# Decolonization: the Role of Changing World Factor Endowments

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# Abstract

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.

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# 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.

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[1] An 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.

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. 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. First, I study the decadence of the colonial power of Spain in 1590-1750, its temporary revival in 1750-1810, and its final collapse after 1810. I then study the process which led Britain to concede self-government to her settler colonies of Canada and Australia in mid 19th century. In both 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 coun-

tries 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   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

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[2]E.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

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 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

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Indochina.

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 American 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 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

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[3]During 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.

[4]Data 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.

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, were 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 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

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[5]In 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.

[6]There 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.

[7]Famous 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.

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 alimenting 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 maximised 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).[8]

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).

# 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.

## 3.1   Economic model

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[8]In a companion paper (Bonfatti, 2007) I am reviewing such evidence, as well as trying to put these theories in a more formal framework.

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.[9]

### 3.1.1 Environment

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

$$
\begin{aligned}
L^H &= 1 & K^H &= \overline{K} \\
L^E &= 1 & K^E &= \overline{K}\left(1 + \delta\right) \\
L^F &= 1 & K^F &= \overline{K}\left(1 + \kappa\right)
\end{aligned}
$$

where $\kappa, \delta > 0$: in words, I am assuming that both $F$ and $E$ are more capital intensive than $H$. All citizens own exactly one unit of labour, and citizens 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:

$$
\begin{aligned}
x &= L \\
y &= K
\end{aligned} \tag{1}
$$

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

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

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[9] One should think of $F$ as representing the colonizer *and the rest of her empire*, and of $E$ as the *rest of the world*.

[10] Notice that I will assume $\kappa$ and $\delta$ 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.

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:

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

$$v^J \left( p^J \right) = \frac{p^J + K^J}{2 \left( p^J \right)^{\frac{1}{2}}} \tag{3}$$

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.

### 3.1.2 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:

$$p_A^J = K^J \tag{4}$$

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

Using equation 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.

$$v_A^J \equiv v^J \left( K^J \right) \tag{5}$$

### 3.1.3 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:

$$p^H_{\{H,F,\cdot\}} = \overline{K}\left(1 + \tfrac{\kappa}{2}\right)$$
$$p^F_{\{H,F,\cdot\}} = \overline{K}\left(1 + \tfrac{\kappa}{2}\right)$$
$$p^E_{\{H,F,\cdot\}} = p^E_A$$
(6)

Equilibrium prices in all other cases are found similarly:

$$
\begin{array}{ll}
p^H_{\{\cdot,F,E\}} = p^H_A & p^H_{\{H,\cdot,E\}} = \overline{K}\left(1 + \tfrac{\delta}{2}\right) \\[4pt]
p^F_{\{\cdot,F,E\}} = \overline{K}\left(1 + \tfrac{\kappa+\delta}{2}\right) & p^F_{\{H,\cdot,E\}} = p^F_A \\[4pt]
p^E_{\{\cdot,F,E\}} = \overline{K}\left(1 + \tfrac{\kappa+\delta}{2}\right) & p^E_{\{H,\cdot,E\}} = \overline{K}\left(1 + \tfrac{\delta}{2}\right)
\end{array}
$$
(7)
$$p^H_{\{H,F,E\}} = \overline{K}\left(1 + \tfrac{\kappa+\delta}{3}\right)$$
$$p^F_{\{H,F,E\}} = \overline{K}\left(1 + \tfrac{\kappa+\delta}{3}\right)$$
$$p^E_{\{H,F,E\}} = \overline{K}\left(1 + \tfrac{\kappa+\delta}{3}\right)$$

Given the prices in 6 and 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. Here, I will consider only the case in which $\delta \in (0, \kappa)$; the case in which $\delta \in (\kappa, \infty)$ is in the Appendix. For $H$ and $F$, if $\delta \in \left(0, \tfrac{\kappa}{2}\right)$ we have:[12]

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

If, instead, $\delta \in \left(\tfrac{\kappa}{2}, \kappa\right)$:

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

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

Note that when $E$ is relatively labour intensive ($\delta \in \left(0, \frac{\kappa}{2}\right)$), $H$ 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 ($\delta \in \left(\frac{\kappa}{2}, \kappa\right)$), the opposite is true.

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

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

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

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

If $E$ is labour intensive ($\delta \in (0, \delta^*(\kappa))$) her citizens prefers to have a capital intensive trade partner like $F$. If she is capital intensive, instead ($\delta \in (\delta^*(\kappa), \kappa)$), they prefers to have a labour intensive partner like $H$. In no circumstance, when $\delta \in (0, \kappa)$, will $E$ prefer to trade with both $H$ and $F$ at the same time.[13] In the Appendix, I show that $\delta^*(\kappa) \in \left(0, \frac{\kappa}{2}\right)$ and $\frac{\partial \delta^*(\kappa)}{\partial \kappa} > 0$ for any $\kappa$.

## 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 $F$.[14] In other words, $F$ has *de jure* political power in $H$.

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[13]This is not always true for $\delta > \kappa$ (see the Appendix).

[14]Throughout 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.

### 3.2.1  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

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

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 6 and 7, we can express the equilibrium price ratios as functions of $\mathbf{T}$, $\kappa$ and $\delta$ only, $p^J(\mathbf{T}|\kappa, \delta)$. The gains from trade for country $J$, can then be written as:

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

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:

$$u < v_A^H$$

### 3.2.2 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.[15] 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 following:

1. Nature choses $b$;

2. $F$ choses 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);

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[15]It would be an natural extension to model trade policy as a continuous decision - with import tariffs ranging from 0 (free trade) to $\infty$ (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.

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.

## 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 $J$:

$$V^H(\mathbf{T}, A|\kappa, \delta) \;=\; v_A^H + \Pi^H(\mathbf{T}|\kappa, \delta) - A + \phi B + \theta b \tag{8}$$

$$V^F(\mathbf{T}, A|\kappa, \delta) \;=\; v_A^F + \Pi^F(\mathbf{T}|\kappa, \delta) + A \tag{9}$$

$$V^E(\mathbf{T}, A|\kappa, \delta) \;=\; v_A^E + \Pi^E(\mathbf{T}|\kappa, \delta) \tag{10}$$

Where $\phi$ ($\theta$) 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

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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 shown[16] that:

**Proposition 1** *After the colony stages a revolution, the type of trade equilibrium depends on the endowments parameters ($\kappa$ and $\delta$) 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 $\{\cdot, F, E\}$: 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 $\{H, \cdot, E\}$: thus, the colonizer falls into autarchy:*

- *If $\delta \in (2\kappa, \infty)$, that is the rest of the world is very capital intensive, the trade equilibrium is of the type $\{H, F, E\}$: thus, all countries trade.*

The threshold $\delta^*(\kappa)$ is defined in Section 3.1.3 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, $A(R) = 0$.*

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 8, revolution is profitable if and only if:

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[16]Proofs of all proposition are in the Appendix.

$$\Pi^H(R, \kappa, \delta) + b > \Pi^H(C, \kappa, \delta) - A(C) \qquad (11)$$

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.[17] 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 11, we will say that there is a *revolutionary constraint* if and only if:

$$b > -\left[v_A^H - u\right] - \Pi^H(R, \kappa, \delta) \equiv \underline{b} \qquad (12)$$

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:

**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 $p^J = \overline{K}\left(1 + \frac{\kappa+\delta}{3}\right) \forall J$ and $\forall \kappa, \delta$.*

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[17]Autarchy utility drops from the inequality, as it appears on both sides.

It is important to note that, while under revolution the trade equilibrium depends on $\delta$ and $\kappa$ (Proposition 1) under colonialism it does not. Thus, the disruption in trade following to a revolution will depend on $\delta$ and $\kappa$ 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 11 holds as an equality:[18]

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

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

Inspecting equation 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:

$$b > \Pi^H(C, \kappa, \delta) - \Pi^H(R, \kappa, \delta) \equiv \bar{b} \tag{13}$$

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

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

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 12 and 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 $\delta$ and $\kappa$, the endowment parameters.

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### 3.3.1 Analysis

To make the exposition simpler, I define

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

and study how $\underline{b}$ and $\bar{b}$ depend on $\frac{\delta}{\gamma}$, *keeping $\gamma$ constant.* The measure $\frac{\delta}{\gamma}$, which takes value in $[0, 1]$, 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 1 means just the opposite. Here, I am fixing the total volume of the colony's trade, and study how the her political state is influenced by the trade pattern captured by $\frac{\delta}{\gamma}$.

Figure 1 gives a qualitative representation of $\underline{b}$ and $\bar{b}$ as functions of $\frac{\delta}{\gamma}$:
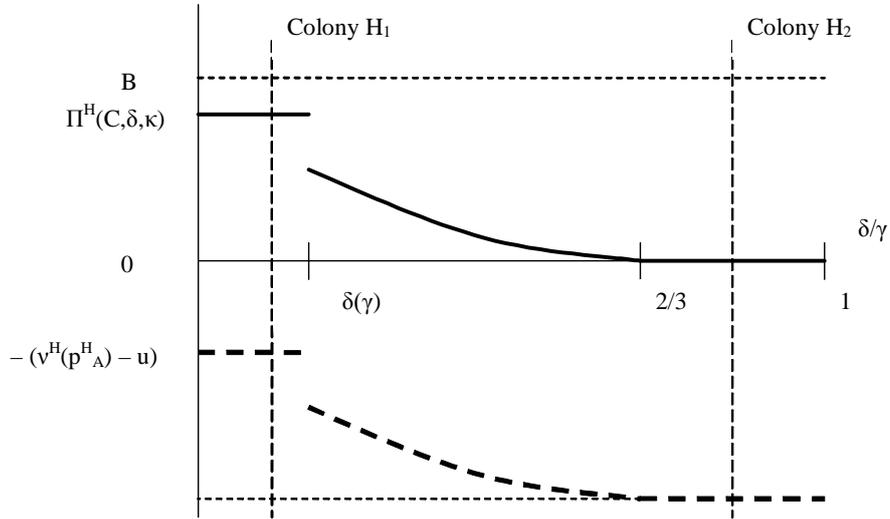


Figure 1

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 $\delta < \delta^*(\kappa)$,

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where $\delta^{*}(\kappa)$ was defined in Section 3.1.3. The solid, thick line represents $\bar{b}$, whereas the dashed line starting at $-\left(v^{H}\left(p_{A}^{H}\right)-u\right)$ 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 low (taking value in $[0, \delta(\gamma)]$), $\bar{b}$ and $\underline{b}$ are constant and valued at $-\left[v_{A}^{H}-u\right]$ and $\Pi^{H}(C, \delta, \kappa)$ respectively. This is the case in which the rest of the world is so labour intensive that it competes with the colony in selling labour-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 unconstrained as long as $b$ is smaller than $-\left[v_{A}^{H}-u\right]$. As for independence, this is obtained when $b$ is positive and greater than $\Pi^{H}(C, \kappa, \delta)$.

When $\frac{\delta}{\gamma}$ takes intermediate values (in the range $\left[\delta(\gamma), \frac{2}{3}\right]$), $\underline{b}$ 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 enough to compete 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 $\Pi^{H}(C, \kappa, \delta) - \Pi^{H}(R, \kappa, \delta)$.

Finally, when $\frac{\delta}{\gamma} \in \left[\frac{2}{3}, 1\right]$ the two thresholds are again constant and valued at $-\left[v_{A}^{H} + \Pi^{H}(C, \delta, \kappa) - u\right]$ and 0, respectively. Here the rest of the world is so capital intensive, that the colony and the mother country compete with each other in selling labour-intensive goods to the rest of the world. Proposition 1 tells us that sanctions have no effect in this case: this is because $E$ are happy to trade with both $H$ and $F$ at the same time. Thus, not only revolution would not drive $H$ into autarchy, but it would leave their terms of trade unaffected ($\Pi^{H}(R, \kappa, \delta) = \Pi^{H}(C, \kappa, \delta)$): sanctions are not ineffective, and $F$ has no economic power. Given that the revolutionnaires can appropriate all resources extracted by $F$ under unconstrained colonialism, this can remain unconstrained only as long as $b$ is smaller than $v_{A}^{H} + \Pi^{H}(C, \delta, \kappa) - u$, and has to be abandoned as soon as $b$ is positive.

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 $b$.[19]

Note that, if $F$ could not commit to punish rebel colonies by trade sanctions, $\underline{b}$ and $\bar{b}$ would be constant in $\frac{\delta}{\gamma}$ (and equal to $-\left[v_A^H + \Pi^H\left(C, \delta, \kappa\right) - u\right]$ and $0$, respectively). This highlights the central importance of that assumption for the results of the paper.

# 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.

One could view decolonization's happening in three main waves.[20] 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 colonies[21] peacefully obtained the right to govern themselves within the British Empire. Finally, most remaining Middle

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[19] We 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 $b$.

[20] Not considering the more isolated cases of the United States (1776) and Haiti (1804).

[21] Canada, Australia, New Zealand and South Africa; slightly later came South Rhodesia and Malta.

Eastern, Asian and African colonies obtained their independence in a 40-year period beginning around 1930. I concentrate on the first two waves, and in particular on the case the Spanish Empire (Section 5.1) and of Canada and Australia (Section 5.2).

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. 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.

## 4.1 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, $\delta$ was growing much higher than $\kappa$. 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 pattern 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.[22] 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

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[22]Trade was done by two large, military-excorted fleets, which sailed yearly (or less frequently) from Cadiz to Veracruz (Mexico) and Cartegena/Portobello (Colombia/Panama).

remitted to Spain or to other parts of the empire[23] 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 production - 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.[24] 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 or revenues began to be remitted to Spain (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.[25] In terms of the model,

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[23]Some 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).

[24]For 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).

[25]After 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

*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.[26]

### Analysis

We have seen how the level of extraction that Spain imposed on her 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 $\delta$ relative to $\kappa$).

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,

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(Walker, 1979, p. 14).

[26]This 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.

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.[27]

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 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.

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[27]Of 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)

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 $\delta$ was increasing rapidly), Spanish policy was not adjusting to take this into account ($A$ remained very high).

## 4.2 British settler colonies and self-government

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.[28] In the *crown colonies,* the British retained all legislative, executive and judiciary power;[29] in all other colonies, some type of representative institution was in place.[30] 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* politi-

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[28]Protectorates are not included in this categorisation.

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

[30]Typically, 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.

cal 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 the popularly elected part of the legislation* (be it the legislative council or the assembly)[31]. 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 colonies[32] (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.[33] 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 should be refined to control for settlers.[34] 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.

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[31]The 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.

[32]By 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).

[33]For 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.

[34]This 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.

### 4.2.1 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, $\delta$ increased relative to $\kappa$. 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 Ontario[35] 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.[36] 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.[37] This dualistic economic structure con-

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[35] Before 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.

[36] In both provinces, the size of the indigenous population was insignificant.

[37] The 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.

tributed 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 foodstuff, 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.[38] 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 trading[39], 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 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 chose the members of the two councils, and had many legislative tools at his disposal to weaken the power of the assembly.

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[38]Not 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.

[39]The 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).

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, were 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 tariff[40] 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 use to sell it to large British land speculators first. On all of these issues, the Canadian merchants 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; Creigthon, 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 con-

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[40]Ever 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.

duct a much more compact opposition to the authoritarian temptations of the governor. On the other hand, this opposition was corresponded by increasing 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.[41]

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.[42] Already in the early 1840s, substantial amounts

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[41]Britain 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.

[42]Up until the mid 1830s, domestic supply of Maine (the large reserves of the West

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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).[43]

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 consumers 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.

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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.

[43]In 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).

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.

### 4.2.2 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, $\delta$ increased relative to $\kappa$.

### 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.[44] Initially, the two colonies were meant to accommodate British convicts; already at the end of 18th century, however, free settlers began 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 on an option; in 1824, therefore, imports from all sources were liberalized.[45] 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 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

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

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

second largest source of British imports.[46] 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.[47] 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 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

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[46]There, 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).

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

immigration.[48] 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 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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[48]The colonists wanted immigration as the pastoral boom had led to a labour shortage.

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.
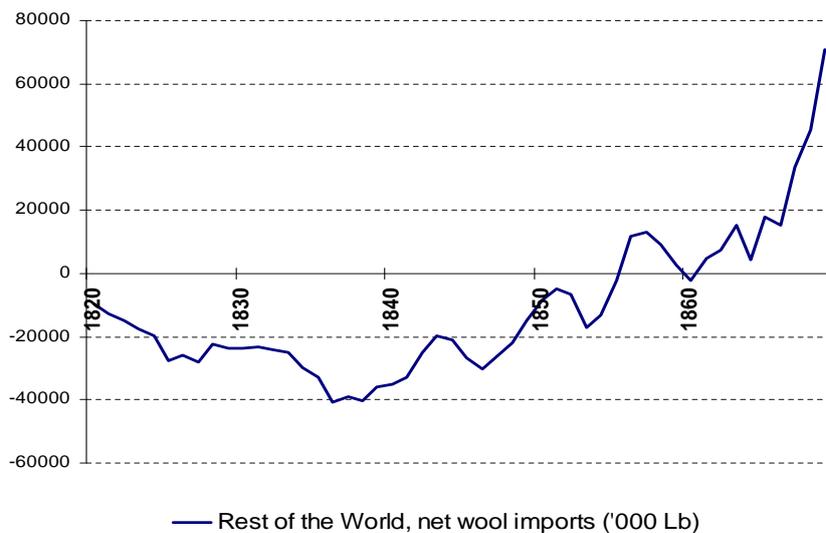


Figure 2

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 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.

# 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 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.

# 6 Appendix

**Trade preferences when** $\delta \in (\kappa, \infty)$ - The starting point is to realize that $\frac{\kappa+\delta}{3} > \frac{\delta}{2} \Leftrightarrow \delta \in (\kappa, 2\kappa)$. Thus, for $H$ and $E$, if $\delta \in (\kappa, 2\kappa)$ we have:

$$
\begin{array}{cccccccc}
\{\cdot, F, E\} & \prec^H & \{H, F, \cdot\} & \prec^H & \{H, \cdot, E\} & \prec^H & \{H, F, E\} \\
\{H, F, \cdot\} & \prec^E & \{\cdot, F, E\} & \prec^E & \{H, F, E\} & \prec^E & \{H, \cdot, E\}
\end{array}
$$

If, instead, $\delta \in (2\kappa, \infty)$:

$$
\begin{array}{cccccccc}
\{\cdot, F, E\} & \prec^H & \{\cdot, H, F\} & \prec^H & \{H, F, E\} & \prec^H & \{H, \cdot, E\} \\
\{H, F, \cdot\} & \prec^E & \{\cdot, F, E\} & \prec^E & \{H, \cdot, E\} & \prec^E & \{H, F, W\}
\end{array}
$$

For country $F$, there exist a $\delta^{**}(\kappa) \in (2\kappa, \infty)$ such that if $\delta \in (\kappa, \delta^{**}(\kappa))$:

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

If, instead, $\delta \in (\delta^{**}(\kappa), \infty)$:

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

The properties of $\delta^{**}(\kappa)$ can be inferred by analogy from the properties of $\delta^*(\kappa)$, to which I now turn.

**Properties of** $\delta^*(\kappa)$ - Using equations 3 and 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 $\partial \frac{\delta^*(\kappa)}{\kappa}/\partial \kappa$ 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 $\delta \in \left(0, \frac{\kappa}{2}\right)$, $\{H, \cdot, E\}$ when $\delta \in \left(\frac{\kappa}{2}, 2\kappa\right)$ and $\{H, F, E\}$ when $\delta \in (2\kappa, \infty)$.∎

**Proof of Proposition 3 -** Let us focus, first, on the case of colonialism. Given that $F$ sets trade policy for $H$, there are only two players in this game. The key is to realize that $F$ is the residual claimant to $H$'s wealth, and as such chooses trade policy to maximise the joint utility $\Psi$:

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

To prove that the no equilibrium exists outside of the class $\{H, F, E\}$, note first that no equilibrium can leave either $H$ or $F$ in autarchy. This is because trade between $H$ and $F$ would increase both $v^H \left[p^H \left(\mathbf{T}|\kappa, \delta\right)\right]$ and $v^F \left[p^F \left(\mathbf{T}|\kappa, \delta\right)\right]$. Next, we can show that $\{H, F, \cdot\}$ is not an equilibrium, as opening up to $E$ always increases $\Psi$. Use equation 3 to write $\Psi$ as a function of a common price in $\{H, F, \cdot\}$:

$$\begin{aligned}
\Psi\left(p\right) &= \frac{p + \overline{K}}{2p^{\frac{1}{2}}} + \frac{p + \overline{K}\left(1 + \kappa\right)}{2p^{\frac{1}{2}}} \\
&= p^{\frac{1}{2}} + \overline{K}\left(1 + \frac{\kappa}{2}\right)p^{-\frac{1}{2}}
\end{aligned}$$

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

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

A visual analysis of $\frac{\partial \Psi(p)}{\partial p}$ immediately shows that $\Psi\left(p\right)$ achieves a minimum at $p = \overline{K}\left(1 + \frac{\kappa}{2}\right)$. Thus, trading with $E$ is profitable whenever $\delta \neq \frac{\kappa}{2}$. Within the class $\{H, F, E\}$, it is easy to see that "all countries trading with all countries" is an equilibrium. This is because the only way $E$ can change the equilibrium price is by retreating into autarchy, and no alternative trade outcome is strictly better from $F$'s point of view.

Next, let's focus on the case of independence. We distinguish two cases, $\delta \in (0, \kappa)$ and $\delta \in (\kappa, \infty)$. In the first case, no equilibrium can leave either $H$ or $F$ in autarchy: this is because the two would always agree to trade

with each other, since this would make them both better off. But note that $\{H, F, \cdot\}$ would not be an equilibrium either: this is because either $F$ (if $\delta \in \left(0, \frac{\kappa}{2}\right)$) or $H$ (if $\delta \in \left(\frac{\kappa}{2}, \kappa\right)$) would deviate and bilaterally admit $E$ into trade. Similarly, in the second case, no equilibrium could leave either $H$ or $E$ in autarchy (they would agree to trade with each other) nor would $\{H, \cdot, E\}$ be an equilibrium.

Again, "all countries trading with all countries" is an equilibrium. The only price-changing deviation available to individual countries is to retire into autarchy, which is never optimal to chose. As for two-country coalitions, note that there exist none that could agree on excluding the third country from trade, as this would always damage one of its members. ∎

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