents \underline{b} . According to Proposition 5, the equilibrium political state is unconstrained colonialism at points below the dotted line, constrained colonialism at points between the two lines, and independence at points above the dotted line.

When $\frac{\delta}{\gamma}$ is below $\delta(\gamma)$, \bar{b} and \underline{b} are constant and valued at $-(v_A^H - u)$ and $\Pi^H(C, \delta, \kappa)$ respectively. This is the case in which the rest of the world is relatively land intensive, and competes with the colony in selling land-intensive goods to the mother country: Proposition 1 tells us that in this case, trade sanctions have the effect of driving H into autarchy, reducing their gains from trade to 0 ($\Pi^H(R, \kappa, \delta) = 0$). In other words, sanctions are fully effective, and F has maximum economic power. As the citizens of H expect that revolution would destroy $\Pi^H(C, \delta, \kappa)$ of their wealth, colonialism remains

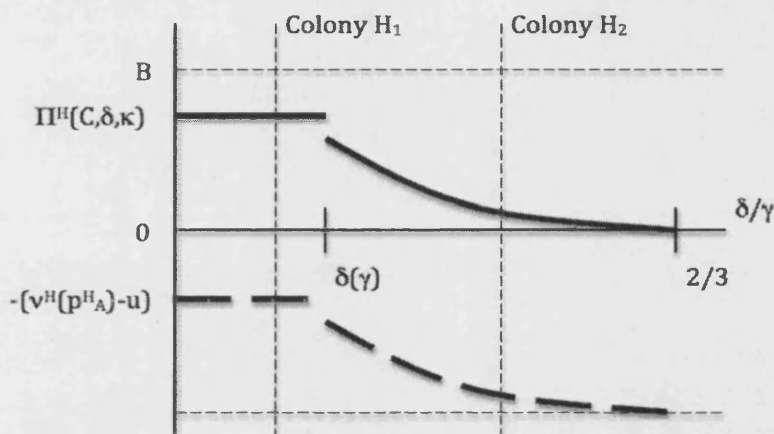


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unconstrained as long as b is smaller than $-[v_A^H - u]$. As for independence, this is obtained when b is positive and greater than $\Pi^H(C, \kappa, \delta)$.

When $\frac{\delta}{\gamma}$ is above $\delta(\gamma)$, \underline{b} and \bar{b} are a step lower and decreasing monotonically to reach $-\left[\Pi^H(C, \kappa, \delta) + v_A^H - u\right]$ and 0 respectively. This is the case in which the rest of the world is capital-intensive and competes with the mother country in selling capital-intensive goods to the colony ($\delta^*(\kappa) < \delta < 2\kappa$). According to Proposition 1, sanctions would reduce H 's gains from trade but not drive the colony into autarchy ($0 < \Pi^H(R, \kappa, \delta) < \Pi^H(C, \kappa, \delta)$). Thus, compared to the previous case, sanctions are only partially effective, and F has a lower economic power (and decreasing in $\frac{\delta}{\gamma}$). As the revolutionnaires expect that $\Pi^H(R, \kappa, \delta)$ of their gains from trade will be recovered after revolution, colonialism is unconstrained only as long as b is smaller than

$\Pi^H(R, \kappa, \delta) + v_A^H - u$, while independence comes as soon as b is bigger than $\Pi^H(C, \kappa, \delta) - \Pi^H(R, \kappa, \delta)$. Notice that, as $\frac{\delta}{\gamma}$ increases and E becomes more and more important as a trading partner, the amount of trade disruption faced by the colony following to revolution decreases. In fact, as $\frac{\delta}{\gamma}$ goes to $\frac{2}{3}$, trade disruption goes down to zero.

Proposition 6 summarizes the central result of the paper:

Proposition 6 *Ceteris paribus, the likelihood of decolonization is constant or increasing in $\frac{\delta}{\gamma}$, that is in the attractiveness of the rest of the world (as opposed to the colonizer) for the colony's trade. At the same time, the likelihood of colonialism with maximum extraction (as opposed to colonialism with partial extraction, and decolonization) is constant or decreasing in $\frac{\delta}{\gamma}$. Furthermore, the expected share of colonial wealth that the colony can retain for herself under colonialism is constant or increasing in $\frac{\delta}{\gamma}$.*

Proposition 6 can be easily illustrated by comparing the case of colonies H_1 and H_2 in Figure 1. The two colonies have the same volume of trade and are equal in all other respects except that H_1 's trade is much more attracted by the colonizer than H_2 's. It is easy to see that the likelihood of decolonization (the probability that $b > \bar{b}$) is lower for H_1 than for H_2 , and that the likelihood of unconstrained colonialism (the probability that $b < \underline{b}$) is higher for H_1 than for H_2 . As for the expected share of wealth that cannot be extracted, this is higher for H_2 than for H_1 at all values of b .²¹

²¹We cannot make any prediction for the *ceteris paribus* effect of $\frac{\delta}{\gamma}$ on the likelihood of constrained colonialism, as that depends on the distribution of b .

$\Pi^H(R, \kappa, \delta) + v_A^H - u$, while independence comes as soon as b is bigger than $\Pi^H(C, \kappa, \delta) - \Pi^H(R, \kappa, \delta)$. Notice that, as $\frac{\delta}{\gamma}$ increases and E becomes more and more important as a trading partner, the amount of trade disruption faced by the colony following to revolution decreases. In fact, as $\frac{\delta}{\gamma}$ goes to $\frac{2}{3}$, trade disruption goes down to zero.

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²¹We cannot make any prediction for the *ceteris paribus* effect of $\frac{\delta}{\gamma}$ on the likelihood of constrained colonialism, as that depends on the distribution of b .

Thus, the key result of the model is that, *ceteris paribus*, the amount of wealth that a colonizer is able to extract from her colony is decreasing in the attractiveness of the rest of the world (as opposed to the colonizer) for the colony's trade, and so is the sustainability of colonial power. In the next section, I look at a few historical cases which illustrate this point.

2.4 Historical Evidence

The key result of my model is that, *ceteris paribus*, the amount of wealth that a colonizer is able to extract from her colony is decreasing in the attractiveness of the rest of the world (as opposed to the colonizer) for the colony's trade, and so is the sustainability of colonial power. In this section, I look at a few historical cases which illustrate this point.

Apart from the more isolated cases of the United States (1776) and Haiti (1804), one could view decolonization's happening in three main waves. First, the Latin American colonies of Spain and Portugal unilaterally declared their independence in 1810-1830. Then, in the second half of the same century, a few important British settler colonies²² peacefully obtained the right to govern themselves within the British Empire. Finally, most remaining Middle Eastern, Asian and African colonies obtained their independence in a 40-year period beginning around 1930. After considering the case of the American Revolution (Section 4.1), I concentrate on the first two waves, and in particular on the case the Spanish Empire (Section 4.2) and of Canada and Australia (Section 4.3).

²²Canada, Australia, New Zealand and South Africa; slightly later came South Rhodesia and Malta.

In the case of the American Revolution, I find that the long-discussed role of the treaty of Paris (which concluded the Seven Years War between France and England, 1756-1763) can be better understood by seeing this as a massive re-allocation of factor endowments, making the French Empire a better trade partner for the American colonies. In the case of the Spanish Empire, I first show how the tribute the colonies paid decreased as European manufacturing capital relocated outside the Spanish Empire during 1600-1750, and rose again with Spain's modest economic development in the second half of 18th century. I then argue that the deposition of the Spanish king by Napoleon (1808) was particularly likely to result in the independence of Latin America, because of the concentration of manufacturing capital in Britain due to the industrial revolution. Finally, in the cases of Canada and Australia, I show how Britain conceded self-government only after their raw materials began to be exported extensively to regions outside of the British Empire - the US for Canadian timber, continental Europe for Australian wool.

2.4.1 The American Revolution and the Seven Years' War: the Link Reconsidered

Economic historians have long debated about the economic origins of the American Revolution. While the attempt to estimate the economic gains from independence has led to mixed conclusions, there is a broad agreement that the economic incentives to revolution were improved by the Seven Years War, a major conflict between France and Britain (1756-1763) which led to the British annexation of French North America (Canada and the Mid-West)

in 1763.²³ My model suggests a new possible channel for the economic link between the Seven Years War and the American Revolution. By transferring a large chunk of factor endowments (mainly land and sea) from France to Britain, the war made the French Empire a better trading partner for the Middle and New England colonies. This decreased the economic power of Britain relative to these colonies, who thus joined Virginia and Maryland (whose trade had long been attracted by the world outside the British Empire) to form a coalition that was large enough to challenge imperial rule. Failure by Britain to appreciate the new conditions led to dissatisfaction with imperial taxation in the 1760s, and, eventually, revolution.

The commerce of pre-revolutionary America was subject to the many restrictions that regulated trade within the British Empire. From a trade perspective, the thirteen colonies could be classified into four groups. In the South, key exports were indigo and rice in the Lower South (Georgia and the Carolinas) and tobacco in the Upper South (Virginia and Maryland). These were all “enumerated goods”, which imperial regulations required to be shipped to Britain independently on their final destination. In the North, the Middle Colonies (Delaware, New Jersey, New York, Pennsylvania) and New England (Connecticut, Massachusetts, New Hampshire, Rhode Island) exported mainly wheat, salt meat (Middle Colonies), and fish, whale oil, ships and shipping services (New England). For these non-enumerated commodities, the British and foreign West Indies were a key export market (McCusker,

²³Three main channels have been proposed. First, the elimination of a French military threat from North America reduced the value of British protection (Schlesinger, 1919). Second, high war expenditures induced Britain to overtax the American colonies (Gipson, 1950). Finally, the incorporation of the Mid-West into the British Empire increased the potential prize from a successful revolution (Baak, 2004).

1970, p. 246; Ostrander, 1956, p. 77). From the West Indies, the colonies obtained specie, bills of exchange, and various intermediate products,²⁴ the most important of which were the molasses used in the New England rum industry.²⁵ Overall, the thirteen colonies had exports worth £3.17 million in 1770²⁶, which they exchanged mostly with European manufactures. This made them largely dependent on overseas markets for their growth and prosperity (Jensen, 1969, p. 108).

But how dependent were the colonies on *imperial* markets? In the South, the Seven Years War did not significantly alter a pattern that had existed for decades, and that put the two groups of colonies in a very different position. On one hand, indigo was mostly consumed in Britain, where it even benefited from a preferential subsidy. At the same time, while rice sent to Britain²⁷ was largely re-exported, there was a clear upward trend in retained imports in the 1760s and 1770s (Nash, p. 691). This made the trade of the Lower South significantly dependent on the British market. On the contrary, tobacco was largely re-exported from Britain (on average more than 80% of the total in 1770-1774; see Schumpeter, 1960, Table 18). This reflected the large popularity of tobacco in 18th century Europe, and the fact that Virginia and Maryland had come to dominate this industry since the mid 17th century

²⁴Differently from manufactures, intermediates were not required to be imported from Britain.

²⁵This was a key New England industry at that time. See Mc Cusker (1970) and Ostrander (1956).

²⁶Of these, 50% went to Britain and Ireland, 30% to the West Indies, and 17% to South Europe and the Wine Islands. About 76% of the exports to Britain were "enumerated" goods, 85.4% of which were re-exported to continental Europe.

²⁷Despite its enumerated good status, rice could be exported directly to Southern Europe since 1730. Thus, only 78% of all colonial export went to Britain in 1772-1774, (Nash, 1992, p. 688), 75% of which was re-exported.

(Davis, 1954, p. 152). Thus, the Upper South was only very marginally dependent on the British market for its main export industry.

In the north, the pattern of dependence on imperial markets was significantly affected by the consequences of the Seven Years War. Before 1756, the Middle and New England colonies had traded a lot with the French West Indies, which were the most important sugar-producing islands in the Caribbean region and the heart of a rapidly growing commercial empire (Eccles, 1972, p. 172). This trade, however, had been discouraged not only by Britain (whose tax on foreign molasses diverted much trade with the foreign West Indies into smuggling, see Bjorn, 1956, and Ostrander, 1956) but also by France, who owned large chunks of land and sea in Canada and was developing her own food and fish productions in this colony (Gould, 1939, p. 489). With the loss of Canada after the Seven Years War, the project of creating a self-sufficient French Empire in America was gone (Gould, 1939, p. 490), and the French were left with the problem of obtaining much needed provisions for their West Indies islands. This arguably increased the importance of the French West Indies as an export market for the Middle Colonies and New England, therefore decreasing their dependence on imperial markets. While the importance of smuggling makes it very hard to track this evolution in the data, much anecdotal evidence hints at a sharp increase in the volume of smuggling in the 1760s (see for example Greene, 1980, p. 89).

Thus, the model constructed in Section 3 suggests the following interpretation of the consequences of the Seven Years War. Before the War, the Lower South and the North could expect large trade costs from revolution. Had Britain imposed sanctions on her rebel colonies, little support could be

expected from third countries in the indigo trade, which was not valuable outside the British market. At the same time, the Middle Colonies and New England could expect to lose access to the British West Indies markets, at a time when the main other West Indies power (France) would not provide much commercial support in the interest of her own food-producing colonies of North America. This stood in contrast with the isolated case of Virginia and Maryland, whose commercial interests were aligned with those of the various European countries who consumed American tobacco. In terms of the model, before the war the economic power of Britain was high (δ was low) relative to a majority of the American colonies. By giving French North America to the British, the war made the French Empire less land-intensive, thus removing some of the internal forces that pushed against providing commercial support to the US. This made revolution more attractive for the Middle Colonies and New England, in that these colonies could now expect that the loss of the British West Indies market would be replaced by a more open access to the French West Indies. Thus, paradoxically the war - which left Britain as the world's leading imperial power - *decreased* the economic power of Britain vis-a-vis her Middle and New England colonies of America. Together with Virginia and Maryland, these colonies created a colonies that was willing to fight against British taxation, even at the cost of staging a revolution.

This description of the economic incentives to revolution squares well with the pattern of political radicalism in reaction to increased British taxation in the late 1760s and early 1770s. For example, the standard historical interpretation of the politics of 1774-1776 is that New England radical representa-

exports to Britain dropped to virtually zero in 1776-1780, and did not recover to 65% of their pre-war value until 1791-1795 (Figure 1).³¹ As for the trade with the British West Indies, this was at half the pre-war level in 1785-1787, and even lower in 1793.



Figure 2.2: US exports, 1771-1795

The three figures for exports to the British West Indies are for 1771-1773, 1785-1787 and 1793. Source: Schumpeter (1960) and Bjork (1965).

Among the thirteen colonies, the Carolinas and Georgia were hit the hardest by this decline in trade. British imports from the Carolinas fell from a combined £579,000 in 1775 to £75,000 in 1783 and £282,000 in 1788. For Georgia, these figures were £103,477 in 1775 and £25,057 in 1788 (Bjork, p. 557). As Bjork points out, “*undoubtedly there was some expansion of trade with the other European countries in rice, indigo, naval stores, and tobacco; and the preferential tariff on rice and wheat on the British market.*”

³¹These figures are particularly significant if one considers that the American population was growing fast in that period. I do not consider the figure for 1796-1800 (which stands at £1.7m) as this was largely influenced by new international conditions (the French revolution and the outbreak of war between England and France).

tives, seconded by a group of Southern representative led by representatives from Virginia first pushed a reluctant Congress into active resistance, then forced an open declaration of independence (Jillson and Wilson, 1994, p. 177).²⁸ This compares with the prudent attitude of the lower south and, to a lesser extent, the middle colonies.²⁹ Also, that an increased and more secure trade with the foreign West Indies was one factor driving the radicalization of New England in the 1760s is consistent with the pattern of radicalism observed within the community of Boston merchants. As first pointed out by Schlesinger (1919), this group was a key promoter of American independence. Using data on insurance contracts to identify the smugglers, Tayler (1986) shows that these were relatively more likely to be patriot than loyalist, and that their influence raised to a very high level in the 1760s. This suggests that the arguments of those involved in the foreign trade became more convincing in this period, possibly because of more favorable economic conditions in the French West Indies.

That perspective trade relations were a key priority for the revolutionaries is clear from the analysis of the diplomatic exchange with foreign nations before and after the declaration of independence (see Eccles, 1972). In the words of John Adams (FIND). But what actually happened to American trade after the revolution? As a result of war and sanctions³⁰, American

²⁸In fact, Virginia declared her own independence months before the joint declaration of July 4th.

²⁹While Georgia was last in sending her representatives to Congress, South Carolina and Pennsylvania were the only two who initially voted against the declaration of independence; in this same vote, Delaware and New York abstained.

³⁰Trade between any part of the British Empire and the thirteen colonies was totally prohibited in 1776-1783. After that, a number of restrictions remained in place, among which the prohibition to export salt meat and fish to the British West Indies, the prohibition for any American vessels to trade with the islands, the loss of the subsidy on indigo

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but the amount was certainly far from large enough to make up for the decline in exports to Britain. The difficulties faced by the plantation economy of the lower south were nowhere better seen than in the population statistics of South Carolina, where there was an absolute decline in the slave population between 1775 and 1790" (p. 556). This is in sharp contrast with the experience of Virginia, where tobacco exports *increased* from 55,000 hogsheads prior to the war to an average 57,125 in 1783-1789 (Bjork, p. 540).³² Thanks also to an increase in price (due to the break of the British monopoly)³³, the years up to 1790 were a time of real prosperity for the tobacco planters of the upper South. As for the middle and New England colonies, these were severely hit by trade restrictions in the British West Indies. For example, exports of fish to the British West Indies fell from \$226,000 in 1771-1773 to almost zero in the 1780s and early 1790s. (Bjork, p. 552). Still, *total* fish exports to the West Indies stood at \$684,000 in 1790. Of these, \$610,000 were exports to the French West Indies (Pitkin, 1835, Table VII).³⁴ Also, estimating the total value of exports to the West Indies in 1790, Jefferson comes up with a figure of \$2.2m going to the British West Indies, and \$3.2m going to the French West Indies (Bjork, 1965, p. 553). Trade with the French Empire was facilitated by the crucial Treaty of Amity and Commerce, that the American diplomats signed with France in 1778 (see Eccles, 1972).

These facts are consistent with the idea that the American revolution-

³²Total tobacco exports increased from 102,000 hogsheads to 110,000 in 1790-1792 (Bjork, p. 540). This confirms that Maryland's exports must have also done well.

³³Bjork, p. 554-555. From the British account (Schumpeter, 1960, table XVIII) we see that the imports of tobacco from the US fell from an annual average of 55.2 m lb in 1771-1775 to 35.1 m lb in 1783-1789

³⁴While smuggling makes it impossible to compare this trade to pre-war levels, it seems safe to conclude that the French trade gave substantial relief to the American fish industry

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aries cared about the trade consequences of revolution, and acted when the economic conditions were right in this sense. This establishes a new link between the consequences of the Seven Years War and the American revolution. Of course, this link is not incompatible with other links previously suggested in the literature, but does seem to have considerable explanatory power in light of the importance of trade for the American colonies.

2.4.2 The Spanish Empire: Decadence, Revival and Fall, 1590-1810

The Spanish colonies of Latin America became independent after a series of successful rebellions in 1810-1827. Many argue that the French invasion of Spain in 1808 triggered them. I argue that the invasion was particularly likely to result in revolution because of the change in economic incentives that the industrial revolution in Britain had brought. The economy of Spanish America relied on the exchange of silver and agricultural commodities for European manufactured goods. By 1810, the accumulation of manufacturing capital in Britain was making her the natural trading partner of Latin America: in terms of the model, δ was growing much higher than κ . Thus, the invasion of Spain decreased the cost of rebellion (b) when the cost of rebellion in terms of trade disruption was already very low (\bar{b} close to zero). Furthermore, the tribute that Spain asked from the colonies (A) was very high, reflecting perhaps the trade conditions of the period 1750-1790 more than the current ones. I extend this logic to analyse the fortunes of Spanish imperialism since its golden age in 16th century, and argue that the pat-

tern of extraction adapted over the centuries to reflect the concentration of manufacturing capital within or without the Spanish Empire.

Background and Political Developments

Conquistadores in the first half of 16th century established the Spanish Empire, and it rapidly extended to cover almost half of the American continent. After plundering the riches of the natives, the Spaniards set out to organise the extraction of the mineral and agricultural wealth of the colonies. The social structure that they created had at its bottom a mass of people (mainly native Indians, but also imported Negroes) that was forced to work at very little or no salary in the plantations and mines. Above them were the *creoles*, the descendents of Spanish immigrants. These were the legal owners of the assets of the colonies, and the people to whom the working class owed their labour obligations. On top were the peninsular Spaniards with whom the Crown shared the benefits of political power. For centuries, the imperial economy was centred on two large silver mining centres (Upper Peru and Mexico) that the other colonies supplied with foodstuffs and basic manufactures. In the early 18th century, after the Upper Peruvian silver economy declined sharply, various South American regions that had served as suppliers for it began to export their production (e.g. Venezuela, Chile). All colonial needs besides food and basic manufactures were satisfied with imports from Europe.

From the late 16th century to 1776, the ports of Seville, first, and later Cadiz, monopolized official trade between Europe and Spanish America.³⁵

³⁵Trade was done by two large, military-escorted fleets, which sailed yearly (or less frequently) from Cadiz to Veracruz (Mexico) and Cartagena/Portobello (Colombia/Panama).

This fact may seem to contradict the result in Proposition 3 - that colonizers should allow their colonies to integrate with the rest of the world - but it does not. Colonizers were the fiercest promoters of colonial exports, and when they assumed for themselves the role of entrepot they did so with a view to promote, rather than hinder, such trade. With all the distortions that it entailed, the Cadiz monopoly did not prevent Latin American silver from being exchanged outside Spain for non-Spanish manufactures. In the model, all distortions to production and consumption are assumed away for simplicity, and the redistributive effect of the trade monopoly is captured by the lump sum transfer A . In fact, the trade monopoly was not the only tool through which the Spanish redistributed the wealth of the colonies to themselves. While the Indians and Negroes were forced to work for the creoles, a series of taxes and regulations (for example, the reservation of top colonial jobs for peninsular Spaniards) made sure that a portion of colonial wealth ended up in Spanish pockets.

Yet extracting resources from the creoles proved increasingly difficult over time: in other words, A seems to have declined steadily in 1600-1750. TePaske and Klein (1981) show that the share of Mexican public revenues remitted to Spain or to other parts of the empire³⁶ decreased from 57 per cent in the 1610s to 23 per cent in the 1690s. Similarly, only 10 per cent of Peruvian public revenues was remitted in the 1660s as opposed to 64 per cent in the 1590s (TePaske, 1983). Contrary to a traditional view of Spanish colonialism, remittances did not decline because of a fall in silver produc-

³⁶Some share of the richest treasuries (those of Mexico and Lima) was transferred to the poorer regions of the empire. In XVII, the Philippines were the largest recipient of such transfers (TePaske and Klein, 1981).

tion - colonial public revenues were roughly constant over these periods - but rather because of an increasing incapacity of Spain to extract wealth from her colonies (TePaske and Klein, 1981). As argued by Lynch (1965-1969, p. 195), over time the creoles "...appropriated more of their own production, and employed their capital in their own administration, defence and investment". A similar pattern is observable in the appointment of top colonial officials: for example, while in 1600-1678 none of the judges in the colonial *Audiencias* (the highest colonial courts) was of Creole origin, in 1678-1750 the creoles had 44 per cent of the seats (Lynch, 1992, p. 77). As for the redistributive effect of the Cadiz monopoly, this was modified by a series of laws that increased the bargaining power of colonial versus peninsular merchants.³⁷ Thus, Spanish colonialism was relatively constrained in early 18th century, and the colonists were capable of retaining their wealth for themselves. As argued by Lynch (1973), this was one fundamental reasons why the colonists did not take advantage of the War of Spanish Succession (1702) to revolt.

After 1750, however, the situation changed. The Bourbon dynasty, which had ruled Spain since 1702, set out to re-establish Spanish imperial authority in what has been described as the "second conquest of America" (Lynch, 1973, p. 7). The pattern of concessions made over the preceding 150 years was suddenly reversed. Taxation was increased, tax administration made more efficient, and a higher share of revenues began to be remitted to Spain

³⁷For example, in 1714 the Spanish merchants were forbidden direct access to the inland markets of the Americas; in 1749 the American merchants were granted the right to ship money to Spain and purchase directly goods in Cadiz (Walker, 1979 p. 213 and 218). By 1750 the colonial merchants were "... within a stone's throw of victory and virtual economic self-determination" (Walker, 1979, p. 15).

(Lynch, 1973, p. 11). New and old administrative institutions were put under the influence of peninsular Spaniards - in the *Audiencias*, the share of creoles in 1751-1808 dropped to 23 per cent. Instruments of Creole power (such as the order of the Jesuits) were dismantled, and the rising power of colonial chambers of commerce put under control.³⁸ In terms of the model, A increased steadily after 1750.

By the early 19th century, this new imperialism had created an alarming level of frustration in the colonies (Lynch, 1973). The atmosphere in Latin America in 1810 when Napoleon deposed the king was markedly different than in 1702. In both situations, the political turmoil decreased the expected cost of a rebellion; in the language of the model, b increased. Only in 1810, however, did this increase result in rebellion. Creole rebellion came in two waves, one "... advancing from the Rio de la Plata [Argentina], across the Andes to the Pacific", the other veering from Venezuela to New Granada [Colombia] and back to its birthplace" (Lynch, 1973, p. 35). In less than 20 years, and despite the fact that the Spanish monarchy was restored in 1815, all colonies became independent from Spain.³⁹

Analysis

We have seen how the level of extraction that Spain imposed on her

³⁸After 1750, the confrontation between Spanish and colonial merchants, which had seen the latter having the upper hand for more than 50 years, reached a sort of impasse (Walker, 1979, p. 14).

³⁹This result is in contrast with the result of the model that revolution never takes place. This is, of course, because of the assumption that the colonizers can always instantaneously adapt the level of extraction to the current attractiveness of revolution. To remove this assumption and generate equilibrium revolution, it would be sufficient to modify the model to the case in which the policy is set before b is realized, and cannot be adapted afterwards. This extension would not change any of the results of the model, and I therefore stick to the version presented in Section 3.

American empire (A in the model) was very high in 16th century, declined steadily in 17th and the first half of 18th century, and partially recovered in the second half of 18th century. But was this pattern matched by the evolution of world factor endowments that the model suggests? Given the structure of Latin American trade, we would expect that the capacity of Spain to extract wealth from her American colonies would be high or low depending on whether the manufacturing capital that is complementary to the colonies' trade is mainly concentrated within or without the Spanish empire (in the model, an increase in δ relative to κ).

In fact, while the Spanish empire in the time of Charles V and Phillip II (1519-1598) included some of the most important manufacturing regions in Europe (such as the Duchy of Milan and Flanders) the era of the Hapsburg kings after Philip (1598-1702) witnessed an inexorable decline in the manufacturing capacity of the Empire relative to other European powers' (see Hamilton, 1937, pp. 170-171). For example in the textile sector - which represented the bulk of Latin American imports - Milan and Flanders lost their leadership to England, Holland and, slightly later, France (Wilson, 1960, p. 219). As many authors argue (Kamen, 1978; Flynn, 1982; and Acemoglu, Johnson and Robinson, 2005), this decline was due to the predatory behaviour of the Spanish oligarchy, which squandered the American treasure in luxurious consumption and costly wars across Europe (see also Flynn, 1982, p. 143-145). As a result, the import needs of the Latin Americans were increasingly served by producers outside of the Spanish Empire: by the end of 17th century, just about 5% of the goods leaving Cadiz were of Spanish origins (Walker, 1979, p. 13) and the Andalusian merchants "... had been

turned into nothing more than the agents of foreign manufacturers and businessmen" (Walker, 1979, p. 11). At the same time, smuggling from the Dutch, English and French trading posts in the Caribbean and Africa grew faster than ever before.⁴⁰

After the Bourbon dynasty took over in Spain (1702), however, this pattern slowly changed. The new dynasty started an ambitious programme of economic reforms that included promoting the inflow of skilled textile artisans from France and England (La Force, 1964) and opening new royal factories endowed with cutting-edge manufacturing technology. Initially, the reforms were not very successful because vested interests resisted them fiercely. But by the second half of the century, Spanish industry appeared to be seriously catching up with the rest of Europe's. Fisher (1998, p. 460) argues that the 1780s and early 1790s were periods of unparalleled prosperity and economic growth for Spain. For example in the textile sector, Barcelona became a leading centre of calico production in Europe (La Force, 1964).

The effect of the Bourbon reforms on trade with Latin America is evident: already in 1748-1765, the share of Spanish imports in total Latin American imports had grown to 15 per cent (Garcia-Baquero Gonzales, 1976). By 1778, this share was 38 per cent. In the same year, the Crown introduced discriminatory tariffs on non Spanish imports to favour the industrial development of Spain, and as a result, the Spanish share rose to 52 per cent in

⁴⁰Of course, an alternative explanation for the weakening of Spanish authority could be that the military power of Spain decline vis-à-vis her colonies. This explanation cannot be ruled out, but as long as military power is proportional to national product, it seems at odd with the fact that overall, both the Spanish and Latin American economies seem to have stagnated in 17th century, rather than diverged (for Spain, see Acemoglu, Johnson and Robinson, 2005; for Latin America, see TePaske and Klein, 1981)

1782-1796 (Fisher, 1981, p. 27). This increase was not because of a fall in exports to Latin America due to protectionism, as total exports amounted to 3.8 million pesos in 1778 and 14.1 million in 1795 (*Ibid*).

But if Spain was really an important trading partner for Spanish America, why were the creoles so quick to declare their independence when Napoleon arrived? One possible interpretation is that by the turn of the century the industrial development of Spain was completely overshadowed by Britain's. In fact, while in Spain the period of highest growth was over in the 1790s, growth in Britain would continue undisturbed for several decades, making it the most capital-intensive country in the world for most of 19th century. By the beginning of the century, Britain was already producing excess manufactured goods, and her merchants, faced with the loss of markets brought about by the American revolution and prolonged wars in Europe, began looking at Latin America as a market potentially as rich as those of India or the United States (Kaufmann, 1951, p. 6-7). There is plenty of anecdotal evidence that, on the American side, the creoles who rebelled against Spain cared about maintaining their trade with Britain as much as their political independence (see both Kaufmann, 1951, and Lynch, 1973). There is also anecdotal evidence that British diplomatic activities favoured Latin American independence (Kaufmann, 1951). Thus, one possible interpretation of the Latin American revolutions is that the French invasion of Spain did nothing but bring the inevitable for a political situation that was per se unsustainable: while the industrial growth of Britain was making the trade disruption stemming from a revolution against Spain increasingly irrelevant (in the model, while δ was increasing rapidly), Spanish policy was not ad-

justing to take this into account (*A* remained very high).

2.4.3 Self-Governing Colonies: the case of Canada and Australia

Unlike the Spanish Empire, where colonial administration formally remained in the hands of the Crown until independence, various forms of power sharing existed within the British Empire. Before 1849, there were two types of British colonies.⁴¹ In the *crown colonies*, the British retained all legislative, executive and judiciary power;⁴² in all other colonies, some type of representative institution was in place.⁴³ The extent to which these institutions represented colonial societies depended on the share of seats reserved for locals, and on whether locals were selected by the governor or elected by the population (voting was normally only a privilege of those with wealth). These institutions did not substantially undermine control of *de jure* political power by the British, as the governor retained the power to appoint and dismiss top officials, and to veto all local legislation.

With the concession of self-government to Canada in 1849, a substantially new type of representative institution emerged. The key innovation was that top officials were appointed and dismissed *only on the indication of*

⁴¹Protectorates are not included in this categorisation.

⁴²British officials in charge of government decisions were periodically turned over, and major decisions were taken in London.

⁴³Typically, these institutions consisted of an executive council, a legislative council and an assembly (but the assembly was often missing). The executive council was a sort of government who assisted the governor with the administration of the colony, while the legislative council and the assembly had some legislative and advisory power.

the popularly elected part of the legislation (be it the legislative council or the assembly)⁴⁴. This was a major surrendering of *de jure* political power, one that substantially anticipated formal independence. Between 1849 and 1923, five more British colonies were granted this privilege: Australia, New Zealand, South Africa, South Rhodesia and Malta. Most of them obtained formal independence with the treaty of Westminster in 1931.

There seems to be a positive correlation between the degree of administrative autonomy that a colony could hope to achieve within the British Empire and the share of settlers of British or European origins in her population. Most colonies with no European settlers were crown colonies, while the others were normally given representative institutions at an early stage of their political history. Furthermore, all "pure" settler colonies⁴⁵ (with the exception of the US) obtained self-government at a later stage. To reconcile this fact with the model would require assuming that settlers have a higher capacity to revolt than natives, something that could be justified in a number of ways.⁴⁶ Empirically, this poses important limitations. It seems in particular that any cross-section analysis that relies on the assumption that the exogenous cost of revolution (*b*) is distributed equally across colonies

⁴⁴The Crown remained responsible for administering foreign and trade policy, and retained formal veto power on local legislation. The latter, however, was rarely used during the life of this institutional arrangement.

⁴⁵By this it is meant all colonies where the economic importance of the indigenous population was negligible: basically, the various colonies of Canada and Australia (see Mosley, 1983).

⁴⁶For example, settlers could be less willing to be ruled despotically because of the institutions they brought with them from Europe (Acemoglu, Johnson and Robinson, 2001b). Also, it could be argued that smaller groups of settlers were in greater need of assistance by the colonizer to keep control of the natives. On the belief that it deserves a fuller theoretical treatment, I keep this issue for future research.

should be refined to control for settlers.⁴⁷ In what follows, I limit myself to studying whether the time series of two "pure" settler colonies who obtained self-government can be explained with a change in economic incentives as suggested by my model.

Canada

The British colonies of Canada obtained self-government at the end the 1840s, a decade during which the British attitude towards Canadian independence suddenly became more conciliatory (Conrad, Finkel and Jaenen, 1993, p. 427). Just one decade before, policy disagreements between Britain and Canada over the issue led to riots, repression and the defence of the status quo. In the first half of the 19th century, the Canadian economy relied on exports of timber and trans-shipped US wheat for her prosperity. I argue that one key reason why Britain adopted a new attitude towards Canadian self-government was that the structure of Canadian trade fundamentally changed around 1840. On one hand, rapid urbanization and growth in the US created strong North American demand for timber. On the other, the dismantling of the tariff system that had granted colonies preferential access to the British market had left Canadian timber uncompetitive in Europe. Because of both factors, the timber-processing capital that was relevant to Canadian trade relocated from Britain to North America: in terms of the model, δ increased

⁴⁷This is because of the colonies who received self-government, Canada, Australia and New Zealand are unique for their level of settlers and received self-government at very close points in time; South Africa came somewhat later, but it also represent a special case in terms of settlers. Very interesting, instead, will be to study why North Rhodesia received self-government while South Rhodesia didn't. I keep this issue for future research.

relative to κ . Soon, it appeared clear that the cost of concessions needed to keep political power in Canada was too large, and responsible government was granted (in terms of the model, A became negative).

Background and political developments

Both Quebec and Ontario⁴⁸ were annexed to the British Empire in 1763. While Quebec was a French "pure" settlers colony (about 60 thousands inhabitants in 1763), Ontario was part of a scarcely populated region of the American Midwest that had long been disputed between the British and the French. There, large European settlement began only after 1783, with the inflow of British Loyalists from the US. In both provinces population grew fast in the following 50 years, reaching 550 thousands in Quebec and 231 thousands in Ontario by 1831.⁴⁹ Most immigrants were English speaking in this period, resulting in the French share of Quebec population decreasing to about a third by 1850.

Before 1800, the economy was split between subsistence agriculture and the fur import-export industry.⁵⁰ This dualistic economic structure contributed to create a very polarized society, where the interests of settlers-farmers and of merchants often diverged. This will have important consequences for Canadian politics, as we shall see. In the first two decades of 1800s, the fur trade disappeared and the two industries that would dominate the economy for the next 50 years emerged: the import-export of US food-

⁴⁸Before 1870, British Canada was made up of several independent colonies. I will focus on Quebec and Ontario for their high relative population density and economic importance.

⁴⁹In both provinces, the size of the indigenous population was insignificant.

⁵⁰The fur trade was the backbone of the Canadian economy since XVII century. Fur was purchased in a vast area surrounding the Great Lakes and the American Midwest, and shipped to Europe through the St. Lawrence river.

stuff, and the production and export of timber. The first was the natural successor of the fur trade, and was mainly a mercantile enterprise. But where did the timber trade originate from, and whom did it benefit?

Ever since the 16th century, Britain had based her military and economic power on the strength of her commercial and military navy. This factor, together with urbanization levels with no equivalent in Europe, contributed to making Britain the largest timber consumer in the world at the end of 18th century. Due to scarce domestic supply, most timber was imported from the Baltics; during the Napoleonic wars, however, a series of major supply break-ups showed how vulnerable that source of supply could be, and how this could threaten the military supremacy of Britain in Europe.⁵¹ Canadian timber was abundant and of high quality, but the timber industry had failed to develop for the high cost of shipping this bulky commodity to Europe. In 1802, however, the British introduced a discriminatory tariff against non-imperial timber, which more than compensated for Canada's disadvantage. As a result, by 1820 more than 80 per cent of British imports were of Canadian origins (Marr and Paterson, 1980).

For the Canadians, this was a primary source of prosperity: a large share of the population was involved in timber production and trading⁵², and between 1829 and 1845 timber made up for over 40 per cent of Canadian exports (with year peaks of 70 per cent, despite the importance of the import-export

⁵¹Not only did Britain's military power rely more on timber: her European rivals enjoyed a large domestic supply, and a safer access to North-Eastern European exports.

⁵²The timber trade was of importance to farmers (who harvested it on the margin of their land, and supplied foodstuff to lumbering camps) lumberjacks, sawmill entrepreneurs and workers, and a large number of middlemen (Marr and Paterson, 1980, p. 64-65; Pomfret, 1981, p. 25; Easterbrook and Aitken, 1956, p. 159).

industry; Marr and Paterson, 1980, p. 61).

Turning to political developments, the first important event in Canadian political history is the concession by Britain of representative institutions in 1790. In each colony, these consisted of an appointed executive and legislative council and an elective assembly. Just as in other settler colonies of the British Empire, these institutions did not represent a significant surrendering of *de jure* political power by the British. In fact, the governor retained the power to choose the members of the two councils, and had many legislative tools at his disposal to weaken the power of the assembly.

Initially, all appointed and elective seats were occupied by merchants, and the relations with Britain were good. After 1820, however, farmers, made more numerous by immigration, secured control of the two elective assemblies, and a sharp conflict over the destination of public revenues began. This grew particularly bitter in Quebec, where farmers (mainly of French origins) were an old and compact social group. There were several key issues at stake: first, farmers advocated the free import of US manufactures, whereas Britain defended the import tariff⁵³ cherished by her manufacture producers and by both British and Canadian merchants. The same logic of commerce induced British officials to favour public investment in the improvement of the St. Lawrence canal system, while farmers pressed for investing in agricultural infrastructure. Finally, farmers wanted Crown land to be sold directly to them and at cheap prices, while the British government used to sell it to large British land speculators first. On all of these issues, the Canadian merchants

⁵³Ever since the Huskisson Acts of 1825, colonies could import goods from all reciprocating foreign countries at an Empire-wide tariff. This went a long way towards the abolition of the Navigation Laws, which for centuries had forced the British colonies to trade with the rest of the world through Britain.

were the natural ally of the British, and they were systematically chosen to fill in the seats of the executive and legislative council in the 1820s and 1830s.

In the 1830s, frictions increased together with the timber trade and public revenues. By the middle of the decade, a few radical leaders of the farmers were asking for the executive and legislative councils to be nominated by the assemblies, and responsible to them only. It was, in essence, the request for self-government. Faced with no consideration by the British, these leaders came to see independence from Britain as a necessary step to access power (Conrad, Finkel and Jaenen, 1993, pp. 412-424). Then, in 1837, the governor denied the long-established right of the Quebec assembly to authorise new revenues, and an additional slot of 2.1 million hectares of Crown land was sold to British speculators. At the news, violent riots erupted in Montreal, followed by similar protests in Ontario. But despite the fact that their motivations were shared by many, these riots did not succeed in appealing to the general population. Thus, the numbers involved were small (see Conrad, Finkel and Jaenen, 1993, p. 418-419), and the British could easily repress them. Soon after, the pre-riots status quo was re-established (Conrad, Finkel and Jaenen, 1993, p. 425; Creighton, 1966, p. 250), and Canadian opposition returned quite for the next several years.

In the 1840s, things began moving again, but in a substantially different way. On one hand, the moderate reformers of the two colonies who had not taken part in the riots joined forces in 1842 and formed a new, compact political movement which, from that moment onwards, would conduct a much more compact opposition to the authoritarian temptations of the governor. On the other hand, this opposition was corresponded by in-

creasing concessions made by the three governors which succeeded to Lord Durham (1840-1846), and a large imperial loan was granted to the colonies. By the second half of the decade, the opinion that control of government in Canada was not worth making more concessions began to circulate within British official circles (Creighton, 1966, p. 258). This prefigured the turning point, the moment in which the British government first accepted Canadian self-government. This was on the belief that "...it is neither possible nor desirable to carry on the government of any of the British provinces in North America in opposition to the opinion of the inhabitants" (the Colonial Secretary, Earl Grey, as reported by Creighton, 1966, p. 259-260). Both Quebec and Ontario obtained self-government in 1849.

Analysis

Can this change in political climate be explained with a change in the economic incentives to rebellion along the lines suggested in Section 3? Proposition 6 claims that the likelihood of decolonization is non-decreasing in the attractiveness of the rest of the world (as opposed to the colonizer) for the colony's trade. This is because as the factor endowments to which colonial trade is attracted become more concentrated outside of the empire, the capacity of the colonizer to impose harmful trade sanctions decreases, increasing the capacity of the colony to stage a revolution.

In fact, there seems to have been a key discontinuity in the structure of Canadian international trade between the 1830s and the 1840s. In the 1830s, the distribution of the world's endowments of timber and capital (the capital of the timber-based industries) was such that, despite the large Canadian

supply, the British Empire was a net importer of timber from the rest of the world. In the 1840s, things changed in two important ways. First, the US became a major net importer of timber. Second, in a major and final step towards her conversion to free trade, Britain dismantled the preferential tariff system that had long protected domestic and colonial producers of agricultural commodities and raw materials.⁵⁴

The US firstly turned into a net importer of timber at the end of the 1830s, as the onset of a long economic boom lead was accompanied by rapid urbanization in the East coast.⁵⁵ Already in the early 1840s, substantial amounts of Canadian timber took their way South notwithstanding a still-high US import tariff on natural products. By 1849, export to the US represented 24 per cent of Canadian timber exports, and this valued increased to 34 per cent in the second half of the 1850s and 50 per cent in the second half of the 1860s (Lower, Carrothers and Saunders, 1938, p. 101 and 134).⁵⁶

Britain began dismantling the old system of trade restrictions in the early 1820s, and, by the second half of 19th century, she had fully converted to free trade. In the 1840s, a series of major reforms abolished the import tariffs on several agricultural commodities and raw materials. For decades, these tariffs had granted high profit for British producers to the detriment of con-

⁵⁴Britain began dismantling the old system of trade restrictions in the early 1820s: by the second half of XIX what was then the greatest economic power of the world had fully converted to free trade, and several other countries had followed suit.

⁵⁵Up until the mid 1830s, domestic supply of Maine (the large reserves of the West and Midwest were still unexplored at that time) had been more than enough to cover domestic demand, to the point that timber used to be exported to Canada and from there to Britain.

⁵⁶In fact, timber was the leading industry in determining the re-orientation of the Canadian economy away from Britain and towards the US in the second half of XIX century (Easterbrook and Aitken, 1956, p. 204).

sumers and employers of the manufacturing sectors. Often, their protection extended to colonial producers, who were granted at least a preferential tariff on their exports. Their abolition was a severe blow to both. In the case of Canada, the strategic considerations that had warranted the introduction of the preferential tariff in 1802 had become increasingly outdated, and the tariff was dismantled without exception.

For the Canadians, the tariff was crucial to offset their disadvantage in terms of higher transport costs. Its abolition exposed them to the fiercest European competition, and, as a consequence, the share of Canadian timber in the British market fell dramatically over the following decades (Marr and Paterson, 1980, p. 70). From the Canadians' point of view, this decreased the importance of Britain as a trading partner, and had therefore the same effect as a sudden relocation of relevant factor endowments outside the British Empire.

Thus, the model suggests that the new political climate which pervaded British-Canadian relations in the 1840s and culminated in the concession of self-government in 1849 could be attribute to the fact that the factor to which Canadian trade was attracted were becoming to relocate outside of the British Empire – namely to the US. This undermined the capacity of Britain to impose effective trade sanctions against Canada, therefore making revolution relative more attractive. Faced with an increased local pressure, the British tried to stick to the old colonial system, only to realize that this would cost them more, in terms of concessions, that they were willing to pay. Self-government was thus conceded as a way for Britain to get free of the burden the Canadian colonies had come to represent.

One possible alternative explanation for the change in British attitude towards Canadian independence is that rapid immigration and settlement increased the de facto political power of the Canadian masses, up to a point in the 1840s when de jure political power had to be surrendered. In fact, one major consequence of the timber trade was that immigration boomed in 1820-1860, for the high loading capacity of ships on their way back to America offered a cheap passage to many European emigrants. It is perfectly plausible that immigration may have played a role. Note however that there is no necessary correspondence between population growth and political independence, as shown by the fact that the United States remained a trustful colony during many decades of rapid population growth in the first half of 18th century. Also, population growth in Canada was matched by high population growth in Britain in the first half of 19th century, so it is not clear which way the balance of power should have been altered. Finally, historians tend to acknowledge that there was a link between the evolution of Canada's external trade and the coming of responsible government in the 1840s, even though they have not formalized their intuition. For example, Creighton (1937, p. 364) argues that:

To contemporaries, who could best appreciate the interlocking mechanism of the old system, the action of Great Britain implied the most inevitable break-up of the empire; and they felt the old ties loosen around them with both regret and a kind of bitter impatience to be free" (Creighton, 1937, p. 364).

For all these reasons, I believe that the model presented in Section 3 fits

rather well the case of Canada. I will now turn to the case of another British settler colony, who received responsible government a few years later.

Australia

The colonies of Australia obtained self-government in 1855-1856. Relative to Canada, the political process that led to this result was more gradual and less traumatic; still, it was pushed by an equally stark contrast over the allocation of colonial public money. I argue that one economic factor that induced the British to make increasing concessions on these issues, and eventually concede self government, was the increased competitiveness of the wool textile industry of continental Europe in the 1840s and 1850s. At that time, wool was a fundamental source of prosperity for the Australian colonies. As the industrial revolution began spreading from Britain to the continent (mainly France) in the 1840s, continental Europe consumed an increasing share of the world's wool in its textile sector. In terms of the model, δ increased relative to κ .

Background and political developments

The most ancient of the British Australian colonies, New South Wales was firstly settled in 1787; originally a part of it, Victoria became an independent colony in 1851.⁵⁷ Initially, the two colonies were meant to accommodate British convicts; already at the end of 18th century, however, free settlers be-

⁵⁷As for Canada, I will focus on the two most ancient and economically significant colonies.

gan flowing numerously, and by 1810 they had become a majority of colonial society.

The economic history of Australia of the two colonies is easily summarised. Initially, the colonies did not produce any significant export commodity; thus, while they were self-sufficient in food, they could only afford to import manufactures thanks to the financial help of the mother country. In the 1810s, however, the colonists discovered that Merino sheep could adapt very well to the Australian climate, and a small trade of wool developed. For a fortunate coincidence, this happened when the British demand for wool was about to explode.

For centuries, the wool textile industry in Britain had relied on home-grown wool, supplemented by a little import of special-quality Merino wool from Spain. Given the abundance of wool supply in Europe, this pattern had required an active protectionist policy by the British government, and until early 19th century a high import tariff on raw wool was in place. With the development of the wool textile industry, however, the pressure to liberalize the wool trade intensified, and by the end of the 1810s the protectionist system was being dismantled. Given that no region in the empire seemed capable to supply enough wool at that time, a preferential system such as the one designed for Canada was not an option; in 1824, therefore, imports from all sources were liberalized.⁵⁸ Over the following year, the combination of free trade and industrialization triggered a boom in wool imports.

Where was this wool imported from? Soon after the elimination of the tariff, Germany replaced Spain as the main source of supply, and remained

⁵⁸This was to become the first major step made by Britain towards free trade in XIX century.

so throughout the 1830s. Ever since the mid 1820s, however, a significant share of supply came from Australia, and in the 1830s the colony became the second largest source of British imports.⁵⁹ Then in the 1840s, the German supremacy was displaced: by 1850, the share of Australia was 52 per cent, that of Germany 12 per cent; in 1870 these figures were 66 per cent and 2 per cent.⁶⁰ As a consequence, the 1830s and 1840s were years of great prosperity for the Australian colonies.

The early political history of Australia is also easy to tell. Between 1787 and 1823, successive British governors ruled in a fully autocratic manner. Then, in 1823, a type of representative institutions similar to those of many other British settler colonies was introduced. The extent to which these institutions represented colonial society was initially very limited, as their members were all appointed and mostly chosen among British officials. In 1829, however, the number of seats reserved for locals was increased, and the prerogatives of the legislative council substantially widened. Still, far from configuring a substantial loss of *de jure* political power by the British, the institutions of 1823/1828 were essentially "...intended to legitimize, rather than restrict, the governor's actions" (Mc Minn, 1979, p. 21). Among the prerogatives retained by the governor, one, control of land revenues, would become the main reason for discontent over the following years.

Throughout the 1820s - a time in which the colony did not produce any significant wealth that the British could plan on extracting - most of the quarrelling in Australian politics was among local factions. Particularly hot

⁵⁹There, the Merino sheep population grew exponentially after the 1810s: from 0.3 M units in 1821, to 2.8 M in 1838 and 13.2 M in 1849 (Shann, 1930).

⁶⁰significant suppliers were South Africa (12 per cent in 1870) and South America (5 per cent).

was the debate on how to share the fiscal burden between the first colonial elite (the so-called exclusivists) and the poorest part of the population (the emancipists, mainly former convicts). In the second half of the decade, the leaders of the emancipists came to ask for “taxation by representation” and “representation by election” as a way to decrease the influence of the exclusivists on the legislative council.

In the 1830s, however, the nature of the conflict changed. As the wool trade boomed and land revenues became the main source of government income, exclusivists and emancipists joined in protesting that Britain should surrender control of land revenues to the legislative council, and that the latter should be more representative of colonial society. From that moment and until the concession of self-government, Australian politics was more about this protesting against Britain than anything else. But what was exactly the object of discord? Basically, the colonists wanted land revenues - the provents of the sale of Crown land and grazing licences - to be not too high in the first place, and to be devolved on specific public goods like immigration.⁶¹ On the contrary, British governors and their superiors at the Colonial office considered land revenues as “...being held in trust by the Crown for the Empire as a whole” (Mc Minn, 1979). In practice, throughout the 1830s their control was used to impose unwanted expenses upon the colonists. In 1834-1842, for example, the British Treasury transferred the full cost of jails (still hosting thousands of British convicts) on the colonial budget.

As time went by, however, protests became more vehement, and in 1842

⁶¹The colonists wanted immigration as the pastoral boom had led to a labour shortage.

imports were retained for domestic consumption. In the 1840s things became to change: by 1850, around 20 per cent of British imports were re-exported to continental Europe. After 1850, a boom in wool consumption by France and, later, Germany, increased re-export continuously to represent 40 per cent of the total by 1870.

As Britain exported an increasing share of its colonial wool imports to the world outside the Empire, the net wool exports from the world outside the Empire were falling dramatically. Figure 2 plots this series as a three-year moving average. It clearly shows that the world outside the British Empire turned from being a large net exporter of wool to being a large net importer in the mid 1850s.

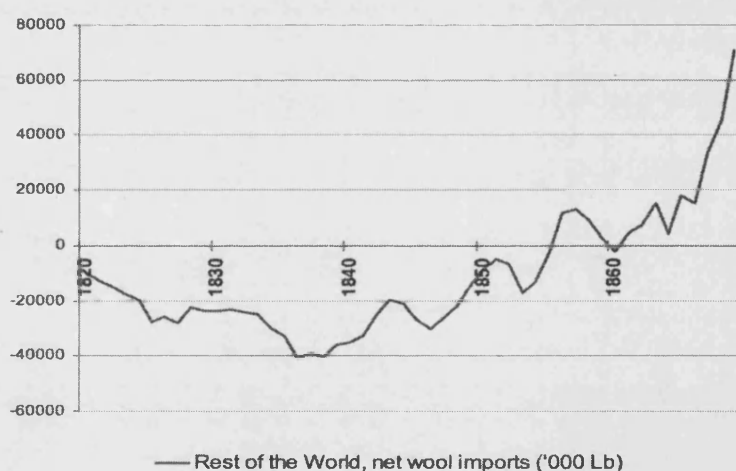


Figure 2.3: Net wool imports, world outside the British Empire, 1820-1870

Source: Bernard (1958).

It would be nice to have data on national production and consumption

the British conceded that 50 per cent of land revenues would be officially bound to be spent on immigration, and that the legislative council would become partially elective. As frictions went on, concessions were made again in 1846 and 1848. Eventually, in 1851 the legislative council issued a formal "Declaration, Protest and Remonstrance" where it said that "the imperial Parliament should not continue to tax the people of the colony", that all "Offices of trust and emolument, except for the Governorship, should be under local patronage" and that "plenary power of legislation should be exercised by the Colonial Legislature". Soon after that, "a revolution in colonial office thinking" occurred as the new colonial secretary, Sir Pakington, seemed to "... have felt that resistance to growing colonial pressures might ultimately produce more mischief than the abandonment of this interest could cause" (McMinn, 1979, p. 50). At the end of 1852, land revenues were surrendered, and self-government followed shortly.

Analysis

It is interesting to study how the loss by Britain of de jure political power in Australia was matched by the evolution of the British and European market for wool.

As explained above, the export of wool from Australia increased rapidly in 1830-1870. All of this wool was sent to London, where the main international market for raw wool was located.

But how much of this wool was retained for consumption in Britain, and how much was re-exported? Throughout the 1830s, the British market was the only market for the Australians: in 1840, 99 per cent of British wool

imports were retained for domestic consumption. In the 1840s things became to change: by 1850, around 20 per cent of British imports were re-exported to continental Europe. After 1850, a boom in wool consumption by France and, later, Germany, increased re-export continuously to represent 40 per cent of the total by 1870.

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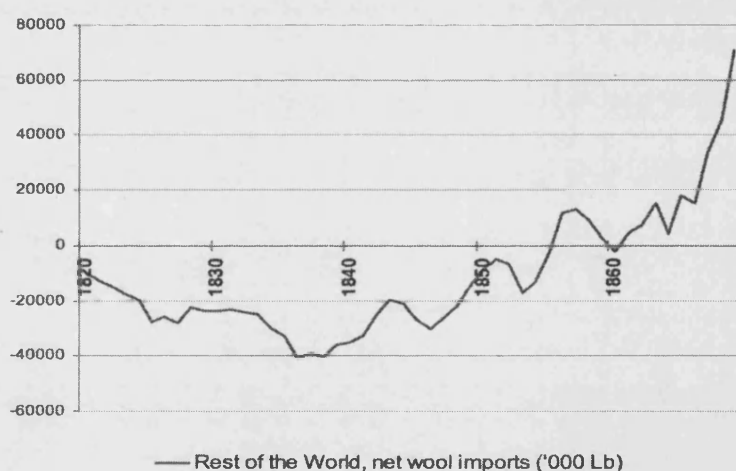


Figure 2.3: Net wool imports, world outside the British Empire, 1820-1870

Source: Bernard (1958).

It would be nice to have data on national production and consumption

of wool for the period 1830-1870. Unfortunately, these data can be obtained (indirectly, through trade data) only for colonial economies that exported almost all of their wool production. One major trend that seems to stand out in the existing data, however, is the increase in consumption by continental Europe and especially France relative to Britain. While Britain was, in the first half of the century, “by far the largest consumer of wool”, in 1860-1864 total consumption of wool in France was 239 M lb against 251 M lb in Britain, and these numbers were 319 M lb and 251 M lb by the second half of the 1860s.

These figures are consistent with one broad trend in the European wool textile industry: the catching up of a few countries of continental Europe (and especially France) vis-à-vis Britain. In the words of Barnard (1958), “from the middle of the century the growth of these Continental industries most probably implied an increase in the world demand for raw wool. [...] These Continental countries exerted, therefore, a growing force in the international raw wool markets” (p. 33). And referring to the catching up of the French worsted industry in particular, “the course of technological development [...] paralleled that of Britain, though the initial moves occurred a little later. In the forties most wool combing was done by hand. At the end of that decade machines [...] were beginning to displace handwork, and in the first half of the fifties the industry was revolutionized by their wide-scale adoption” (p. 28).

These discussion points out that, in fact, the endowments to which the Australia trade was attracted (the capital of the wool textile industry) were relocating, in relative terms, outside of the British Empire. This is likely to

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These discussion points out that, in fact, the endowments to which the Australia trade was attracted (the capital of the wool textile industry) were relocating, in relative terms, outside of the British Empire. This is likely to

have increased the bargaining power of the Australian colonists who knew that, had they decided to repudiate British authority and had Britain put some sort of sanction against them, they would have been able to obtain a better access to European markets than ever before. Just like in the case of Canada, this increased bargaining power was matched by increasing concessions made by the British, until a point when it made no sense to insist. As Mc Minn (1979) has pointed out, the decision to concede self-government can be seen "as a corollary of the decision on land" (Mc Minn, 1979, p. 50). Arguably, after land revenues were surrendered under the new political conditions, controlling public policy in Australia had no economic return for the British.

2.5 Conclusions

I have studied how the sustainability of colonial power depends on the structure of trade between a colony, her colonizer and the rest of the world. Focusing on factor endowments as the economic force which shapes the pattern of trade, I have developed a model which links the colonists' private incentives to rebellion to the distribution of world factor endowments. In particular, as the factor endowments to which colonial trade is attracted become more concentrated outside of the empire, rebellion becomes more appealing. This, in turn, reduces the capacity of the colonizer to extract wealth from the colony, and increases the likelihood that independence has to be granted.

I have used my model to re-interpret the long-established link between the Seven Years War and the American Revolution of 1776: this can be

better understood by looking at the Seven Years War as a large re-allocation of factor endowments (mainly land) from the French to the British Empire, making the former a better trading partner for the American colonies. I have then studied whether my model can help interpret two of the three big episodes of decolonization in modern history: the fall of the Spanish Empire, and the advancement of most British settler colonies to self-government in 19th century. It is traditionally argued that the fall of the Spanish Empire was brought about by the invasion of Spain by Napoleon. My model suggests that one economic factor which underpinned this causality was the increasing concentration of manufacturing capital outside of the Spanish Empire, due to the industrial revolution. My model also helps understand the fluctuations in the strength of Spanish imperial authority over a much longer period of time (1550-1810). As for British settler colonies, I argue that one economic factor which induced Britain to concede self-government to Canada and Australia was, respectively, the accumulation of timber-processing capital in the United States and wool-processing capital in continental Europe.

These findings have important implications for the debate on the economic legacy of colonialism. On one hand, my results suggest that some of the most successful European economies may have become so because of a virtuous circle between colonialism and factor accumulation. As Acemoglu, Johnson and Robinson (2005) have pointed out, the opening of Atlantic trade in 16th century affected the countries involved in different ways: while countries such as Spain and Portugal depleted the wealth of colonial trade in public and private consumption, England used it to improve private incentives to capital accumulation. My paper suggests that a more rapid capital

accumulation in England was, in turn, at the base of her unmatched capacity as colonizer, and therefore her capacity to keep colonial trade highly profitable.

On the other hand, the paper suggests that to understand the actions that shaped the economic legacy of colonialism, one should keep in mind that colonial investment and capital accumulation may have an adverse effect on the profitability and sustainability of colonial power. In fact, by showing that a higher complementarity between colonial and imperial factor endowments may boost extraction and make colonial power more persistent, this paper provides some new theoretical underpinnings to the argument made by dependency theorists (see, for example, Frank, 1971) according to which colonizers deliberately hindered capital accumulation in colonies.

To the best of my knowledge, this is the first paper to spell out the link between factor accumulation, trade, and institutional change in international relations. It does so by constructing a model that, because of its simplicity, can be generalized and extended. For example, one could write a general version of the model where the actual source of comparative advantage is not specified: this would broaden the scope for analysis of the sustainability of colonial power to changing technology, transport costs, etc. Also, one may want to use an extended version of the model to study how equilibrium trade policy is influenced by international relations. Finally, one could enrich the political model to account for either heterogeneous colonial agents (and the possibility that decolonization affects post-independence politics) or international investors and their role in inducing governments to decolonize. These, and other interesting issues, remain for future research.

2.6 Appendix

Properties of $\delta^*(\kappa)$ - Using equations 2.3 and 2.7, $\delta^*(\kappa)$ is found by solving:

$$\begin{aligned}\delta^*(\kappa) &= \arg \left\{ v^E \left[\overline{K} \left(1 + \frac{\delta}{2} \right) \right] = v^E \left[\overline{K} \left(1 + \frac{\delta + \kappa}{2} \right) \right] \right\} \\ &= \frac{1}{6}\kappa + \frac{1}{6}\sqrt{16\kappa + \kappa^2 + 16} - \frac{2}{3}\end{aligned}$$

It is easy to see that $\frac{\partial \delta^*(\kappa)}{\partial \kappa} > 0$; let us now show that $\delta^*(\kappa) < \frac{\kappa}{2}$. Consider the properties of $\frac{\delta^*(\kappa)}{\kappa}$:

$$\frac{\delta^*(\kappa)}{\kappa} = \frac{1}{6\kappa} \left(\kappa + \sqrt{\kappa^2 + 16\kappa + 16} - 4 \right)$$

It is easy to check that $\frac{\delta^*(\kappa)}{\kappa} = \frac{1}{2}$ when $\kappa = 0$; furthermore, it is possible to check that $\frac{\partial \delta^*(\kappa)}{\partial \kappa} / \kappa$ is negative $\forall \kappa > 0$. ■

Proof of Proposition 1 - In order to keep the exposition simple and meaningful, I am only focusing on equilibria in which countries do not make unilateral trade attempts. The fact that $T_H^F = 0$ implies that there are only three possible equilibria: $\{H, \cdot, E\}$, $\{H, F, E\}$ and one equilibrium of the type $\{H, F, E\}$ in which both H and F trade with E . As both H and F see autarchy as the worst possible scenario, the equilibrium will depend entirely on the preferences of E . Thus, the equilibrium will be $\{H, F, E\}$ when $\delta \in (0, \frac{\kappa}{2})$ and $\{H, \cdot, E\}$ when $\delta \in (\frac{\kappa}{2}, 2\kappa)$. ■

Proof of Proposition 3 - Begin by considering the case of independence. To see that $\{H, F, E\}$ can be an equilibrium, consider the case where all countries trade with all countries. In this case, no individual deviation can

be profitable (as it can only lead the deviating country into autarchy), nor can a 3-country deviation be Pareto improving (one country is always at its first best at $\{H, F, E\}$). To see that no 2-country deviation can be Pareto improving, notice that any such deviation would make F worse off if $\delta \in (0, \frac{\kappa}{2})$, H worse off if $\delta \in (\frac{\kappa}{2}, 2\kappa)$. But because $p_A^H < p_{\{H,.,E\}}^H < p_{\{H,F,E\}}^H$ in the first case and $p_{\{H,F,E\}}^E < p_{\{.,F,E\}}^E < p_A^E$ in the second case, such deviation would also make either H or E worse off. To see that no other trade outcome can be an equilibrium, distinguish again between two cases. If $\delta \in (0, \kappa)$, $\{., F, E\}$ or $\{H, ., E\}$ cannot be an equilibrium, as both H and F would benefit from beginning to trade with each other. Next, $\{H, F, .\}$ cannot be an equilibrium either: this is because either F (if $\delta \in (0, \frac{\kappa}{2})$) or H (if $\delta \in (\frac{\kappa}{2}, \kappa)$) would benefit from admitting E into trade. If $\delta \in (\kappa, 2\kappa)$, $\{H, F, .\}$ or $\{H, ., E\}$ cannot be an equilibrium (H and the excluded country would deviate) nor can $\{., F, E\}$ be (either F or E and H would deviate).

Next consider the case of colonialism. In this case, the trade policy game is a two-player game between F and E , where F maximises $p^F(\mathbf{T}|\kappa, \delta) + A(C)$. From Proposition 3, it is clear that this is equivalent to maximising:

$$\Psi \equiv v^F [p^F(\mathbf{T}|\kappa, \delta)] + v^H [p^H(\mathbf{T}|\kappa, \delta)]$$

To prove that no trade outcome other than $\{H, F, E\}$ can be an equilibrium, notice, first, that $\{H, ., E\}$ and $\{., F, E\}$ are always dominated by a trade outcome that F can achieve through a unilateral deviation. To see this, notice that the colonizer can unilaterally deviate from $\{H, ., E\}$ ($\{., F, E\}$) to the first best outcome of H (F) and thus increase both v^H and v^F . This establishes that $\{H, ., E\}$ and $\{., F, E\}$ are always dominated by either $\{H, F, .\}$ or

$\{H, F, E\}$ in the preferences of F . Next, $\{H, F, .\}$ cannot be an equilibrium outcome either. To see this, I show that this outcome is always dominated by $\{H, F, E\}$ in the preferences of F . When the starting point is $\{H, F, .\}$, Ψ can be rewritten as:

$$\Psi(p) = p^{\frac{1}{2}} + \bar{K} \left(1 + \frac{\kappa}{2}\right) p^{-\frac{1}{2}}$$

The first derivative of $\Psi(p)$ is:

$$\frac{\partial \Psi(p)}{\partial p} = \frac{1}{2} p^{-\frac{1}{2}} \left[1 - \frac{\bar{K} \left(1 + \frac{\kappa}{2}\right)}{p} \right]$$

from which it is clear that $\Psi(p)$ achieves a global minimum at $p = \bar{K} \left(1 + \frac{\kappa}{2}\right)$. Thus, opening up to E increases Ψ whenever $\delta \neq \frac{\kappa}{2}$. This also establishes that $\{H, F, E\}$ is always F 's first best.⁶² Finally, it is easy to see that $\{H, F, E\}$ can realize in equilibrium. At such an outcome, F is never willing to deviate (as it is at its first best), nor is E (who, unilaterally, can only deviate to autarchy). ■

⁶²If $\delta > 2\kappa$, it may be the case that F 's first best is $\{H, ., E\}$ (and this is also the trade equilibrium). This is because F and H are competing for selling the labour intensive good in this case, and restricting supply may increase their joint welfare by giving one of the two better terms of trade vis-a-vis the rest of the world. Thus, colonialism may be welfare improving in this case.

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Chapter 3

Foreign Influence and the International Trade in Natural Resources

Anecdotal evidence suggests that diplomacy plays an important role in the allocation of oil and other exhaustible resource contracts in developing countries. I present an economic model of energy security that rationalizes the role of governments in facilitating the expansion of national resource FDIs. I begin by showing that the control of a large number of overseas contracts may allow a country to distort the terms of trade to its advantage, and that this may be optimal when prices are high, despite the fact that it depresses the value of the contracts themselves. Because the benefits of such distortion are not captured by overseas investors, there is a role for governments to facilitate the expansion of national oil companies to the nationally optimal level. I then argue that natural resource contracts are long-term in nature,

making a myopic resource-rich government potentially willing to exchange current transfers for a clientelistic allocation of contracts. The combination of these two elements creates the scope for a natural resource diplomacy: this can be offensive (when it aims to make national resource hoarding possible) or simply defensive (when it is concerned with avoiding resource hoarding by other countries). I study the impact of diplomatic competition on the pattern of FDI, trade and welfare.

3.1 Introduction

It is commonly accepted in the security studies literature that governments of resource-scarce countries have a key responsibility in ensuring that the pattern of resource FDI and trade is favorable to the home country. For example, Klare (2008, p. 487) argues that "for the USA, as for other industrialized states that rely on imported supplies of energy, energy security thus entails a conspicuous foreign policy dimension, in that a principal objective of its overseas diplomacy is to establish and sustain friendly ties with key providers of oil, gas and other fuels, thereby facilitating the procurement of these fuels by companies linked to the home country". That diplomacy is at the heart of the natural resource trade is confirmed by the literature on the history of the oil industry. This is often described as having been shaped by competition between governments as much as by competition between companies (e.g. Turner, 1983; Venn, 1986). In recent years, this view has been corroborated by studies of the expansion of government-backed Chinese resource investments to Africa (e.g. Taylor, 2005), and of the implications of

this for US energy security.

In economics, we do not have theories of how diplomacy - intended as inter-governmental lobbying - may affect the pattern of FDI and trade. For the specific case of natural resources, this prevents us from answering a number of important questions: 1) Is there an economic rationale for government intervention, and under what conditions? 2) Can this be linked to some specific concept of energy security? 3) How is diplomacy likely to affect the pattern of resource FDI and trade? 4) And what are the welfare consequences of this?

In this paper, I build a model of the international oil trade that gives a possible answer to these questions. The model is composed of three building blocks. The first is a simple three-country model of the oil trade, where two oil-scarce countries compete to obtain a discriminatory trade agreement with an oil-abundant country. Because the latter benefits from the highest possible price of oil, however, trade policy is always non discriminatory when it is set to maximise its national welfare.

The second building block is a model of the production of oil. I assume that for oil to become fully usable, an upfront investment is needed. In the oil abundant country, this investment can be outsourced to foreign companies, who are then also responsible for buying the oil. While enforceable contracts on future oil transactions cannot be written, buyers who have made the initial investment retain the power to destroy some share of production. Thus, the final price that they pay is the result of a bargaining between them and the sellers. The key element here is that buyers from a given country remain subject to their government's trade policy, which may then be used

to influence the result of the bargaining.

The third building block is a model of oil diplomacy, where the two oil-scarce governments lobby the oil-abundant government to obtain a preferential treatment in the initial allocation of oil contracts. Because oil contracts are long-term, a myopic oil-abundant government may be willing to exchange current transfers for a suboptimal allocation of contracts.

The main results of the paper are as follows. First, parent governments who “hold” enough many overseas resource contracts may find it optimal to impose trade restrictions on their overseas investors. This results in a reduction in the amount of resources available for general trade, creating a security issue for other consumer countries. Second, because investors bear only the cost of trade restrictions, their overseas expansion is less than socially optimal: this creates a rationale for a resource diplomacy. When contracts are long-term, myopic resource-rich governments may be willing to exchange current transfers for a favorable allocation of contracts. Thus, diplomacy may have two roles: it may be “offensive” (when it succeeds in distorting the allocation of contracts in favor of the country who exerts it) or “defensive” (when it purely avoids that the allocation is distorted in favor of some other country). I show that foreign influence has opposite welfare implications in the two cases, and that international co-ordination away from defensive diplomacy can be Pareto improving.

The paper is related to several strands of literature. The main tension in the trade model is related to the concepts of trade creation and trade diversion investigated by the literature on preferential trade agreement (see Baldwin and Venables, 2004, for an excellent review of this literature). The

lobbying model uses the concept of truthful Nash equilibria, first developed by Bernheim and Whinston (1987) and commonly used in the literature on the political economy of trade policy since the seminal paper by Grossman and Helpman (1994). A subset of the latter literature has investigated the impact of *foreign* lobbying on trade patterns: see in particular Hillman and Ursprung (1986), Grossman and Helpman (1995), Endoh (2005), and Antras and Padro (2009). My main point of departure from this group of papers is that I consider lobbying by *governments* rather than by the private sector, that I allow for competition between lobbyists from different countries, and that I focus on the natural resource industry. Another related paper is Bueno de Mesquita and Smith (2008), who study how political institutions affect a generic aid-for-policy exchange between a donor and recipient government. My paper differs from this in that I focus on trade policy in particular, and I consider the interaction between two competing donors. Finally, the paper is related to a recent empirical literature on the impact of diplomacy on trade patterns (e.g. Gil-Pareja et Alii, 2005a, 2005b).

The paper is organized as follows. Section 2 provides an introduction to the international oil industry and trade, laying the ground for my modeling choices. Subsections 3.1-3.3 introduce the three building blocks of the model. Section 4 derives the equilibrium, and outlines the results. Section 5 discusses the limitations of my approach, and proposes a few extensions. Section 6 concludes.

3.2 Structure of the international oil market and oil diplomacy

Most of the oil produced by developing countries is exported in the form of crude oil.¹ For example, among the top ten net exporters of oil outside the OECD, the share of crude oil processed abroad in 2006 ranged from 59% in Venezuela to 96% in Angola.² Crude oil is traded in two ways. First, a few varieties of crude are traded in the form of standardized contracts, and priced anonymously on centralized exchanges (Brent in London, West Texas Intermediate in New York, and Dubai Crude in Dubai). Second, all other varieties (there are 161 overall) are traded in Over The Counter (OTC) transactions between specific buyers and sellers. While the price that is realized in OTC transactions is normally linked to one of the centralized prices, OTC prices are, in principle, specific to each transaction. OTC transactions accounts for most of the spot trade in crude oil. In fact, centralized exchanges are mostly used to hedge against fluctuations in the centralized spot price (and therefore in OTC prices).

OTC contracts between multinationals and oil-exporting countries fall into two broad categories. On one hand, some of them are pure sales contracts, whereby a local oil company is solely responsible for extracting the crude. Often, these contracts are long-term, and require the installation of specific refining capacity in the country of destination. On the other hand, the multinationals are often involved in production as well. In this case,

¹While I talk about oil from now on, my argument could be extended to a number of other mineral and metal resources.

²Source: International Energy Agency's website.

the parties write more complicated contracts, whereby the buyer takes on responsibility for exploring, developing and managing the oil field, as well as for refining and marketing the crude.

Particularly in the second type of contract, buyers may be responsible for developing a factor that is needed for make the oil usable. To the extent that this factor essential, non appropriable and not promptly substitutable, this may give the buyer some bargaining power over the seller should this want to renegotiate the contract at a later stage. For example, it may be hard for a seller to find another counterpart with the installed refining capacity needed to market its full production. Or, once a foreign company develops a specific knowledge of an oil field or a specific know how, this may be costly to substitute. Thus, by entering into an oil contract where the buyer has responsibilities in the production of the final product, a seller is tying himself up to some extent.

While many of the most successful multinational oil companies are private or semi-private, the allocation of oil contracts in the developing world seems to be shaped no less by intergovernmental politics than by market competition. Many historical accounts of the evolution of the oil industry in the 20th century describe the first 65 years of this as a series of government competition for securing rich concessions for their companies in Asia, the Middle East and Latin America (see, for example, Turner, 1983; Venn, 1986). After a period where this inter-governmental competition was overshadowed by the creation of OPEC and the nationalization of most Western concessions in the 1970s, the 1990s and early 2000s have witnessed a renewed level of competition prompted by the rise of China and its attempt to tap

old, as well as new (mostly in Africa and Central Asia), sources of oil (Taylor, 2005).

3.3 Model

3.3.1 A three-country trade model

Consider a world where two tradable inputs, oil and another input (say machines), are used in the production of a final good. I denote oil by x , the other input by y , and the final good by z . The production function is:

$$z = x^{\frac{1}{2}}y^{\frac{1}{2}}$$

All agents who populate this world have linear utility in the consumption of z . For simplicity, the two inputs are not produced but simply exist as endowments, and are fully tradable. The final good may be tradable as well, but trade is ruled out by the fact that technology is the same across countries.

The world is made up of three countries, H , A and B . I choose endowments so that H is always a net oil exporter, while A and B are net importers. In particular, H has a unit endowment of both inputs, while A and B have a unit endowment of oil but endowments of the other input (y^A and y^B) greater than unity and not too dissimilar from each other (I will soon clarify the exact conditions needed for both of these countries to be net importers of oil).

Take y to be the numeraire and denote the autarchy price of oil in country H by π . At this country's autarchy equilibrium, producers set their MRTS equal to the price ratio π . Because the MRTS is simply $\frac{y}{x}$, input market clearing then requires that:

$$\pi = 1$$

That is, oil has unit cost in H 's autarchy equilibrium. It is also easy to work out H 's autarchy price of the final good at $\pi_z = 2(\pi)^{\frac{1}{2}} = 2$.

Denote by π^A and π^B the autarchy price of oil in A and B . Using the same logic as in the case of H , it is straightforward to show that:

$$\pi^A = y^A$$

$$\pi^B = y^B$$

I consider three possible trade regimes: free trade between H and A (and B in autarchy), free trade between H and B (and A in autarchy), and free trade between all countries. Denote by p^A (p^B) the price of oil that is realized within H and A (B) in the first (second) case, and by p^{AB} the single world price in the third case. Within any of the possible free trade areas, producers face the same prices of inputs. Thus, the MRTS must be the same anywhere,

and it must then equal the relative endowments within the specific free trade area. This implies that trade prices can be calculated similarly to autarchy prices:

$$p^A = \frac{1 + y^A}{2} \quad (3.1)$$

$$p^B = \frac{1 + y^B}{2} \quad (3.2)$$

$$p^{AB} = \frac{1 + Y}{3} \quad (3.3)$$

where $Y \equiv y^A + y^B$. I now impose necessary and sufficient condition for A and B to be net oil importers whatever trade regime they belong to (if any). These are:

$$y^A, y^B > 1$$

$$y^A, y^B \in [\underline{y}(Y), \bar{y}(Y)]$$

where $\underline{y}(Y) = \frac{1+Y}{3}$ and $\bar{y}(Y) = \frac{2Y-1}{3}$. The first condition requires that A and B are oil-scarce enough. This is necessary and sufficient for them to be net importers when they trade with H alone, as they have then a higher autarchy price than H . The second condition requires that A and B are

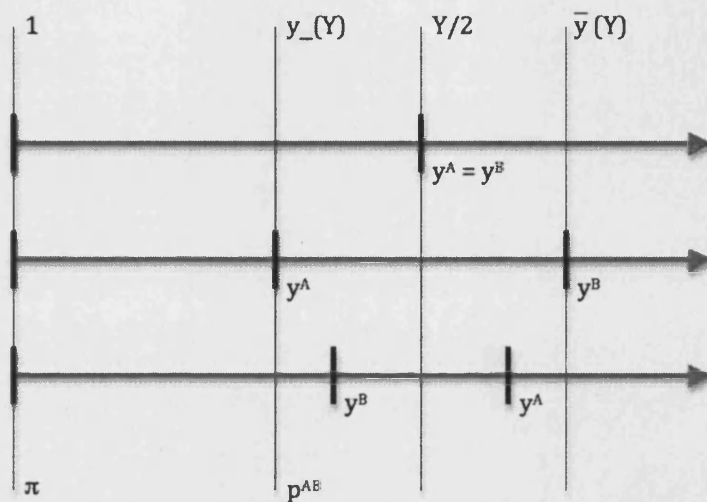


Figure 3.1: Possible values of y^A and y^B .

$$\theta^A \equiv \frac{y^A - \underline{y}}{\bar{y} - \underline{y}}$$

$$\theta^B \equiv \frac{y^B - \underline{y}}{\bar{y} - \underline{y}}$$

Clearly, $\theta^A + \theta^B = 1$. At the same time, the higher is θ^J the more important is country J as a net importer, with $\theta^J = 0, \frac{1}{2}, 1$ capturing the three special cases where J is not a net importer, is a net importer as important as $-J$, and is the only net importer. My main comparative statics for what concerns the structure of the endowments will consist in moving Y (and, therefore, the price of oil) and θ^A .

not too different from each other. Together with the first condition, this condition is necessary and sufficient for A and B to be both net importers when they both trade with H . Notice that $\underline{y}(Y) = p^{AB}$: thus, the condition is requiring that both A and B have an autarchy price that is higher than the trade price they face when they both trade with H . The upper bound $\bar{y}(Y)$ then comes from the fact that, for Y constant, an excessively high y^J would imply a y^{-J} below the threshold $\underline{y}(Y)$

How high is y^A (y^B) in the range $[\underline{y}(Y), \bar{y}(Y)]$ is a measure of how relatively important is A (B) as a net importer of oil. This is illustrated in Figure 1. The case where $y^A = y^B$ is illustrated in the first line. In this case, A and B are identical, and are therefore also equally important as net oil importers. The second line considers the case where y^A is at the minimum threshold, while y^B is at the maximum. In this case, A is effectively self-sufficient in oil, while all oil imports in the world go to B . To see this, notice that $\pi^A = p^B$ (the latter is always halfway between 1 and y^B , see above). In words, A has the same price in autarchy as the other two countries do when they trade: not surprisingly, A 's contribution to world trade will then be zero. Finally, the third line illustrates the case where y^A is greater than y^B . In this case, A is more important as a net importer than B . If y^A was increased to reach $\bar{y}(Y)$, then the situation in the second line would be reversed and A would be the only net importer.

The relative importance of A and B as net importers of oil can be effectively captured through a normalization. Define:

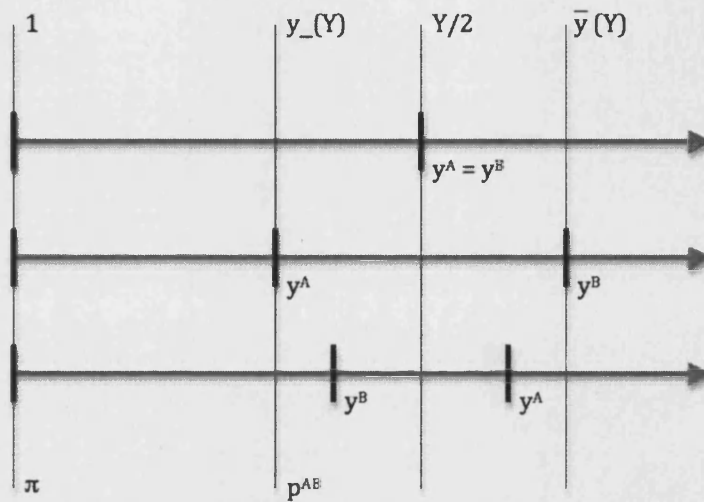


Figure 3.1: Possible values of y^A and y^B .

$$\theta^A \equiv \frac{y^A - \underline{y}}{\bar{y} - \underline{y}}$$

$$\theta^B \equiv \frac{y^B - \underline{y}}{\bar{y} - \underline{y}}$$

Clearly, $\theta^A + \theta^B = 1$. At the same time, the higher is θ^J the more important is country J as a net importer, with $\theta^J = 0, \frac{1}{2}, 1$ capturing the three special cases where J is not a net importer, is a net importer as important as $-J$, and is the only net importer. My main comparative statics for what concerns the structure of the endowments will consist in moving Y (and, therefore, the price of oil) and θ^A .

The total utility of country J ($J = H, A, B$) when faced with a trade price p can be measured as the value of its endowments, divided by the cost of the consumption good:

$$W^J(p) = \frac{p + y^J}{2(p)^{\frac{1}{2}}}$$

from which we can derive autarchy utility at $W_A^J(\pi^J) \equiv (\pi^J)^{\frac{1}{2}}$. It is shown in the Appendix that the function $W^J(p)$ reaches a global minimum at $p = \pi^J$ (implying that there are gains from trade) and is monotonically increasing (decreasing) in p when $p > \pi^J$ ($p < \pi^J$). This is something that we would have expected, as it is always best for a net exporter (importer) to obtain the highest (lowest) possible price for its export (imports).

Because both A and B are net importers, it is always $p^A, p^B < p^{AB}$. This, together with the properties of W^J , establishes that the total welfare of H is maximum when it trades with both A and B , while the total welfare of A (B) is maximum when it trades with H alone.

3.3.2 Equilibrium trade policy

Suppose that all countries are governed by utilitarian planners. These have only one policy tool at this stage: they can choose whether their country is open or not to trade with each of the other two countries.³ For trade to

³One obvious limitation of this approach is that I am not considering the role of optimal tariffs. These would certainly play a role in this model where countries have market power. To model a continuous trade policy would greatly complicate the model, however, and not qualitatively affect the results of the paper. I thus keep this possible extension for future

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realize between any two countries, both governments must agree to be open to each other. Suppose that the first mover is the government of H (from now on, simply H), followed by a simultaneous move by the government of A and B (from now on, simply A and B). First, notice that H will never choose to close down to both A and B , as then autarchy is the only possible outcome. But could it consider to closing down to one of the two only?

To answer this question, notice that whenever H closes down to, say, B , A finds it optimal to close down to B (and to it only) as well. This follows promptly from our discussion, as the decision to close down to B gives A the price that maximizes its welfare. However it is useful to provide an intuition for why, once A 's agents are allowed to purchase the oil from H at a price p^A , they should not be allowed to resell it to B at a price $\pi^B > p^A$. The intuition for this is simple. Because of perfect competition *in intermediation*, any price spread would be closed and a single price p^{AB} would immediately realize if A did not close down to B . Thus, the only agents in A who would benefit from this are the owners of A 's oil, but we know that this gain is more than outweighed by the loss to the owners of the other input.

Thus, because it can be expected that closing down to B (A) results in H trading with A (B) only, and because H 's favorite regime is to trade with both, it is always optimal for H to remain open to both countries.

These results can be summarized in the following proposition:

Proposition 1 *If H closes down trade to B (A), for any θ^A it is optimal for A (B) to close down to B (A). Thus, H never closes down to either*

research.

country.

So far I have assumed that the national endowments of oil are fully owned by national agents. While this is true in most parts of the world, oil companies from industrialized countries often have an important role in making the oil of developing countries fully available for consumption. As discussed in Section 2, this may give oil companies control over some share of the oil, and at the same time link their profit to those of producers. In the next section, I model the oil industry more explicitly to take into account these two factors.

3.3.3 Long-term contracts

I now assume that each country's endowment of oil is divided into n "oil fields", each of which owned by a separate oil company. Thus, all fields have size $\frac{1}{n}$ wherever located. I assume that $n \geq 2$ and that oil companies compete on price. This is sufficient to ensure that the equilibrium remains competitive.

For any oil field to generate oil that is usable in production, an upfront investment is needed: on each field, this costs c units of the final good. While investments in A and B are made directly by the company who owns the oil, companies in H may decide whether to do the investment by themselves or to outsource it to a company from A or B . Once the investment is made, the oil become fully usable at no additional cost.⁴ If the investment has been

⁴Thus, c includes the all fixed cost from transporting and refining the crude. After this investment is done, I assume (for simplicity) that the marginal cost of marketing this oil is zero.

outsourced, the contractor is responsible for buying and marketing the oil⁵; otherwise, the oil is marketed directly by the company who owns it.

While it is not possible to write enforceable long-term contracts on the future price that a buyer will pay for the oil, the price that a contractor will pay is determined by a bargaining between it and the outsourcer after the investment is made. My key assumption here is that the investment made by the contractor (which is essential for production), is only imperfectly appropriable by the outsourcer, and costly to replace. I capture this by assuming that the contractor has the power to destroy a share ξ of production.

Thus, before any international trade takes place, the oil industry develops as follows:

1. Oil companies in H decide whether to do the initial investment in house or to outsource it;
2. Investments are made;
3. Where there has been no outsourcing, the oil is taken to the market by its owner. Otherwise, the outsourcer and the contractor bargain a la Nash over the price that the latter should pay. If there is agreement, the oil is taken to the market by the contractor. If there is no agreement, a share $1 - \xi$ of the oil is taken to the market by the outsourcer.

Consider the case with outsourcing. In period 3, the two parties bargain a la Nash, and they have the same bargaining power. Then, assuming that the expected value of a barrel of oil is p^{AB} ,⁶ agreement is always reached and

⁵I could equivalently assume that the oil is sold to a third party.

⁶Expectations will always be rational in equilibrium, please see below

the price (per barrel) that the contractor ends up paying to the outsourcer is:

$$p_o^{AB} = p^{AB} \left(1 - \frac{\xi}{2}\right)$$

reflecting the fact that the market value of a barrel of oil is p^{AB} , and that the contractor effectively owns $\frac{\xi}{2}$ of it.⁷

Thus, an oil contract is valuable to a potential contractor in that it gives some bargaining power vis-a-vis the outsourcer in period 3. This bargaining power is worth $\frac{\xi}{2}p^{AB}$. Because the number of interested contractors ($2n$) always exceeds the number of available contracts (n at a maximum), the price that a contractor pays for entering into a contract is:

$$V^{AB} = \frac{\xi}{2n}p^{AB} - c$$

which, depending on c , could be either positive or negative.⁸ Thus, the total value of an oil field is $\frac{1}{n}p^{AB} - c$, and this is the also the profit of the owner of the field independently on whether it outsources or not. However by outsourcing, the owner can anticipate $\frac{\xi}{2n}p^{AB}$ of the value of the field to period 1 (there is no inter-temporal discounting for simplicity).

⁷I am also assuming (for simplicity) that there the contractor's investment does not have a value outside the relationship.

⁸For simplicity I assume that $c < \pi$, so that no oil is ever left under the ground.

Because of perfect competition, and because the same investment technology is available to all agents in all countries, the net value of entering into a long-term oil contract is zero both for the outsourcer and for the contractor. Thus, the equilibrium allocation of oil contracts is indeterminate in this world. In the next section, however, I show that the allocation of contracts may have significant consequences for equilibrium trade policy. This will motivate the governments of A and B into lobbying the government of H to obtain a large enough number of oil contracts for their national companies.

3.3.4 Oil diplomacy

In this section, I add two final elements to the model. These add some additional asymmetry in the way in which I model the government of H , on one hand, and the government of A and B , on the other. First, I introduce new policy tools. In particular, I assume that H may also *force* its companies to a given allocation of oil contracts, while A and B can offer conditional transfers of the final good to H , to induce it to choosing their favorite allocation of contracts. Second, I assume that H is always open to trade with both A and B , but as in my baseline trade model governments may decide whether their country is open or not to trade with each of the other two countries, but this decision is now made *for a given allocation of oil contracts*.

The timing of the overall game is:

- 1.1 A and B make transfer offers to H , conditional on the allocation of oil contracts;
- 1.2 H chooses an allocation of contracts;

1.3 Investments are made.

2.1 H always lets its agents free to trade with both A and B . Instead, A (B) decides whether its agents can trade with B (A);

2.2 Bargaining between outsourcers and contractors takes place;

2.3 All usable oil is traded.

Notice that, by ruling that its agents cannot trade with B , A creates a tension within each oil contract owned by its overseas oil company. This is because while the outsourcer is not constrained by any government restrictions (H never closes down to either A nor B), the contractor now is. The outcome of this tension for the bargaining is key to my results.

3.4 Equilibrium & Welfare

To find an equilibrium of this game implies answering to three key questions. First, when is it optimal for A (B) to close down to B (A), for a given allocation of contracts and considering the consequence of such decision for the bargaining between outsourcers and contractors? Next, how is the allocation of contracts optimally chosen by H , and in exchange for which transfers? And finally, what are the welfare consequences of this? Sections 4.1, 4.2 and 4.3 address these questions in turn. To simplify the notation, I will develop my argument for country A , bearing in mind that the case of country B is just symmetric.

3.4.1 Oil contracts and optimal trade policy

We have seen in Section 3.1 that A always prefers to trade with H only, as this gives this oil importer a lower price of oil. In that section, however, A had little hope to obtain this trade outcome, as H would always let its companies free to trade with whoever they wanted and thus equalize the price in A and B to p^{AB} .

With a share of H 's oil in the hands of A 's companies, A may now hope to be able to affect the final trade outcome by imposing its companies not to trade with B . The welfare consequences of such a move are all to be worked out, however. On one hand, a trade restriction imposed on the companies will affect the outcome of their bargaining with the outsourcer: in some cases, this may well result in A 's company being all kicked out. On the other hand, A 's companies are now stakeholders in H 's oil: this makes any trade restriction more expensive for A , as such restriction would depress the value of both its domestic and overseas oil investments.

To illustrate the optimal decision by A , consider the case where all trade contracts have gone to contractors from A . For simplicity, I now assume that n is large enough, so that none of the companies can influence prices with its decision.

Imagine that A forbids (subject to a large penalty) its companies to trade with B . Is it an equilibrium that all outsourcers accept this trade restriction, and H 's oil goes to H only? And if yes, what price do the outsourcers receive? To answer the first question, notice that the value of an oil field when all outsourcers accept the trade restriction is $\frac{1}{n}p^A$. This must be weighed against the value of the field when the outsourcer decides to break the contract, and

market the oil by itself. Thus, it is an equilibrium that all outsourcers accept the trade restriction imposed by A if and only if:

$$\frac{1}{n}p^A > (1 - \xi)\frac{1}{n}\pi^B \quad (3.4)$$

Whenever the above condition is satisfied, A may obtain exclusive trade without having any of its companies kicked out. The price per barrel that outsourcers receive will then be:

$$p_o^A = p^A - \frac{p^A - (1 - \xi)\pi^B}{2}$$

Having derived conditions such that A can restrict trade, I now turn to considering when will this be the optimal thing to do. While we know that $W^A(p^A) - W^A(p^{AB}) > 0$ for all θ^A , the condition that needs to be satisfied now is more stringent:

$$W^A(p^A) - W^A(p^{AB}) - \left(\frac{1}{2}\xi p^{AB} \frac{1}{p_z^{AB}} - \frac{p^A - (1 - \xi)\pi^B}{2} \frac{1}{p_z^A} \right) > 0 \quad (3.5)$$

Thus, while the exclusion of B from trade was unambiguously optimal in the world with no long-term contracts, this is now only true under more stringent conditions. The intuition for this is simple. On one hand, A 's citizens now

own some additional quantity of oil ($\frac{\xi}{2}$ for each contracts they hold), making A 's preferences closer to that of a net exporter of oil. On the other hand, to exclude B from trade increases the value of the outside option available to outsourcers for any ξ , therefore decreasing A 's companies bargaining power.

Before proceeding, I impose the following parametric restriction:

Assumption 1: $\xi = 1$

Assumption 1 yields two strictly related simplifications. First, it washes out the just-mentioned effect of excluding B on bargaining. Second, it rules out the possibility of disagreement (condition (3.4) is always satisfied). While these are clearly drastic simplifications, Assumption 1 is needed in order to obtain closed-form solutions. However, numerical simulations show that the main results of the model still go through if $\xi < 1$, as long as ξ is not too low.⁹

Under Assumption 1, it is shown in the Appendix that:

Lemma 1 *Suppose that all oil contracts have gone to country $J = A, B$. Then, there exist a threshold $\underline{\theta} \in [\frac{1}{2}, 1]$ such that, if $\theta^J > \underline{\theta}$, J 's first best is achieved when $-J$ is excluded from trade. Such threshold is strictly lower than 1 iff Y is high enough. In this case, it is also strictly decreasing in Y , converging to $\frac{1}{2}$ as Y goes to infinity.*

⁹Even a very low ξ would leave scope for successfully imposing trade restrictions in a more general model with continuous, rather than discrete, trade policy. In such a model, A could choose from a continuum of prices in A and B (say $[\bar{p}^A, \bar{p}^B]$) between the two extremes $[p^{AB}, p^{AB}]$ and $[p^A, \pi^B]$. I keep this generalization for future research.

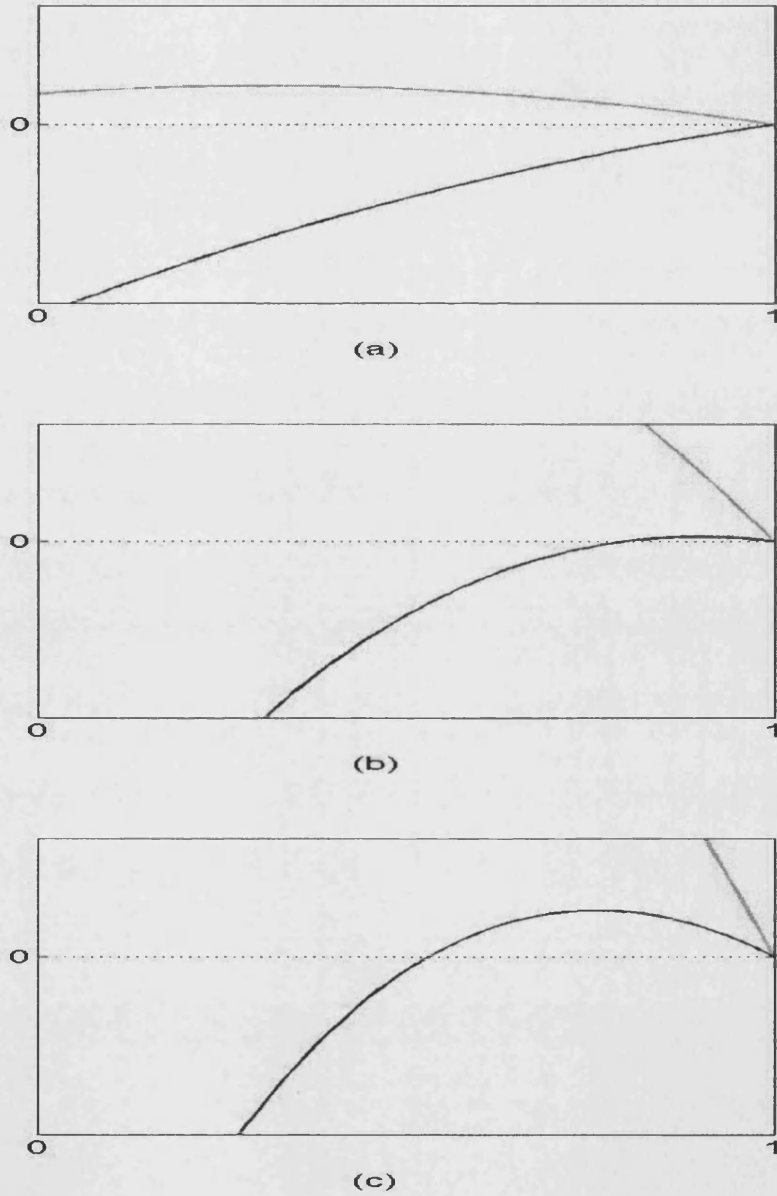


Figure 3.2: Illustration of Lemma 1

Each panel represents $W^A(p^A) - W^A(p^{AB})$ (top line) and $W^A(p^A) - W^A(p^{AB}) + \frac{p^{AB}}{2p_z^A} - \frac{p^A}{2p_z^A}$ (bottom line) as a function of θ^A . Panel (a): $Y = 3$; Panel (b): $Y = 6$; Panel (c): $Y = 9$.

According to Lemma 1, when A is important enough as an importer of oil ($\theta^A > \underline{\theta}$) it may still benefit from excluding B from trade even if all of H 's contracts are controlled by its companies. The condition $\theta^A > \underline{\theta}$ becomes less stringent as the total demand for oil imports increases (Y increases), and boils down to the requirement that A be more important as a net importer than B ($\theta > \frac{1}{2}$) as demand becomes infinitely large. Figure 2 plots A 's gain from excluding B (the LHS of condition 3.5) as a function of θ^A . The top line represents the gain when A controls none of the oil in H , that is the case we considered in section 3.1. When A controls all the contracts in H and $\xi = 1$, the gain from excluding B is always negative if Y is low; however it can be positive if Y and θ^A are high enough, and the critical threshold is decreasing in Y .

Lemma 1 has an intuitive explanation. In section 3.1, A 's demand for oil was larger than its oil endowment by construction: thus, its preferences were those of a net importer (preferring p^A to p^{AB}) for any possible value of θ^A . Controlling one half of H 's oil makes A relatively more oil abundant. When its demand for oil is low ($\theta^A < \underline{\theta}$), this extended endowment will be more than enough for its own consumption, and its preferences will now be those of a net exporter (thus preferring p^{AB} to p^A). When its demand is high ($\theta^A > \underline{\theta}$), however, A may still wish to consume more than its extended endowment, therefore retaining the preferences of a net importer. Because demand in A is an increasing function of total demand and the share of A , Lemma 1 finds that the minimum share for A to retain the preferences of a net importer is decreasing in total demand.

But what happens when A is allocated less than the totality of contracts?

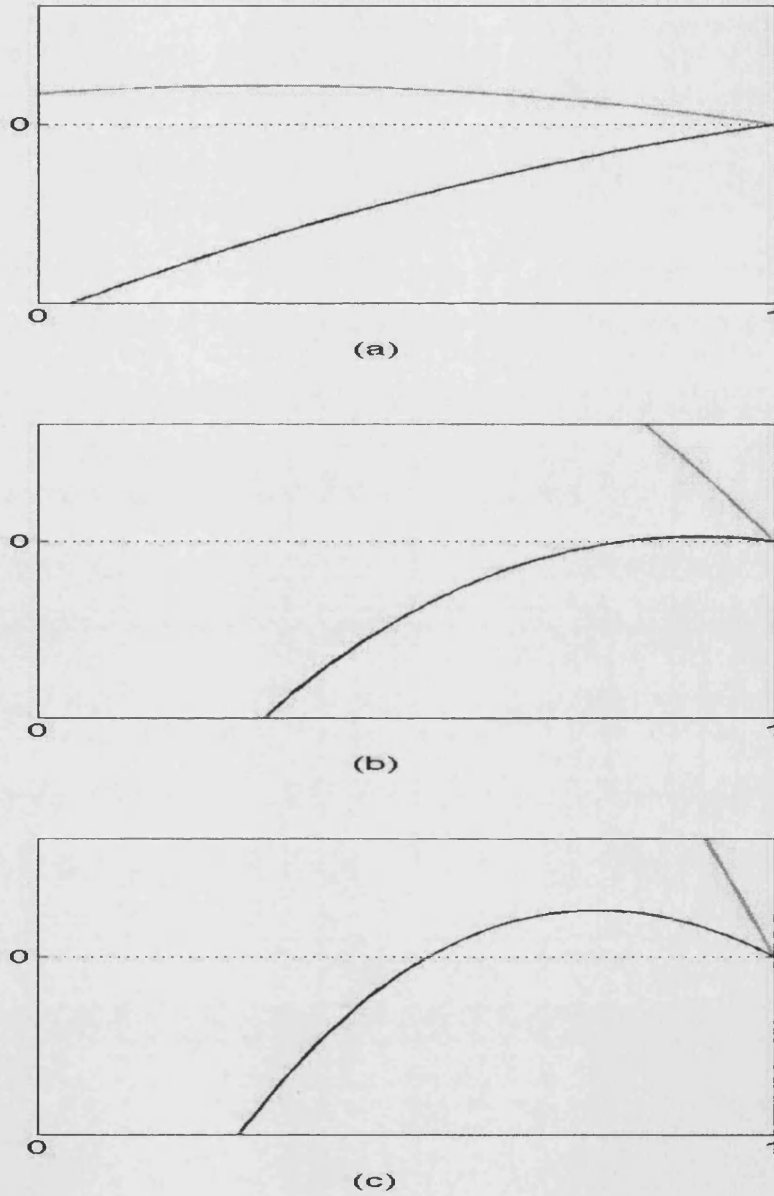


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For simplicity, I now want to restrict the possible allocations to a few representative ones. Beside the case where all contracts go to either A and B , I allow for the case where A (B) gets exactly θ^A (θ^B) of the contracts.¹⁰ Denote allocations by $F \in f^A, f^B, f^{AB}$, where f^J denotes the allocation where all contracts go to country J , and f^{AB} the one where each J receives exactly a share θ^J . Then, it is shown in the Appendix that:

Proposition 2 *If $F = f^{AB}$ or $F = f^J$ and $\theta^J < \underline{\theta}$, the equilibrium price is p^{AB} everywhere independently on any trade restriction imposed by A and B in period 2.1. If $F = f^J$ and $\theta^J > \underline{\theta}$, instead, the equilibrium price is p^A in A and H , π^B in B .*

Following straight from our discussion, Proposition 2 finds that when all oil contracts go to country J and this has relatively high oil imports, trade is restricted to J and H , and $-J$ falls into autarchy. For all other cases, the proposition finds that the world is fully integrated, and all countries can buy the oil at the free trade price p^{AB} . This latter result has an intuitive explanation. Clearly, when $F = f^J$ and $\theta^J < \underline{\theta}$, the free trade price must realize, as J imposes no restrictions on its agents. When $F = f^{AB}$, the two oil importing countries are awarded a number of contracts that is exactly proportional to their oil imports under free trade. Thus, even if trade restrictions are imposed in period 2.1, these cannot be successful in diverting any oil from its free trade pattern, and the free trade price must realize.

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Proposition 2 implies that, by choosing F in period 1, the government of H is effectively choosing a trade outcome in period 2. Thus, the introduction of long-term contracts provides a micro-foundation for the assumption (made in section 3.2) that H moves first in selecting trade policy.

It should now be clear what the role of oil diplomacy in this model will be. Suppose that the proposed allocation of contracts is f^{AB} . In this case, the value of an oil field is $\frac{\frac{1}{2n}p^{AB}}{2(p^{AB})^{\frac{1}{2}}}$, and companies from A are not willing to outbid their rivals from B to secure the additional $(1-\theta^A)n$ of contracts: if anything, their evaluation of an oil field *falls* to $\frac{\frac{1}{2n}p^A}{2(p^A)^{\frac{1}{2}}}$ when they obtain all contracts, in expectation of future trade restrictions. For the government of A , however, to secure all contracts implies a welfare increase that more than compensates for the companies lower evaluation (when $\theta^A > \underline{\theta}$). Thus, the government and companies of A may want to join effort to expand the country's allocation of contracts beyond their "fair" share θ^A . Two key questions then arise: when is H willing to accommodate this joint effort by A 's (or B 's) government and companies to obtain all contracts? When is this attempt blocked by B 's companies, or by a joint effort of B 's companies and government? To answer these questions, I now move to considering how the choice of F in period 1 is optimally determined by lobbying.

3.4.2 Oil diplomacy and the allocation of oil contracts

In the previous section, I have shown that by appropriately selecting the allocation of contracts in period 1 H can determine the trade outcome in period 2. If it is reasonable to assume that enough time elapses between the two periods (that is, if investment takes enough time to be completed), it

is then worth considering the effect that government myopia may have on trade in this environment. In this section, I consider the possibility that H is myopic, that is it attaches a higher weight to transfers in period 1 than to gains from trade in period 2. I then study how this myopic H is lobbied by (forward looking) A and B when allocating contracts in period 1.¹¹

There may be many reasons why the government of a developing country attaches a higher weight to current transfers than to future oil revenues, not just in absolute terms but relative to the governments of industrialized countries. For example, the government may be credit constrained: this was clearly the case of Angola in 2004, when it accepted a US\$ 2bn loan from China (to be repaid with long-term oil contracts) as a way to escape the stringent transparency conditions of IMF loans (Taylor, 2005; Alden, 2007). It could also capture the current situation of Brazil, whose need to finance the development of fabulous new oil discoveries has prompted it to seek low-cost government loans from China and the US.¹² Alternatively, in weakly institutionalized country the government (or the elite it represents) may be afraid that its tenure in power is precarious, or that current transfers are needed in order to secure it. A mixture of these two motivations may well capture the cases of countries like Nigeria, Zimbabwe, or Sudan.

The objective functions of governments in period 1 are:

¹¹Notice that to add a discount factor would not change any of the results, as long as it is the same for all governments.

¹²See *The Wall Street Journal*, May 18 and August 18 2009.

$$G^H = T^A(F) + T^B(F) + nV(F) - nc + \alpha[W^H(F) - nV(F)] \quad (3.6)$$

$$G^A = -T^A(F) + W^A(F) - nc \quad (3.7)$$

$$G^B = -T^B(F) + W^B(F) - nc \quad (3.8)$$

Having constructed a complete mapping between the allocation of oil contracts and the equilibrium price, all functions have now F as argument. The functions $T^J(\cdot)$ are the transfer offers made by each J to H , conditional on the allocation of contracts. The parameter $\alpha \in [0, 1]$ captures the degree of myopia of H . The function $nV(F)$ captures the upfront payments received by H on each oil contract. It takes value $V(f^{AB}) = \frac{\frac{1}{2n}p^{AB}}{2(p^{AB})^{\frac{1}{2}}}$ and:

$$V(f^J) = \begin{cases} \frac{\frac{1}{2n}p^J}{2(p^J)^{\frac{1}{2}}} & \text{If } \theta^J > \underline{\theta} \\ \frac{\frac{1}{2n}p^{AB}}{2(p^{AB})^{\frac{1}{2}}} & \text{Otherwise} \end{cases}$$

Notice that $nV(F)$ enters positively the payoff of H , while it cancels out in the payoffs of A and B . Because competition between companies anticipates a share of tomorrow's oil revenues to today, a myopic H must attach a higher weight to that share than to the rest of oil revenues. For forward looking A and B , instead, any effect of F on the future value of their oil holdings is perfectly offset by changes in price paid by their investors today.

A Nash equilibrium of period 1 game consists of two transfer schedules $[T^A(\cdot)]^*$ and $[T^B(\cdot)]^*$ and an allocation Z^* such that each player is at its best-response strategy given all other players' strategies. Because Z^* is chosen within a set of three alternatives, this is best modeled as a menu auction. In a seminal paper, Bernheim and Whinston (1987) have suggested that "truthful" Nash equilibria (TNE) are a particularly important subset of all the equilibria of these auctions.¹³ As is standard in the literature on lobbying and trade policy, I only consider this class of equilibria in what follows.

TNE of this game have two very desirable features. The first is that, in any TNE, $[T^J(\cdot)]^*$ must differ from $W(F)$ just by a constant (subject to a non-negativity constraint). Given this, F^* may be defined as:

$$F^* = \arg \max_F \{W^A(F) + W^B(F) + nV(F) + \alpha[W^H(F) - nV(F)] + k\} \quad (3.9)$$

where k is a constant. Thus, H 's problem boils down to choosing the allocation of contracts that maximizes the joint welfare of all players. Second, the transfers paid by A and B in equilibrium (and therefore the equilibrium payoffs of all players) are conveniently and uniquely determined as:¹⁴

¹³This is for two key reasons: first, TNE are essentially the only coalition-proof Nash equilibria of the game (see Bernheim and Whinston, 1987, footnote 12); and second, they are very easy to characterize (as further detailed below).

¹⁴This is not true in general of TNE, but it is true in this game: see Bernheim and Whinston (1987), and the Appendix.

$$\begin{aligned}
[T^A(F^*)]^* &= \arg \max_F \{W^B(F) + nV(F) + \alpha[W^H(F) - nV(F)]\} - \\
&\quad - \{W^B(F^*) + nV(F^*) + \alpha[W^H(F^*) - nV(F^*)]\} \quad (3.10)
\end{aligned}$$

$$\begin{aligned}
[T^B(F^*)]^* &= \arg \max_F \{W^A(F) + nV(F) + \alpha[W^H(F) - nV(F)]\} - \\
&\quad - \{W^A(F^*) + nV(F^*) + \alpha[W^H(F^*) - nV(F^*)]\} \quad (3.11)
\end{aligned}$$

In words: in equilibrium, each importer must pay a transfer that compensates the other importer and H for the higher joint welfare they would have achieved had the allocation of contracts been set to maximize their joint welfare only.

The first question we may want to ask is whether foreign influence may ever lead to an "unbalanced" allocation of contracts. Because we have restricted our possible allocations to just three, this boils down to asking whether H may ever want to allocate all contracts to one country ($F = f^J$). It is shown in the Appendix that:

Proposition 3 *If $\alpha < 1$ and Y is high enough, a sufficient condition for H to allocate all oil contracts to J is that θ^J be close enough to 1. In this case, H receives a positive transfer from J only (offensive transfer). Furthermore, $-J$ is then excluded from trade, and the equilibrium price is p^J in J and H , π^{-J} in $-J$.*

Proposition 3 says that is H is not perfectly forward looking and the total

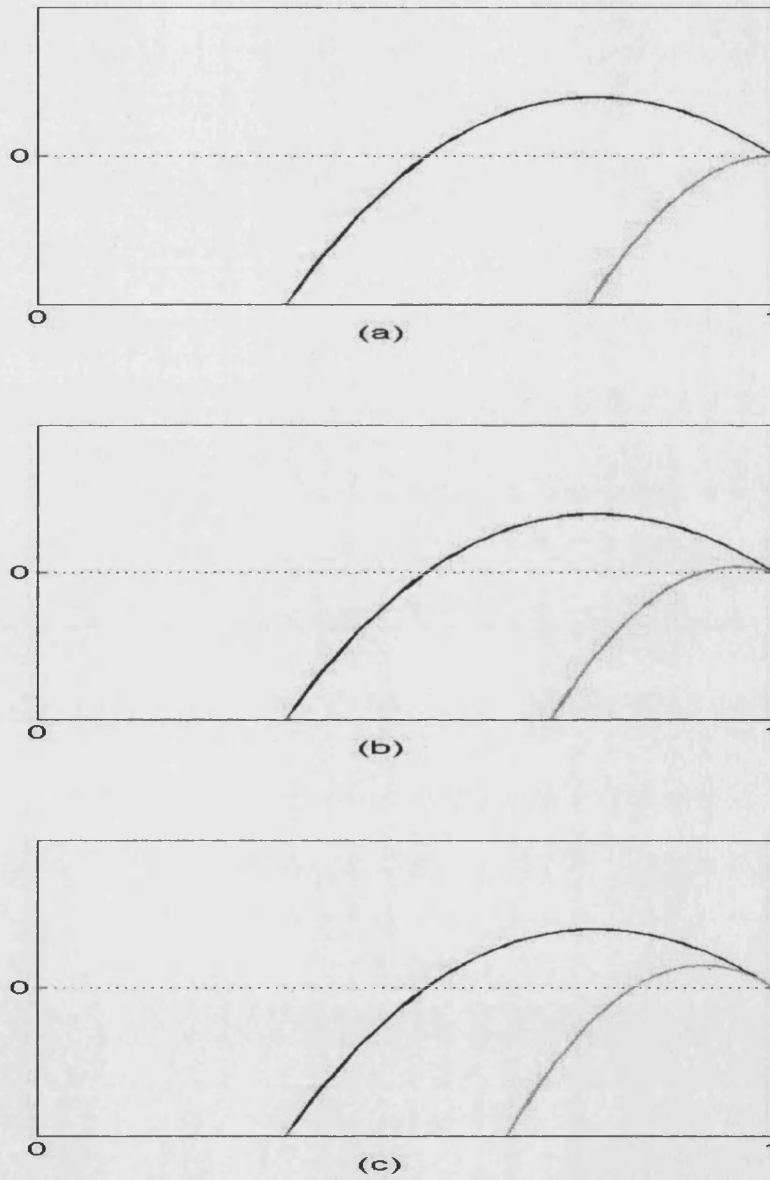


Figure 3.3: Illustration of Proposition 3

Each panel represents $W^A(p^A) - W^A(p^{AB}) + \frac{p^{AB}}{2p_2^{AB}} - \frac{p^A}{2p_2^A}$ and $[G^H(f^A)]^* - [G^H(f^{AB})]^*$ as a function of θ^A , for $Y = 9$. Panel (a): $\alpha = 1$; Panel (b): $\alpha = 0.5$; Panel (c): $\alpha = 0$.

demand for oil is high enough, diplomatic competition results in H allocating all oil contracts to A when this is relatively important as an oil importer. Furthermore, this results in B falling into autarchy. In this case, only A pays a positive transfer to H . Because it succeeds in distorting the pattern of trade to A 's advantage, I call this type of diplomacy *offensive diplomacy*, and the associated transfer an *offensive transfer*.

Figure 3 illustrates the findings of Proposition 3 with an example. The figure plots the gain to the myopic government of H from allocating all oil contracts to A ($G_t^H(f^A) - G_t^H(f^{AB})$) as a function of θ^A , for the case where $Y = 9$. I also report the gain to A from excluding B , when it holds all oil contracts (this is the same as the bottom line in Figure 2.c). While for $\alpha = 1$ the gain to H is always negative, for all $\alpha < 1$ it is strictly positive if θ^A is high enough. Notice that because $\underline{\theta}$ is strictly below 1 for Y high enough, A receives all contracts *and* excludes B from trade if θ^A is close enough to 1.

On reflection, the fact that H may choose a contract allocation that leads to a trade distortion may seem puzzling. Because A and B are both active lobbyists, their combined diplomatic effort could be expected not to distort the equilibrium allocation away from efficiency: after all, what diplomacy does is precisely to make sure that the *joint* welfare of A and B is taken into account when allocating contracts, as evident in (3.9). Notice however that a trade distortion has both a negative and a positive effect on *period 1's* players. On one hand, it creates an allocative inefficiency that decreases the joint welfare of all players. On the other hand, it is a tool for period 1's players to extract welfare from period 2's H . When period 1's H is myopic enough, the second effect may dominate. Obviously, the gain to period 1's

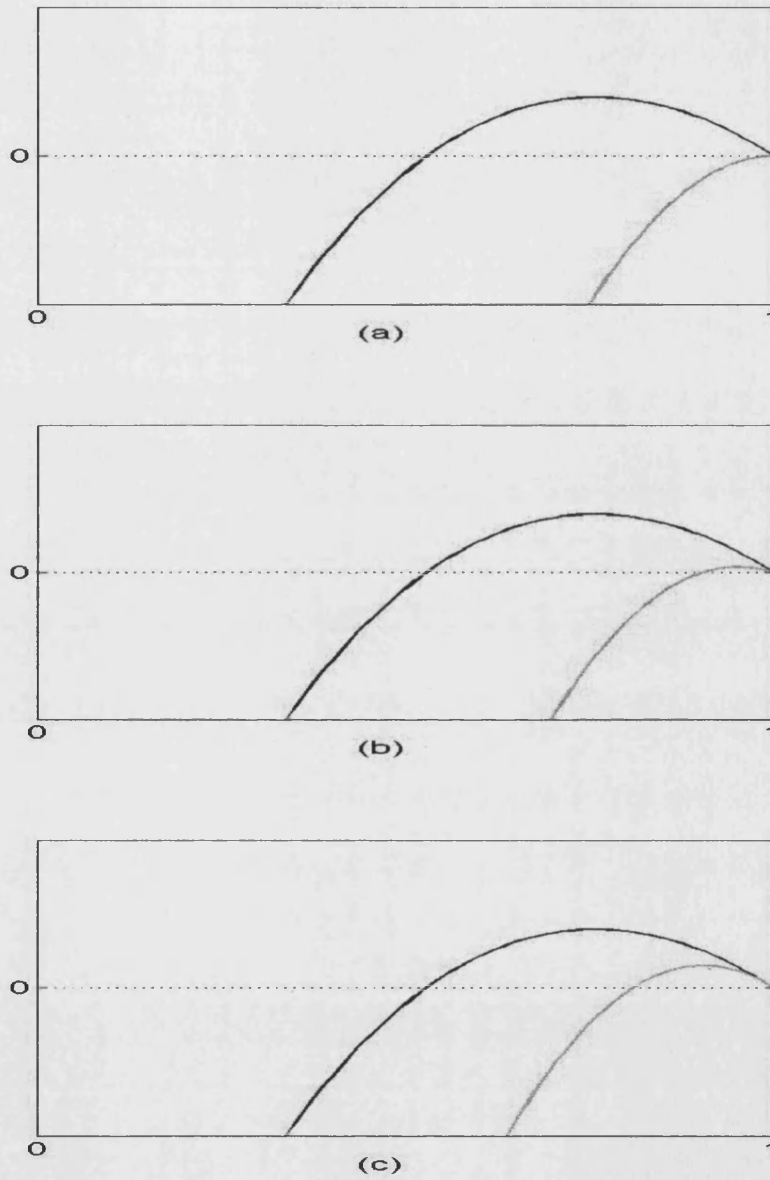


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Each panel represents $W^A(p^A) - W^A(p^{AB}) + \frac{p^{AB}}{2p_2^{AB}} - \frac{p^A}{2p_2^A}$ and $[G^H(f^A)]^* - [G^H(f^{AB})]^*$ as a function of θ^A , for $Y = 9$. Panel (a): $\alpha = 1$; Panel (b): $\alpha = 0.5$; Panel (c): $\alpha = 0$.

players is always very unequally distributed, as it always damages either A or B .

Proposition 3 suggests that when the outsourcing of resource extraction/processing has long-lasting consequences (because contractors develop factors of production that are not easily substitutable or appropriable) and resource-rich government are myopic, diplomacy may be the driver of an unbalanced allocation of contracts. In such an allocation, companies from one or more countries obtain a disproportionate amount of contracts. This may be true even if no country has a diplomatic advantage (i.e., countries are all equally good at exerting diplomatic pressure) as it is driven by the desire of a myopic resource-rich government to “cash in” part of the future value of natural resources. In fact, because of the (at least partial) non appropriability of the initial investment, a clientelistic allocation of resource contracts may offer a commitment advantage over alternative tools usable to obtain foreign support.

We have seen that when J obtains all contracts for itself H receives transfers from J only. Furthermore, we have identified sufficient conditions for J to obtain all contracts. But is any positive transfer ever paid when H chooses a balanced allocation of contracts, that is $F = f^{AB}$? Proposition 4 clarifies this:

Proposition 4 *Suppose that H chooses $F^* = f^{AB}$. Then, there exists a threshold $\bar{\theta} \geq \underline{\theta}$ such that, if $\theta^J > \bar{\theta}$, $-J$ pays a positive transfer in equilibrium (defensive transfer). The threshold $\bar{\theta}$ is strictly lower than 1 iff Y is high enough. In this case, it is strictly decreasing in Y , and converges to $\frac{1+\alpha}{2}$ as*

players is always very unequally distributed, as it always damages either A or B .

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Y goes to infinity.

Proposition 4 identifies sufficient conditions for B to have to pay positive transfers simply to keep the allocation of contracts balanced, that is to keep H open to unrestricted trade. Specifically, it finds that B must pay positive transfers whenever A is important enough as an oil importer. The relevant threshold, $\bar{\theta}$, has the same properties as $\underline{\theta}$, but depends also on α and converges to $\frac{1+\alpha}{2}$ (instead of $\frac{1}{2}$) as total demand grows.

Proposition 4 has an intuitive explanation. Plugging in $F^* = f^{AB}$ in (3.11), it is clear that B has to pay a positive transfer iff the joint welfare of A and H is maximised by f^A . Now consider the extreme case where $\alpha = 0$: in this case, the joint welfare of A and H boils down to $W^A + V$, which we know from Lemma 1 to be maximised by f^A if $\theta^A > \underline{\theta}$: thus, $\bar{\theta} = \underline{\theta}$ in this case. In words, B must pay transfers when H is very myopic and A is very important as an oil importer, as not doing so would certainly lead A and H to agree on $F^* = f^A$. For higher α s, the critical threshold for θ^A above which B must pay transfers increases. Notice that it is perfectly possible that, while B pays transfer to prevent H from allocating all contracts to A , the latter pays *no* transfers at all: from (3.11), whether $[T^A(F^*)]^*$ is positive or not only depends on whether B and H would otherwise agree on $F^* = f^B$, which does not need to be the case.

Figure 4 looks again at our example for the case in which $Y = 9$. From Figure 3, I report the gain to H from allocating all contracts to A and the gain to A from excluding B ; the new line represents the gain to A and H from excluding B . Notice that this (just as the gain to H from allocating all

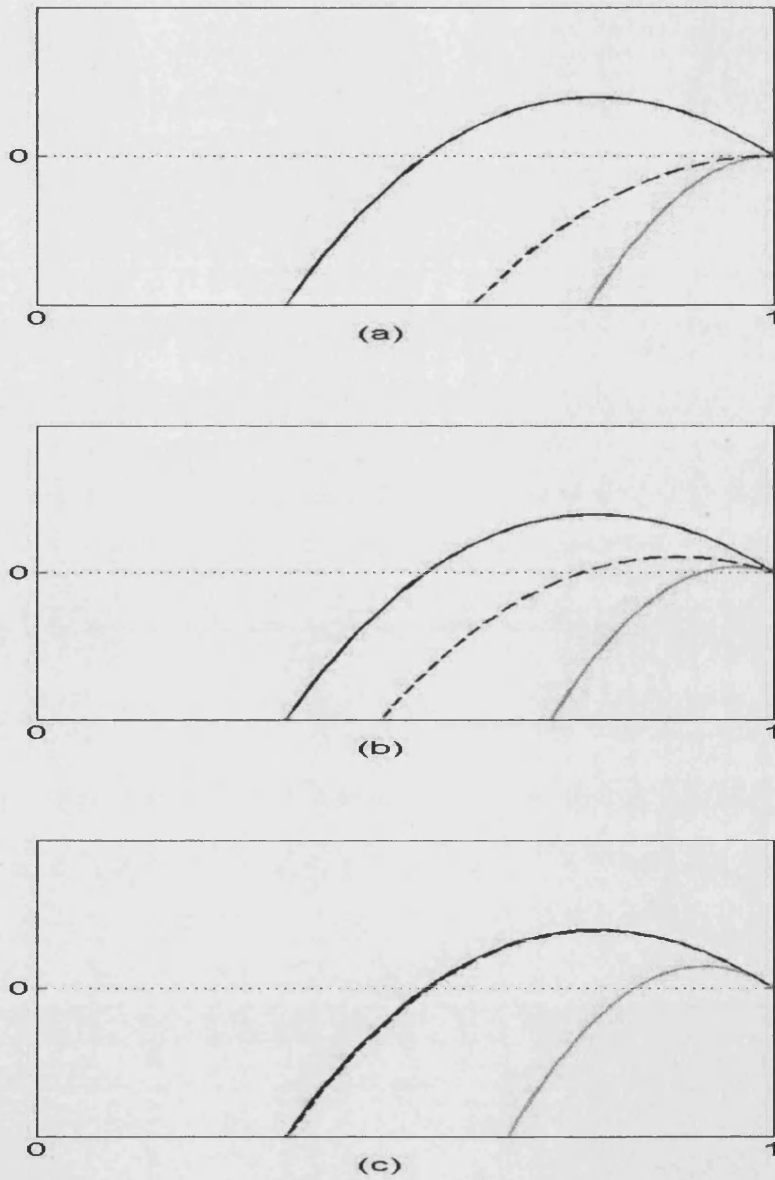


Figure 3.4: Illustration of Proposition 4

The figure reproduces the three panels of Figure 3. The dashed line represents the gain to A and H from excluding B .

contracts to A) shifts up as α decreases, converging to the gain to A from excluding B for $\alpha = 0$.

The main insight from Proposition 4 is that not all observed diplomatic effort must result in a distortion in the allocation of contracts: in many cases, this may simply be aimed at keeping an exporting country open for national companies. Notice that this confirms the role played by governments over and above that of companies: when $\theta^A > \bar{\theta}$. While B 's companies can prevent A 's companies from obtaining more than θ^A of the contracts when $\theta^A < \bar{\theta}$, they cannot possibly do so when $\theta^A < \bar{\theta}$, and the government of A joins effort with them.

I conclude by illustrating in Figure 5 the transfers paid as a function of θ^A . The figure reports the two inferior lines in Figure 4 for the case where $\alpha = 0$, alongside their counterparts for country B . The thick line represents $[T^A(F^*)]^*$ (top panel) and $[T^B(F^*)]^*$ (bottom panel). Country A pays a positive offensive transfer when θ^A is very high, obtaining all contracts in return. In this case, B is excluded from trade and pays no transfer. For intermediate levels of θ^A , the allocation of contracts is balanced, but B has to pay a positive defensive transfer when θ^A is still high enough. When θ^A is low, the opposite happens: it is now A that has to pay a defensive transfer to keep the allocation of contracts balanced, unless θ^A is very low - in which case B pays an offensive transfer and gets all of the contracts.

But what are the effects of offensive and defensive diplomacy on the welfare of all countries? I answer this question in the next section.

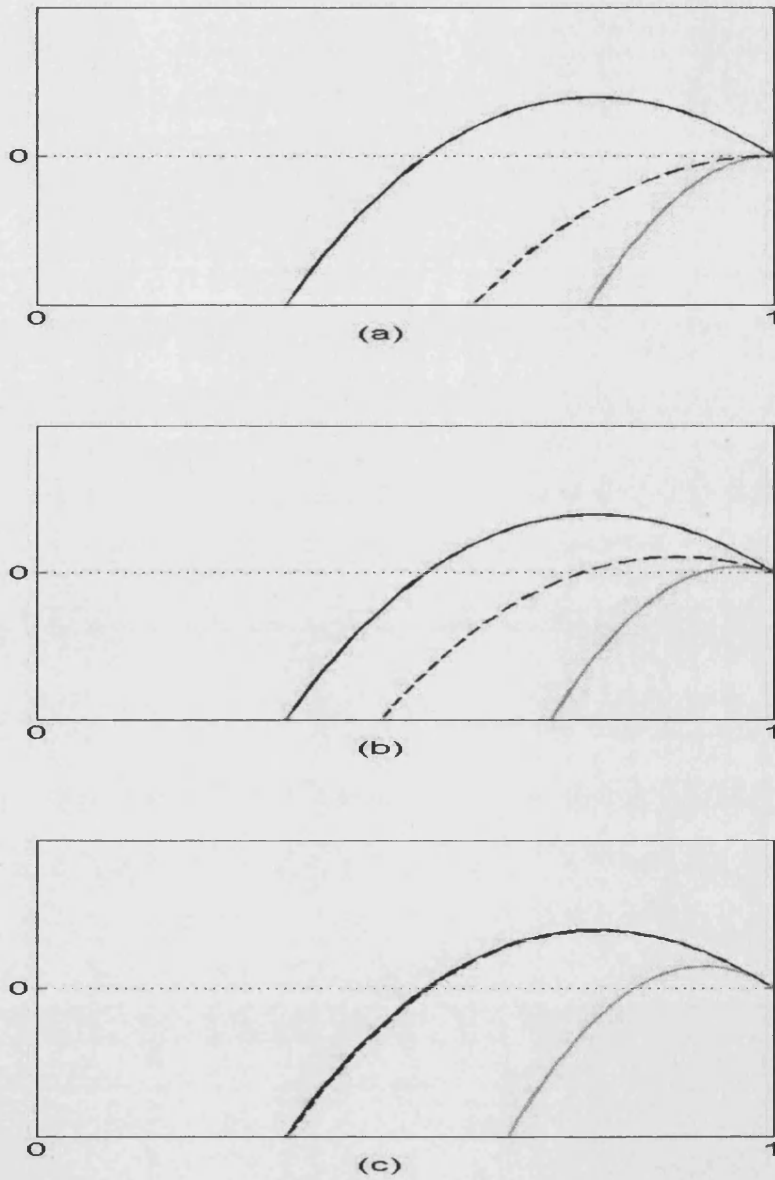


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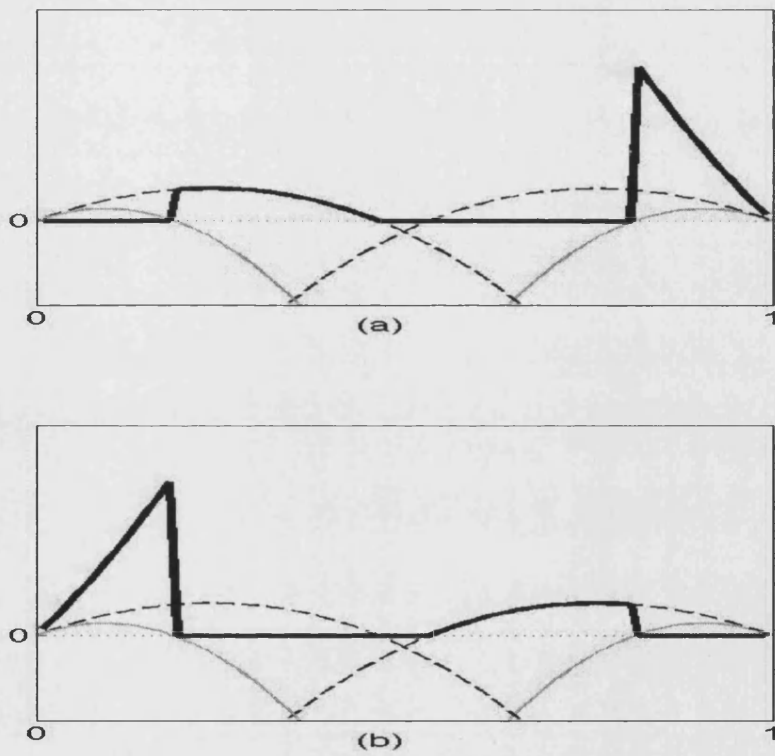


Figure 3.5: Aid paid

The figure reproduces Figure 4.c (but I have removed the top continuous line), adding as a thick line $[T^A(F^*)]^*$ (Panel a) and $[T^B(F^*)]^*$ (Panel b).

3.4.3 Welfare

I now study the impact of foreign influence on welfare. To do that, I compare the welfare of all countries in the equilibrium with transfers (section 4.2) and in the equilibrium without transfers (section 3.1). As a measure of a country's welfare, I use the utilitarian planner's welfare function. This corresponds to G^A and G^B for A and B , to G^H with $\alpha = 1$ for H (equations 3.7-3.8).

Three different cases need to be considered. First, despite the fact that A and B have a diplomatic capacity, they may optimally choose not to use it. This is the case when no government is able to induce H to a clientelistic allocation of contracts - not even if its competitor doesn't do anything to contrast this. From our previous discussion, this is the case when the resource rich government is perfectly forward looking ($\alpha = 1$), but may also be the case when A and B are similarly important as oil importers. Clearly, foreign influence has no welfare effect in this case.

Second, it is possible that A and/or B use their diplomatic capacity in a purely defensive way, that is without leading to any distortion in the allocation of oil contracts. This must be welfare-decreasing for any country who pays positive transfers (in that it bears an extra cost for no extra benefit), while it is always welfare-increasing for H , who receives positive transfers at no cost.¹⁵

Finally, there is the case where either A or B prevails, obtains all contracts and excludes the other country from trade. In this case foreign influence is clearly welfare-decreasing for the excluded country, but what happens to the

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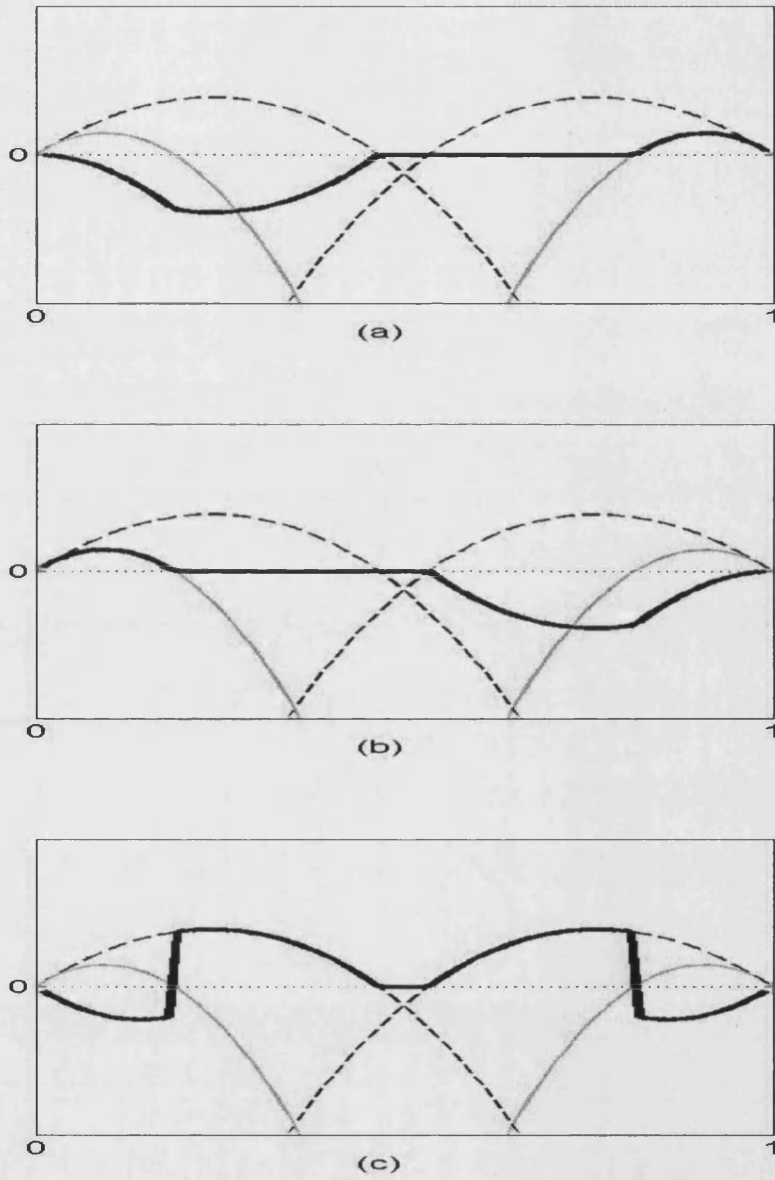


Figure 3.6: Welfare implications

The figure reproduces Figure 4.c (but I have removed the top continuous line), adding as a thick line the welfare gain to A (Panel a), B (Panel b) and H (Panel c).

country who prevails and to H ? This is clarified in the following proposition:

Proposition 5 *Defensive diplomacy is always welfare decreasing for any country who pays positive transfers, welfare increasing for H . Offensive diplomacy by country J is always welfare decreasing for $-J$; it is welfare-decreasing for H and welfare-increasing for J if the next best alternative to f^J is f^{AB} .*

The intuition for the last part of Proposition 5 goes as follows. When the next best alternative to f^J is f^{AB} , A must compensate H for the welfare increase that it and B would obtain by choosing f^{AB} . But because f^A maximises the joint welfare of all countries, this compensation must be lower than the welfare gain to A from having f^A rather than f^{AB} . As for H , that this type of diplomacy is welfare-decreasing for this country follows from the fact that it is welfare-increasing for A , as it is jointly optimal for H and A to open up to B when $\alpha = 1$. In other words, offensive diplomacy is unambiguously good for the country that exerts it when competition is not too strong, as offensive diplomacy by the other country is not feasible. In this case, offensive diplomacy is also unambiguously bad for H .

Figure 6 uses our usual example to illustrate (notice that this case happens to satisfy the sufficient conditions indicated in Proposition 5):

Panel *a* (*b*) shows that A (B) loses out when it pays defensive transfers, or when its competitor obtains all contracts. On the contrary, it reports a net gain when it pays an offensive transfer. Panel *c* shows that that H always gains from defensive transfers, while it loses out from offensive transfers.

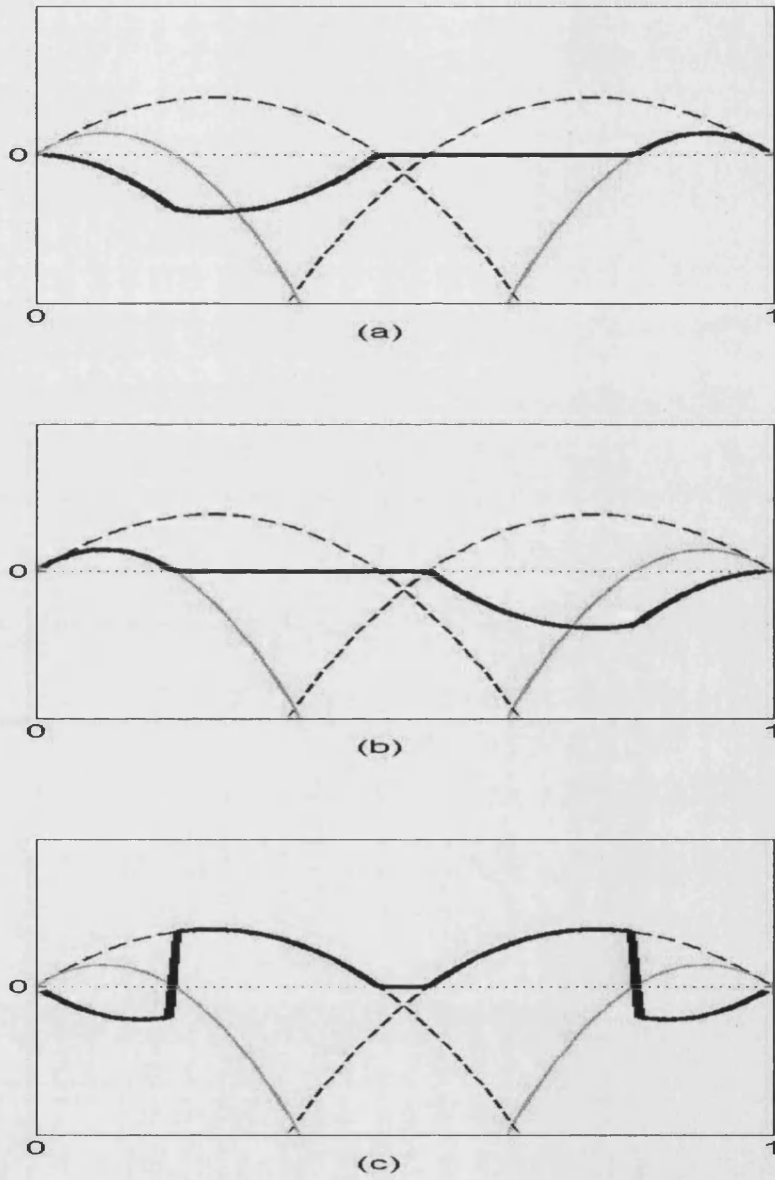


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3.5 Discussion

It is now worth discussing a number of issues about my modeling choices, and discuss some of the possible alternatives.

One first point is that I am assuming that all countries are large enough to affect the international price of oil. While this may be realistic for the most influential oil importing countries (think of China, or the US) and some large oil exporters (Saudi Arabia, Russia), it certainly does not capture the case of many oil-exporting countries where oil diplomacy seems to be important (e.g. Angola, Sudan, Kazakhstan). My one-exporter model would seem not to apply to the case of these countries: even if one of them accepted to trade with China only (say), this would not affect the price at which China and the US import oil. However the model presented above can be easily modified to account for this fact, by assuming that H is actually made up of n independent parts, each of which controlling one oil field, and A and B simultaneously lobby the n governments of these countries. While I do not present this here, it is possible to show that most of the results presented above remained unchanged: most notably, J still gets all of the oil contracts when $\alpha < 1$, Y high enough and θ^J close enough to 1. With this extension, the model becomes more complicated but also allows for studying the effect of different ξ and α across countries.

Two additional issues regards the way in which I have structured the oil industry. First, the technology displays constant returns to scale *across oil fields*.¹⁶ In reality, companies gradually build up their proprietary technology

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and know-how. Second, all oil companies are private in the model, and there is a number of them engaging in price-competition within the boundary of each country. This structure is hardly observable in oil exporting countries, where the oil is normally in the hand of a single, state-owned company. As for oil importing countries, it probably suits the case of the US ¹⁷ but not that of China, where a few oil companies are all controlled by the government.¹⁸

Some of these issues may be addressed more easily than others. If increasing returns to scale resulted in larger contractors being able to create more disruption to production (a higher ξ), then there would be an additional rationale for governments to intervene and help companies grow bigger. The main issue with companies market power in oil importing countries is that this could undermine the rationale for government intervention, as a cartel of national companies would be able to exercise the same market power on exporting countries as its parent government. Notice however that, as long as these companies are private, their *objective* would not coincide with that of the governments, in that they would not capture the positive effect of restricted trade on consumers. Thus, if these companies were left alone in their bidding, they would suffer from a competitive disadvantage vis-a-vis their government-supported competitors. This point may also be true for public companies whose incentives are not perfectly aligned with those of the government, as could be the case of China.

As for the market structure of exporting countries, I have already mentioned the fact that the model could be extended to have n small countries,

¹⁷Notice however that the worry of collusion among the major national companies has been felt by US policy very frequently during 20th century, see Venn (1983).

¹⁸This is despite the fact that some of them are partially private.

each of which containing one oil company. Formally, none of the results would change if this company was government-owned, as this would have the same profit maximizing objective it has in the current model. However the fact that the national government would then be involved in bargaining takes me to another key issue that needs to be addressed.

In the current model, when all oil contracts have been allocated to companies from *A* (say), the government of *A* may be able to set trade policy and so affect the bargaining between private companies. In principle, one could allow for the possibility that the *A* and *H* bargain over the trade policy they both set: after all, just as *A* prohibits its companies to trade with *B* could *H* prohibit its companies to trade with *A*! By how the game is structured (with *H* moving first) I am effectively removing this possibility and giving all the bargaining power in this inter-government game to *A*. Thus, the model is more a model of competition between *A* and *B* than a model of the relative bargaining power of *A* and *B*, on one hand, and *H* on the other. It could be very interesting to endogeneize the latter element as well: in the model with *n* small producers, for example, the superior bargaining power from *A* and *B* could come from their relative size, but could be decreasing in the extent to which the many small *H*s can form a bargaining coalition. This could help explain why the pattern of consumer competition underwent a structural break in the 1970s and 1980s, when OPEC became so important.

3.6 Conclusion

Historical evidence suggests that the diplomatic effort of oil importing countries matters for the allocation of oil contracts in developing countries. In this paper, I have presented an economic theory of energy security that rationalizes this role of governments, and studies its likely impact on the pattern of FDI, trade and welfare.

The model shows that it may be optimal for a country whose companies control enough overseas oil contracts to “hoard” oil. In particular, the model predicts that this will happen when the country involved has a high relative need for imported oil, and the international price of oil is high enough. This optimal oil hoarding behavior provides for an important role of diplomacy in shaping the allocation of oil contracts: because private companies do not capture this benefit of controlling a large number of oil contracts, their bid may effectively be complemented by the lobbying activity of their parent government.

I have studied the allocation of oil contracts in an oil-exporting country when companies *and* governments from two oil-importing countries compete among themselves. When oil contracts entrust buyers with developing an important factor for the production of oil, and this factor is hardly appropriable and substitutable, the allocation of contracts has long-lasting consequences for the capacity of the oil-exporting country to set its trade policy. I interact this long-term decision with the possibility that the government of the oil-exporting country is myopic, and study the consequences of lobbying for the allocation of oil contracts.

The model suggests that when oil-exporting governments are very myopic,

oil diplomacy may lead to distortions in the allocation of contracts and in the pattern of trade even if no country has a better diplomatic capacity than any others. This is because long-term contracts allow exporting governments to commit to the future trade policy preferred by importing governments, and a myopic government may want to “cash in” on this by exchanging contracts for current transfers. I have studied the welfare implication of this “offensive diplomacy”, and found sufficient conditions such that it is welfare-increasing for the country who exerts it, welfare-decreasing for the exporting country.

The model also highlights that when it does not succeed in shaping the allocation of contracts, diplomacy may still be needed to keep the exporting country open to international competition. This “defensive” diplomacy is a waist from in the oil-importing countries’ point of view, as it is costly and yields nothing more than the competitive equilibrium. Not surprisingly, defensive diplomacy is always welfare decreasing for them, while it is welfare increasing for the oil exporting country. The latter result suggests that there is room for international co-ordination to discourage diplomatic transfers. This could be Pareto-improving if transfers have undesirable consequences for the domestic politics of the exporting country (e.g. they keep in power a corrupt government). Even if transfers have a positive impact on H (e.g. development assistance), international co-ordination may be desirable if defensive diplomacy distort the allocation of aid away from countries who are more in need.

Overall, these results suggest that whenever oil-exporting governments attach a disproportionate weight to current transfers - for example because they are credit constrained, or with a fragile political systems - oil diplomacy

may flourish and have real consequences on the pattern of FDI and trade. This may be both an opportunity and a cost to countries that exert it. Insofar as recipient governments can use diplomatic support to remain in power, this may also have important consequences for the political economy of resource rich countries.

3.7 Appendix

Properties of $W^J(p)$

By inspecting the first and second derivatives of a more generic function $W^J(a, p)$ (where a indicates that J has a units of the natural resource):

$$\frac{\partial W^J(a, p)}{\partial p} = \frac{ap - y^J}{4p^{\frac{3}{2}}}$$

$$\frac{\partial^2 W^J(a, p)}{\partial p^2} = \frac{3y^J - ap}{8p^{\frac{5}{2}}}$$

it is clear that this reaches a global minimum at $p = \frac{y^J}{a}$, and is monotonically increasing (decreasing) in p when $p > \frac{y^J}{a}$ ($p < \frac{y^J}{a}$). ■

Proof of Lemma 1

With $\xi = 1$, (3.5) boils down to:

$$\frac{1.5p^A + y^A}{2(p^A)^{\frac{1}{2}}} - \frac{1.5p^{AB} + y^A}{2(p^{AB})^{\frac{1}{2}}} > 0 \quad (3.12)$$

Because $p^A < p^{AB}$, by the properties of $W^A(1.5, p)$ (see above) a sufficient condition for (3.12) to be satisfied is $\frac{y^A}{1.5} > p^{AB}$. Plugging in (3.3) and rearranging:

$$\begin{aligned} \theta^A &> \frac{\frac{1}{2} \frac{1+Y}{3} - \underline{y}(Y)}{\bar{y}(Y) - \underline{y}(Y)} \\ &= \frac{1+Y}{2Y-4} \end{aligned}$$

We can now define $\underline{\theta}$ as:

$$\underline{\theta} \equiv \min\left[1, \frac{1+Y}{2Y-4}\right]$$

Clearly, $\underline{\theta}$ is strictly lower than 1 and strictly decreasing in Y iff $Y > 5$; furthermore, it converges to $\frac{1}{2}$ as Y goes to infinity. ■

Proof of Proposition 2

To simplify the notation, denote $\underline{y}(Y)$ and $\bar{y}(Y)$ by simply \underline{y} and \bar{y} . In the free trade equilibrium, country J receives a share θ^J of H 's exports:

$$\begin{aligned}
m_x^J &= \frac{p^{AB} + y^J}{2p^{AB}} - 1 \\
&= \frac{y^J - y}{2y} \\
&= \theta^J \frac{\bar{y} - y}{2y}
\end{aligned}$$

where:

$$\begin{aligned}
\frac{\bar{y} - y}{2y} &= 1 - \frac{y + 1}{2y} \\
&= -m_x^H
\end{aligned}$$

We can now show that, if $F^* = f^{AB}$, the equilibrium price must be p^{AB} everywhere, and independently on the actions of A and B . First, this must clearly be the case if neither A nor B impose restrictions on their companies, as all agents are exactly as unconstrained as under free trade. Next, suppose that both A and B impose restrictions. This means that θ^A of the oil in H is earmarked to be used only in A or H , while $\theta^B = 1 - \theta^A$ is earmarked to be used only in B or in H . Clearly, the two types of oil cannot have different prices, as users in H can arbitrate between the two and there is enough of the two type to satisfy the demand of the respective importer at the only possible equilibrium single price (p^{AB}). Finally, suppose only J imposes restrictions. Thus, θ^J of the oil is earmarked to be consumed only in J or in H , while $\theta^{-J} = 1 - \theta^J$ can be used everywhere. Again, the two types

cannot have different prices because H can arbitrage and there is enough oil that is allowed to flow to $-J$.

Next, I show that if $F^* = f^J$ and $\theta > \theta^J$, country $-J$ is excluded from trade. Clearly, because $\theta > \theta^J$ J imposes to its agents not to trade with $-J$, and this results in none of the oil of J or H being sold to $-J$ (remember that the constraint in (3.4) is never binding for $\xi = 1$). But can any y be imported from $-J$ to H ? Clearly not: while users of y in H would like to import y from $-J$ (as it is cheaper there) they cannot do so because the oil that they would need for the exchange cannot be sold to $-J$. This shows that no trade can take place between $-J$ and either of the other two countries. ■

Uniqueness of payoffs and transfers

Denote by \mathbf{G} the vector of payoffs of A and B (G^A and G^B). Using Theorem 2 in Bernheim and Whinston (1987), I find that the equilibrium \mathbf{G} must belong to the set:

$$E_{\Gamma}(F) = \left\{ \mathbf{G} \mid \mathbf{G} \in \Pi_{\Gamma}(F) \text{ and } \nexists \mathbf{G}' \in \Pi_{\Gamma}(F), \mathbf{G}' \geq \mathbf{G} \right\}$$

where $\Pi_{\Gamma}(F)$ is defined as:

$$\Pi_{\Gamma}(F) \equiv \left\{ \mathbf{G} \mid \left\{ \begin{array}{l} G^A \leq W^{ABH}(F) - \max_F W^{BH}(F) \\ G^B \leq W^{ABH}(F) - \max_F W^{AH}(F) \\ G^A + G^B \leq W^{ABH}(Z) - \max_F \tilde{W}^H(F) \end{array} \right. \right\} \quad (3.13)$$

and $\tilde{W}^H(F) \equiv V(F) + \alpha[W^H(F) - V(F)]$, $W^{JH}(F) \equiv W^J(F) + \tilde{W}^H(F)$ and $W^{ABH}(F) \equiv W^A(F) + W^B(F) + \tilde{W}^H(F)$.

We begin by showing that $\arg \max_F \tilde{W}^H(F) = f^{AB}$. We can write:

$$\begin{aligned}\tilde{W}^H(F) &= V(F) + \alpha[W^H(F) - V(F)] \\ &= \frac{(0.5 + 0.5\alpha)p + \alpha}{2(p)^{\frac{1}{2}}}\end{aligned}$$

But because $p^{AB} > p^A, p^B$, from the properties of a generic $W(a, p)$ we then know that a sufficient condition for $\tilde{W}^H(f^{AB}) \geq \tilde{W}^H(f^A), \tilde{W}^H(f^B)$ is:

$$\frac{\alpha}{0.5 + 0.5\alpha} < p^A, p^B$$

which is always satisfied for $Y > 2$, as the LHS is never greater than 1.

Next, we show that for all possible F^* , the set $E_\Gamma(F^*)$ is a singleton. My strategy is to show that if the first two constraints in (3.13) holds with equality, then the third constraint holds. Because $E_\Gamma(F^*)$ is the Pareto frontier of (3.13), this is sufficient to prove that $E_\Gamma(F^*)$ is a singleton and the equilibrium payoffs of A and B are indicated by the first two constraints in (3.13) when they hold with equality.

1. $F^* = f^{AB}$. There are then three possible subcases:

- $\arg \max_F W^{AH}(F) = \arg \max_F W^{BH}(F) = f^{AB}$. In this case, it is immediately evident that if the first two constraints in (3.13) hold, the third constraint holds as well;
- $\arg \max_F W^{AH}(F) = f^A, \arg \max_F W^{BH}(F) = f^{AB}(F)$. In this case, if the first two constraints in (3.13) holds we can write:

$$\begin{aligned}
G^A + G^B &= W^A(f^{AB}) + W^{ABH}(f^{AB}) - W^{AH}(f^A) \\
&\leq W^A(f^{AB}) + W^{ABH}(f^{AB}) - W^{AH}(f^{AB}) \\
&= W^A(f^{AB}) + W^B(f^{AB})
\end{aligned}$$

implying that the third constraint is satisfied as well;

- $\arg \max_F W^{AH}(F) = f^{AB}$, $\arg \max_F W^{BH}(F) = f^B$. Proof symmetric to the previous subcase;
- $\arg \max_F W^{AH}(F) = f^A$, $\arg \max_F W^{BH}(F) = f^B$. In this case:

$$\begin{aligned}
G^A + G^B &= W^{ABH}(f^{AB}) - W^{BH}(f^B) + W^{ABH}(f^{AB}) - W^{AH}(f^A) \\
&\leq W^{ABH}(f^{AB}) - W^{BH}(f^{AB}) + W^{ABH}(f^{AB}) - W^{AH}(f^{AB}) \\
&= W^A(f^{AB}) + W^B(f^{AB})
\end{aligned}$$

2. $F^* = f^A$. In this case there are two subcases:

- $\arg \max_F W^{BH}(F) = f^{AB}$. If the first two constraints in (3.13) hold:

$$\begin{aligned}
G^A + G^B &= W^{ABH}(f^A) - W^{BH}(f^{AB}) + W^B(f^A) \\
&\leq W^{ABH}(f^A) - W^{BH}(f^{AB}) + W^B(f^{AB}) \\
&= W^{ABH}(f^A) - W^H(f^{AB})
\end{aligned}$$

Implying that the third constraint holds as well.

- $\arg \max_F W^{BH}(F) = f^B$. Again, if the two constraints in (3.13)

hold:

$$\begin{aligned}
G^A + G^B &= W^{ABH}(f^A) - W^{BH}(f^B) + W^B(f^A) \\
&\leq W^{ABH}(f^A) - W^{BH}(f^{AB}) + W^B(f^A) \\
&\leq W^{ABH}(f^A) - W^{BH}(f^{AB}) + W^B(f^{AB}) \\
&= W^{ABH}(f^A) - W^H(f^{AB})
\end{aligned}$$

and the third constraints again holds.

3. $F^* = f^B$: proof symmetric to the previous case. ■

Proof of Proposition 3

We want to show that, if θ^A is close enough to 1, it is optimal for H to choose f^A over f^{AB} (a symmetric argument holds for θ^B close enough to 1). Suppose that $Y > 5$. Then, we know from the proof of Lemma 1 and from Proposition 2 that for θ^A close enough to 1, f^A results in B being excluded from trade. Thus, what we want to show is that (rearranging from (3.9)):

$$\begin{aligned}
W^A(1.5, p^A) - W^A(1.5, p^{AB}) + W^B(1, \pi^B) - W^B(1, p^{AB}) + \\
+ \alpha[W^H(0.5, p^A) - W^H(0.5, p^{AB})] > 0
\end{aligned}$$

If $\theta^A = 1$, the LHS of the above inequality is exactly zero, as $p^A = p^{AB} = \pi^B$. I proceed to show that, for $\alpha < 1$, the derivative of the LHS with respect

to y^A evaluated at $\theta^A = 1$ is negative: because of continuity, this establishes that the LHS must be strictly positive for some values of θ^A immediately to the left of 1.

Because p^{AB} does not change as we move θ^A (for a given Y), our task simplifies to having to show that:

$$\begin{aligned} \frac{\partial[W^A(1.5, p^A) + W^B(1, \pi^B) + \alpha W^H(0.5, p^A)]}{\partial y^A} &= \frac{\partial \left[\frac{(1.5 + \alpha 0.5)p^A + \alpha + y^A}{2(p^A)^{\frac{1}{2}}} + (y^B)^{\frac{1}{2}} \right]}{\partial y^A} \\ &= \frac{\partial \left[\frac{(1.5 + \alpha 0.5)\frac{1+y^A}{2} + \alpha + y^A}{2\left(\frac{1+y^A}{2}\right)^{\frac{1}{2}}} + (Y - y^A)^{\frac{1}{2}} \right]}{\partial y^A} \\ &> 0 \end{aligned}$$

Working out the derivative and plugging in $y^A = \bar{y} = \frac{2Y-1}{3}$ we find that a condition for the above inequality to hold is:

$$Y(1 - \alpha) > 5(1 - \alpha)$$

Which is true whenever $\alpha < 1$. ■

Proof of Proposition 4

Take $\theta^A > \underline{\theta}$ (a symmetric proof can be constructed for $\theta^B > \underline{\theta}$), and suppose $F^* = f^{AB}$. In this case, we know from the proof of uniqueness of B 's payoff (see above also for a description of the notation) that:

$$T^B(f^{AB}) = W^{AH}(f^A) - W^{AH}(f^{AB})$$

Re-arranging the RHS of the above condition, we now want to find sufficient conditions such that:

$$\frac{(1.5 + 0.5\alpha)p^A + y^A + \alpha}{2(p^A)^{\frac{1}{2}}} - \frac{(1.5 + 0.5\alpha)p^{AB} + y^A + \alpha}{2(p^{AB})^{\frac{1}{2}}} > 0 \quad (3.14)$$

From this point onwards, the proof follow closely that of Lemma 1. Because $p^A < p^{AB}$, a sufficient condition for (3.14) is $p^{AB} < \frac{y^A + \alpha}{1.5 + 0.5\alpha}$. Plugging in (3.3), and rearranging, we find:

$$\frac{\frac{1+Y}{3}(1.5 + 0.5\alpha) - \alpha - \underline{y}}{\bar{y} - \underline{y}} < \theta^A$$

Which simplifies to:

$$\theta^A > \frac{1}{2} \frac{1 - 5\alpha + Y(1 - \alpha)}{Y - 2}$$

Now defining:

$$\bar{\theta} \equiv \min \left[1, \frac{1}{2} \frac{1 - 5\alpha + Y(1 - \alpha)}{Y - 2} \right]$$

It is easy to see that $\bar{\theta}$ is strictly decreasing in Y and strictly below 1 for $Y > 5$. Furthermore, it is strictly greater than $\underline{\theta}$ whenever $Y > 5$, and converging to $\frac{1+\alpha}{2}$ as Y that goes to infinity. ■

Proof of Proposition 5

That defensive diplomacy is always welfare decreasing for any country who pays positive transfers is clear from the fact that transfers are paid in exchange for nothing, as the price remains the same as in the world without diplomacy. As for offensive diplomacy by country A (say), this must be welfare decreasing for country B , who ends up facing a higher equilibrium price than in the world without diplomacy ($\pi^B > p^{AB}$). To see that it must be welfare increasing for A when the choice that maximises the joint welfare of H and B is f^{AB} , just look at the unique payoff of A :

$$\begin{aligned} G^A &= W^{ABH}(f^A) - W^{BH}(f^{AB}) \\ &\geq W^{ABH}(f^{AB}) - W^{BH}(f^AB) \\ &= W^A(f^{AB}) \end{aligned}$$

Where the inequality comes from the fact that, by assumption, f^A maximises W^{ABH} . Finally, offensive diplomacy by A must decrease W^H in this case, as it decreases $W^A + W^H$. To see this latter point, notice that:

$$W^A(p) + W^H(p) = \frac{2p + y^A + 1}{2(p)^{\frac{1}{2}}}$$

reaches a global minimum at $p = \frac{1+y^A}{2} \equiv p^A$. ■

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