

Energy, Motorization, and the End of Empires

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Abstract

Current research in international political economy mostly takes for granted the state-based structure of international relations, without asking how that structure came to be and how it might change in the future. Yet empires dominated the landscape until World War II, after which they collapsed and largely vanished. Why did this occur, and why did it happen when it did? I theorize that their demise was a result of important changes in the political economy of industrialized states. Most of the world's imperial powers crossed a threshold of motorization and energy consumption nearly simultaneously during the period 1945-1973, leading to three major changes: the balance of economic winners and losers from imperialism changed to the detriment of empires' supporters; the net payoff from territorial conquest declined; and changes in the type of foreign direct investment reduced the need for colonial control. These changes in the economic fundamentals supported an ideational shift in favor of norms of sovereignty and territorial integrity. A political economy-based explanation also helps to account for some of the variation in the timing of decolonization, both across metropolises and across types of colonies. I test these claims with newly-recovered historical data, primarily from the British empire.

Introduction

Between 1945 and 1973, imperial powers granted independence to over seventy colonies, a rate of decolonization far exceeding any previous or subsequent period.¹ Why did this occur, and why did it happen when it did? Cyclical theories offer an explanation for the rise and fall of individual empires over the centuries, but they do not explain the sudden demise of multiple empires at once, virtually eliminating empire as a polity type.² The demise of empires completed a long transition by which the sovereign state triumphed as the principal unit of world politics. Some scholars attribute the triumph of the sovereign state to the changes associated with the Peace of Westphalia in 1648, but this ignores the fact that empires continued to exist and even increased in size and prominence through the 18th and 19th centuries.³

I argue that the end of empire was caused, in part, by the shift towards motorization and modern energy consumption, which occurred simultaneously in many metropolises in the period 1945-1973. Motorization is a stage of development that occurs when engines powered by fossil fuels or electricity become the predominant basis for transportation and physical economic output, creating substitutes for traditional power sources such as human and animal muscle. Motorization is distinct from industrialization, a stage of development in which fossil fuels provides industrial heat but only rudimentary forms of agricultural and industrial power.⁴ The transition to motorization is historically unique, differing from previous stages of technological development because once energy could substitute for land and labor in a significant way, it created a new way to generate wealth without the need for conquest or colonization. Crucially, most of the imperial metropolises motorized in the period 1945-1973, including the United Kingdom, Belgium, Holland, and France. This transition facilitated decolonization in each case. Notably, the United States was the first major power to turn its back on imperialism, not long after it motorized c.1903 – though not before its own imperial period just prior to motorization.⁵

Motorization, which I also call energy modernization, contributed to the demise of empires via three causal mechanisms: (i) it shifted the balance within the metropole between economic winners and losers from imperialism; (ii) the net benefits of imperialism declined, because the relative productivity of using labor and resources for military purposes shrank as motorization proceeded; and (iii) it led to

¹ Philpott 2001: 155

² Gilpin 1981; Kennedy 1987; Gartzke and Rohner 2011

³ Spruyt 1994

⁴ Buzan and Lawson 2012; Bayly 2004; Morris 2011

⁵ Roughly 1865-1914 – see Narizny 2007; Frieden 1989

changes in the nature of foreign direct investment that made colonialism less advantageous. These three mechanisms contributed to the global wave of decolonization after 1945. Naturally, other factors shaped the speed and nature of the end of empire in each case.⁶ Yet from the long-view of history, empire came to an abrupt end in a period of rapid motorization.

Most accounts of decolonization point to a change in ideas and norms following World War II.⁷ Clearly this change occurred and contributed to decolonization. Yet an explanation resting only on normative changes is not wholly satisfying, because it leaves open deeper questions such as why the norms were accepted, and why at that particular moment.⁸ Understanding material changes in the political economy of metropolises sheds new light on the proximate cause (normative change) as well as the outcome (decolonization). The fact that most imperial metropolises almost simultaneously motorized in the period 1945-1973 created material incentives for an end to empire, as anti-colonial norms took root. This is not to deny that norms had independent causal force. Motorization was not the only cause of decolonization, but including it is superior to a purely normative explanation.

Current research in international political economy mostly takes for granted the state-based structure of international relations, without asking how that structure came to be and how it might change in the future. Viewing the collapse of overseas empires through the lens of motorization generates new insights, summarized in Table 1, that challenge or deepen several existing bodies of research. The first is a large body of work on empires and decolonization.⁹ Miles Kahler and Michael Doyle provide seminal accounts of imperial politics; this paper builds on their work, as well as political economy research by Jeffrey Frieden and others.¹⁰ My argument adds depth by showing how motorization can help explain cross-national variation, both among metropolises and among colonies. Further, in contrast to many cyclical theories of empire, which view imperial expansion and contraction as an enduring feature of international relations, my work calls attention to the near-simultaneous collapse of empires globally and helps explain it.¹¹ More broadly, my argument contributes to new research at the intersection of political economy and international security.¹² It has important implications for the rise of potentially imperialistic states like China, which is just now motorizing.

⁶ Kahler 1984; Doyle 1986; Philpott 2001; Crawford 2002

⁷ Philpott 2001; Crawford 2002

⁸ Gartzke and Rohner 2011: 530

⁹ Nexon and Wright 2007; Gartzke and Rohner 2011; Blanken 2011; Dietz 2012

¹⁰ Kahler 1984; Doyle 1986; Narizny 2007; Frieden 1989, 1994

¹¹ Gilpin 1981; Kennedy 1987; Gartzke and Rohner 2011. Abernethy 2002 is a partial exception, in that it provides a deep theoretical perspective on the post-1945 decolonization period.

¹² Buzan and Lawson 2012; Poast 2006; Brooks 2007; Gartzke and Weisiger 2014

This paper also offers an important corrective to recent research on energy and international relations, most of which emphasizes energy as a potential source of war and conflict.¹³ Energy consumption is necessary for motorization, which in turn alters the net benefits of imperialism. While at times access to energy has motivated colonialism, I argue that a motorized economy based on modern energy generates disincentives to imperialism, thereby reducing the desire of great powers to fight for territory. In short, energy can contribute to peace. Highlighting the role of energy is also fruitful theoretically. Energy plays specific roles in economic development that have not received much attention to date and that are significant for a state's incentives for or against imperialism. For instance, rising energy consumption as a result of motorization helps explain variation in the timing of decolonization, because some colonies had valuable oil reserves that the imperial powers were reluctant to give up.

The huge scope of this inquiry means that it can offer only a partial account. It focuses on developing the theory and probing its plausibility using newly available data, primary source documents, and other evidence from the British Empire. To a lesser degree, it also investigates other empires. The breadth of scope is necessary to account for a historically unique event – never before have empires disappeared from the world. The political economy of motorization advances our understanding of imperialism and decolonization considerably.

Puzzle and Research Context

I use Doyle's definition: "Empires are relationships of political control imposed by some political societies over the effective sovereignty of other political societies."¹⁴ The term metropole indicates the polity controlling the empire (e.g., Britain), and I use the term colony to indicate all protectorates, mandates, and formal colonies that did not have internationally recognized sovereignty of their own. I use the term informal influence to indicate situations where a state has formal sovereignty, such as Saudi Arabia or Iraq after 1932, but is nonetheless guided and constrained by a foreign power. Following World War II, European empires declined so dramatically that we can refer to them as having ended, then or shortly thereafter.¹⁵

Various forms of international inequality and coercion continue to exist, and some would argue that imperialism continues today under different guises.¹⁶ Using the term empire to refer to the current

¹³ Glaser 2013; Ross 2012; Kelanic 2012; Fuhrman 2012; Horowitz 2009; Colgan 2013

¹⁴ Doyle 1986: 19

¹⁵ Some empires continued to exist but with only a tiny fraction of their former colonial holdings.

¹⁶ Lutz, 2009

practices of major powers can be useful in some contexts, but it is misleading for the purposes of this paper because it diminishes the significance of decolonization and the achievement of state independence by former colonies. Following Doyle and others, I find it useful to define empires in a way that distinguishes them from other forms of hierarchy, coercion, and international sovereign contracting.¹⁷

This paper focuses on empires in which the metropole developed a motorized economy. Pre-motorized empires such as the Austro-Hungarian and Ottoman empire are not included in the scope; they rose and fell like scores of empires before them, but did not contribute to the global collapse of empires following 1945. The German, Japanese, and Italian empires built just prior to World War II are interesting cases because they certainly had motorized militaries, but did not have motorized domestic economies in the way that the postwar metropolises did, as measured by their energy consumption per capita. In any event, the collapse of the Axis empires is easily explained: they were defeated. This paper focuses instead on those empires that were decolonized without having been conquered in war.

The decline of empires and the triumph of the sovereign state as the principal unit of world politics has been called the most important contextual change in the last thousand years.¹⁸ Scholars have offered various explanations for this fundamental shift. Hendrik Spruyt, for instance, offers perhaps the leading econocentric explanation, arguing that the state was more efficient than alternative forms of polity, such as city-states and city leagues.¹⁹ Similarly, Tilly and others argue that the military revolution in the early modern period in Europe (c.1560-1660) made it necessary for polities to have sufficient size to provide the financial and administrative capability to raise armies using firearms.²⁰ The central problem with these explanations is that they do not deal with empires. Spruyt's work, for instance, essentially ends in 1648, after which he claims that the sovereign state was on its way to victory as the only viable form of political organization. The argument ignores the fact that colonial empires were actually increasing in size and prominence through the 18th and 19th centuries, and did not decline as a major form of political organization until the 20th century.

Other scholars, more focused on decolonization after 1945, emphasize the role of ideas, norms and nationalist movements in political transformation.²¹ Daniel Philpott, for instance, argues that ideas were central to decolonization, even as he acknowledges that economic and military factors played a

¹⁷ Cooley and Spruyt 2009; Lake 2011; Nexon and Wright 2007

¹⁸ Ruggie 1983

¹⁹ Spruyt 1994; note that Spruyt 2000 is considerably more ideocentric.

²⁰ Tilly 1992: 15; Downing 1992

²¹ Philpott 2001; Crawford 2002; Abernethy 2002

role.²² One limitation with ideational explanations, noted earlier, is that they do not account for why nationalist ideas caused decolonization to occur in the post-1945 period even though ideas of nationalism and sovereignty had been discussed for a very long time, at least since the French Revolution.²³ As Gartzke and Rohner put it, normative arguments “face a heavy burden in explaining the persistent impotence of anti-colonialist ideas, as well as their sudden salience. Rapid decolonization, in a context of dramatic economic change, suggests the value of economic incentives in bolstering [normative] arguments.”²⁴ Normative change might have occurred after 1945, at least in part, because of material changes in the metropole that reduced the economic incentives for imperialism.²⁵

A third potential explanation for the collapse of empires after WWII was the high cost of the war for Britain and other metropolises.²⁶ There is no doubt that the war was costly, but that does not mean that policymakers decided that their best response was to jettison the empire. In fact, there is considerable evidence that policymakers took the opposite view: that an empire was crucial to rebuilding the metropole’s economy.²⁷ John Darwin shows that British policymakers were desperate for foodstuffs and raw materials that would not have to be paid for with scarce dollars, so they turned to the economies of their colonial empire and tried to swiftly develop them.²⁸ Primary documents show that the British cabinet viewed the costs of empire as being offset by the economic benefits as late as the 1950s.²⁹ Thus the costs of the war are not, on their own, an explanation for the subsequent collapse of empires.

To what extent did economic profits generate incentives for imperialism – and conversely, did declining profits motivate decolonization? The question has been much debated.³⁰ The first wave of scholarship on imperialism, led by Lenin, Hobson, and others, argued that empire was indeed driven by

²² Philpott 2001: 154

²³ Crawford (2002: 7-8) points out that normative rhetoric over the ethics of colonialism extends back to at least 1550, when the humanity of New World Indians was debated.

²⁴ Gartzke and Rohner 2011: 530

²⁵ Ideas still play an independent causal role: modifying, conditioning, and potentially even overriding material incentives. Still, economic conditions have a way of forcing themselves upon leaders’ ideas sooner or later.

²⁶ See Darwin 2006: 43-45. This is part of the explanation Abernethy (2002: 40-41) provides, but his theoretical explanation is considerably richer.

²⁷ Louis 1977

²⁸ Darwin 2006: 45

²⁹ See, for instance, CAB 134/1556, CPC(57)30 “Future constitutional development in the colonies: memorandum for Cabinet Colonial Policy Committee by Sir N Brook,” 6 Sept 1957, reprinted in Hyam and Louis 2000: 28-34; CAB 129/53, C(52)202 “British overseas obligations: Cabinet memorandum by Mr. Eden,” 18 June 1952, reprinted in Goldsworthy 1994a: 6; and CAB 129/52, C(52)196 “Economic policy: Cabinet memorandum by Mr. Macmillan,” 17 June 1952, reprinted in Goldsworthy 1994b: 44.

³⁰ Darwin 2006; Brooks 2007; Ferguson 2004; Liberman 1998

economic motives.³¹ A second wave of research suggested that colonialism was not profitable, and that policymakers doubted the economic wisdom of colonial expansion even as the “scramble for Africa” was unfolding.³² Starting in the 1970s, however, a third wave revived the view that economic motives played a crucial role in colonial expansion, albeit not in the way posited by earlier theorists.³³

Ultimately, the question of the overall profitability of colonialism is less important than the recognition that imperialism created economic winners and losers within the metropole.³⁴ Even skeptics of the aggregate profitability of colonialism agree on this point.³⁵ Not surprisingly, economic winners and losers typically had different preferences over imperial policy. As Kevin Narizny argues, the choice to build, maintain, or eliminate an empire thus rests in large measure on the political contest within the metropole between the winners and losers from imperialist policy.³⁶ Yet Narizny’s work focuses entirely on cases prior to 1945, thereby leaving unexplained the subsequent decolonization. Conversely, Frieden shows the importance of changes in the nature of foreign investment for the decision to colonize or decolonize, but his work focuses solely on investment and not on other changes in the economy.³⁷ So while the choice of imperial policy was ultimately an ideological battle,³⁸ economics mattered because the relative profitability of empire helped determine the number of supporters and the depth of their preferences.

Theory

Motorization helps explain the timing and near-simultaneity of the global demise of empires. Prior to the 20th century, rising economic capability might have initially created incentives for imperialism, but further economic development (i.e., motorization) created large disincentives for empires. I argue that many Western European states crossed this threshold of energy modernization in rapid succession following 1945, leading to a sudden demise of colonial empires.

Energy and Motorization

As defined earlier, motorization is a stage of development that occurs when engines powered by fossil fuels or electricity become the predominant basis for transportation and physical economic

³¹ Hobson [1902] 1938; Lenin [1917] 1999

³² Davis and Huttenback 1986; Pakenham 1992; Offer 1993

³³ Cain and Hopkins 1980, 2001; Pomeranz 2001; Grossman and Iyigun 1995

³⁴ Kahler 1984; Davis and Huttenback 1986

³⁵ Davis and Huttenback 1986

³⁶ Narizny 2007

³⁷ Frieden 1994

³⁸ Kahler 1984; Philpott 2001; Crawford 2002

output. Motorization is most obvious in the transportation sector, where cars become the dominant form of transportation. During the pre-motorized stage of industrialization in the 19th century, horseback and foot travel were still the dominant forms of day-to-day civilian transportation, even though railways and steamboats clearly existed. This was true in Europe even until World War II, when horses were still in use for military and civilian purposes.

Motorization and energy modernization also transformed economic production in the agriculture and manufacturing sectors, allowing machines to substitute for land and labor. The introduction of gasoline-powered tractors and other mechanized equipment transformed agriculture. The internal combustion engine was crucial for this change: even though steam-powered tractors existed in the 19th century, they were typically less economical than a team of horses. In the 20th century, the percentage of the population working in agriculture declined as energy consumption per capita rose – i.e., motorized production substituted for labor.³⁹ (The shift in the labor force away from agriculture actually began in the 19th century during pre-motorized industrialization, but the extent to which that trend continued in the 20th century in a given country depended greatly on its energy consumption.) Energy also substitutes for land in agricultural production, because artificial fertilizers and pumped water for irrigation are heavily dependent on modern energy and greatly increase agricultural yields per unit of land. Higher agricultural yields mean a declining relative value of land, lowering the payoff to territorial conquest.

In the manufacturing sector the exact moment when industrialization ended and motorization began is harder to identify with precision, but the hallmark of motorized manufacturing is that it generates strong physical forces without relying on human or animal labor: for example, heavy lifting, pulling, or crushing objects using construction vehicles, power tools, or industrial diggers. Industrialization prior to motorization, by contrast, is a stage in which fossil fuels provide industrial heat but only rudimentary forms of industrial power. The spinning jenny used industrial power but it generated very weak forces (e.g., pulling cotton thread). Prior to motorization, only watermills or windmills were used to generate relatively strong forces, and their applications were limited, based on the need to bring the work to a geographically fixed energy source. Motorized power, by contrast, generates strong, concentrated forces for any work, anywhere.

³⁹ In the US, where motorized agricultural equipment and energy consumption grew rapidly, the share of the labor force in agriculture fell from 41 percent in 1900 to 15 percent in 1950. In France, which was slower to adopt motorized agricultural equipment and energy consumption grew much less rapidly, the share of the labor force in agriculture fell from 43 percent in 1900 to 32 percent in 1950. Data from Piketty 2014: 91

Motorization and energy consumption are fundamentally interrelated. Modern energy makes motorization possible; motorization leads to increased energy consumption. Strictly speaking, one might claim either that (i) energy consumption is simply a good proxy for measuring motorization or (ii) that the availability of low-cost energy supply actually plays a causal role in motorization (without denying that motorization also causes energy consumption). The first is a weaker claim, and because it is all that is necessary for my argument, I will restrict my argument to it. It is worth noting, however, that there is a large body of research that supports the second, stronger claim.⁴⁰ It is perhaps not a coincidence that there are no cases anywhere of motorized economies powered entirely by traditional energy sources like firewood, domesticated animals, and human muscle.

Motorization Undermines Imperialism

Energy modernization and motorization undermine imperialism via three causal mechanisms. First, motorization shifts the balance of winners and losers from imperialism within the metropole. The economic winners from imperialism are (i) owners of overseas assets and (ii) certain types of exporters: those who gain directly from imperial protectionism, or indirectly by facing less competition from colonies.⁴¹ The losers are generally everyone else, as taxpayers who pay the cost of imperial defense and administration. Motorization in the metropole means that winners from imperialism decline in strength (first economically, then politically) compared to those who pay the costs of imperialism. Key supporters of imperialist policy, such as the textile and steel industries in 19th century Britain, find themselves facing increasing competition from the rest of the world as early-stage industrialization spreads globally. The economic importance of such industries thus declines compared to the advanced manufacturing and the service sectors which motorization makes increasingly important. Note that what matters here is each sector's share of the metropole's economy, not its share of the world economy. Likewise, foreign investors benefiting from imperialism, like the owners of colonial plantations and mines, also decline in economic importance as the primary sector shrinks within the economy. As their economic importance declines, so too does their political clout. Thus business associations that are supportive of imperialist policy, like the Empire Industries Association in Britain or the Comité central de la France d'Outre-mer in France, face declining memberships and fewer financial contributions.⁴² Businesses that benefit less from colonialism tend to adopt an ideology of free trade

⁴⁰ Pomeranz 2001; Gallup et al 1999; Hamilton 1983; Dollar et al. 2005; Wrigley 2010: 14

⁴¹ Imperial policy often prevented the colonies from protecting and developing their own infant industries. For example, Britain refused to let India raise tariffs on British textiles, so that Indian textile manufacturers struggled.

⁴² See discussion below; also Kahler 1984

that runs counter to the mercantilist nature of imperialism. These trends are not monolithic,⁴³ but motorization generally leads to a decline in the economic sectors that benefit from, and thus politically support, imperialism.

Second, motorization causes the net benefits of an imperial policy to decline. Motorization causes the relative productivity of using the metropole's labor and resources for military purposes to decrease, as compared to using that same labor and resources for economic production. As the underlying economics of imperialism shifted, ideologies like colonial nationalism and racial equality became more acceptable to policymakers. Note that this mechanism is distinct from another mechanism some scholars have suggested, namely that a metropole's military advantage declines as the initially weaker conquered people begin to adopt the technology and organizational strategies of the metropole to fight it militarily.⁴⁴ This might be correct for some historical cases, but it is not primarily what happened in the 20th century: for instance, India won independence using political modes of resistance quite different from the military force the British used to colonize it.⁴⁵

This second mechanism of rising military costs should be placed with the context of existing research that has argued both for⁴⁶ and against⁴⁷ the assertion that economic development encourages international peace. Two basic propositions, however, have found broad support within the literature. On one hand, higher levels of economic development relative to potential enemies make power projection easier. This effect dominates at early stages of industrialization, evident in the 19th century and giving rise to the Lenin-Hobson thesis that imperialism was an outgrowth of capitalism.⁴⁸ On the other hand, each soldier deployed occupying and defending imperial colonies is a worker lost to a metropole's economy. As a state moves from pre-industrial to industrial to a motorized society, domestic labor productivity rises. Higher domestic productivity increase the opportunity cost of military occupation and lower the net payoff to empire. Combined, these effects suggest a curvilinear relationship between economic development and imperial size, which has been observed empirically.⁴⁹ Also, scholars have found that developed (motorized) economies are much less likely to fight wars over

⁴³ Kahler 1984

⁴⁴ Gilpin 1981; Kennedy 1987; Gartzke and Rohner 2011

⁴⁵ To be sure, there were cases of colonial armed conflict: Algeria, Vietnam, and Kenya are all examples. The vast majority of the independence movements in the post-1945 period, however, were primarily political movements associated with relatively little violence.

⁴⁶ Angell 2012; Rosecrance 1986; Brooks 2007

⁴⁷ Carr 1939; Schweller 1998; Liberman 1998

⁴⁸ Lenin 1999

⁴⁹ Gartzke and Rohner 2011

territory or resources (implicit in empire building), even as they continue to engage in non-territorial conflicts.⁵⁰ Thus much of the existing literature is consistent with this mechanism.

Importantly, policymakers experience the declining payoff to empire in two ways, without necessarily understanding the underlying structural changes. First, the increase in civilian wages due to motorization creates upward competitive pressure on military wages, as the military seeks to attract and retain labor (at least in states that do not use conscription). Second, rising domestic productivity due to motorization increases the opportunity cost of using labor and resources for military purposes. When coupled with fiscal strain (due to exogenously rising social expenditures, for instance), states face incentives to re-allocate resources away from the military to civilian production to increase the tax base and ease the fiscal crisis. This opportunity cost exists regardless of the actual wages paid to soldiers.

Motorization also contributes to the decline of empires by way of a third mechanism: it changes the nature of investment in ways that make colonialism less advantageous. As Frieden argues, some types of investment are more susceptible to expropriation than others.⁵¹ Site-specific assets like mines and plantations, which typically produce primary commodities, are highly vulnerable to expropriation by the colony/host. Investment in the manufacturing sector, however, is much less susceptible to expropriation because it relies on managerial, marketing, or technological inputs that cannot be easily captured. This protection has predictable political consequences: investors in colonial mines and agriculture lobby against decolonization, whereas manufacturing interests in the colonies generally are less motivated to do so. As a metropole's economy motorizes, the owners of capital become more interested in manufacturing and less interested in primary sectors. This weakens investors' support for imperialism. Again, economic changes allows for ideological change. Individual investors might not change their minds, but as the composition of the investor class changes, there are more investors who have little to gain from imperialism. Note that this third mechanism is related to the first, but it focuses on how motorization changes the interests of investors, whereas the first focuses on the relative decline of the winners from empire in the economy as a whole.

Motorization and the End of Mercantilism

Motorization and energy modernization in the period 1945-1973 not only supported the acceptance of anti-colonial norms, but also contributed to changes in economic ideology. Mercantilism and imperialism reinforced each other: as some states developed mercantilist empires that shut out

⁵⁰ Gartzke 2007; Gartzke and Weisiger 2014; McDonald 2009

⁵¹ Frieden 1994

foreign competition, other states had incentive to build their own empires.⁵² Yet as economic ideology began to favor free trade over mercantilism after World War II, the rationale for imperialism also declined. Motorization allowed some sectors, like advanced manufacturing and services, to become prominent parts of a metropole's economy, thereby shrinking the importance of the primary sector and early-stage manufacturing that enjoyed protected colonial markets. The newly prominent sectors were globally competitive and did not need the protected markets offered by mercantilism. Thus energy modernization supported the ideological shift from protectionism to liberalism in the 1940s.⁵³

Motorization and Energy Supplies: The Demand for Petro-Colonies

While motorization in the imperial metropole created incentives for decolonization for most colonies, there was one set of colonies for which there was a significant countervailing incentive: those colonies with energy resources, especially oil reserves. Each of the four modern energy resources is good at providing electricity, but oil is far superior for transportation. Access to oil reserves was thus a critical economic and military imperative for motorized states. European metropolises understood that any petroleum investments they made were at risk of being expropriated by local governments. Direct colonialism, mandates from international organizations, or other forms of political control reduced the risk that European assets would be seized or the oil supply interrupted. Consequently metropolises were especially reluctant to grant independence to the oil-rich colonies, or petro-colonies. Moreover, even when formal independence was eventually granted, outside powers have sought to maintain a high degree of political influence within the petrostates.⁵⁴

The incentive for such forms of governance increased once petroleum became the essential fuel for modern militaries in the 20th century. Winston Churchill's decisions in 1912-1914 to convert the British Navy's fleet from coal to oil, for instance, created a massive military incentive for Britain to

⁵² Gartzke and Rohner 2011

⁵³ Intriguingly, this repeated an earlier political contest: the repeal of the protectionist Corn Laws in 1846 was substantially a fight between protectionist agricultural landowners and anti-protectionist manufacturers. In both cases, the spread of machines using modern energy gave British producers of the "new" products a comparative advantage that supported their preferences for free trade. The interwar protectionist British policies illustrate, however, that the relationship between energy modernity and free trade preferences is not linear. As discussed later, British early-stage manufacturers (e.g., textiles, steel) who initially supported free trade faced stiff competition after roughly 1900 as early-stage industrialization spread globally; they switched sides and became protectionist. It was the later-stage British manufacturers and service industries who favored free trade following 1945.

⁵⁴ Yergin 2008; Bronson 2006

extend imperial control, formal or informal, over petroleum-producing territories.⁵⁵ Not surprisingly, the British government invested heavily in this effort. One of the world's largest oil companies, today known as BP, began its life as a government-owned project called the Anglo-Iranian Oil Company. Similarly, the French oil giant Total began as an imperial project, Compagnie française des pétroles (CFP). European political control in the Persian Gulf and other oil-producing regions expanded after 1918, in contrast to the gradual halt of imperial growth elsewhere.

Testable Hypotheses

The preceding discussion suggests the following testable hypotheses:

H1: Decolonization is much more likely to occur once a metropole's economy motorizes.

H1a: Motorization will cause the economic benefits of colonies to decline as a proportion of the metropole's economy

H1b: Motorization increases domestic productivity in the metropole, which in turn increases the opportunity costs of deploying military personnel to defend and administer colonies

H1c: Motorization will cause a shift within the metropole's economy favoring sectors in which overseas investment benefits little from colonization

H2: A wave of motorization and energy modernization among metropolises will cause a near-simultaneous global demise of empires

H3: Motorization increases the value of foreign energy resources, causing metropolises to be slower and more reluctant to decolonize petro-colonies than other kinds of colonies

Operationalizing Motorization and Energy Modernity

The gradual transition to motorization began with the Industrial Revolution, but the shift to energy modernity can be divided into roughly three periods: modern energy discovery 1830-1945, the Energy Revolution 1945-1973, and energy diffusion 1973-present. The period I call the Energy Revolution begins in 1945 with the first real application of nuclear power, the last source of modern energy to be discovered; it ends with the oil crisis of 1973 when energy became a first-rate geopolitical issue. In between, world energy consumption increased ten-fold, the largest percentage gain in recorded history (Figure 1).

I define to energy modernity as the point at which modern fuels (coal, oil, natural gas, and uranium) become the dominant energy sources for transportation and economic output. Conceptually

⁵⁵ Yergin 2008

this is equivalent to motorization. At the threshold of energy modernity, transportation based on the internal combustion engine becomes widespread and electricity becomes a significant form of industrial power. In practice, I operationalize the threshold of energy modernity as 20 barrels of oil-equivalent energy consumed per capita annually.⁵⁶ Most of the world's great powers made the transition to energy-modernity in the Energy Revolution period, except the United States, which had already crossed that threshold c.1903. The United Kingdom was actually the first to energy modernity (circa 1900), but its consumption then fell and fluctuated around the threshold level for decades, so it was still making the transition to energy modernity until about 1950.

Crucially, most imperial metropolises made the transition to energy modernity in the period of the Energy Revolution, including the UK (1950), Belgium (1956), Holland (1961), and France (1970), as illustrated by Table 2. This economic transition facilitated decolonization. From the long-view of history, this period of accelerating energy consumption was sudden and its effects were dramatic. Global integration gathered speed; trade grew rapidly; living standards rose; electrification and modern transport transformed cities and later villages. As Eric Hobsbawm puts it, for 80 percent of humanity, the Middle Ages abruptly came to an end in the 1950s and 60s.⁵⁷

Empirical Analysis

My theory suggests specific mechanisms to account for the collapse of multiple empires in the 20th century. The empirical analysis focuses especially on the British Empire, which was the largest and most important. I supplement the analysis with data on other empires to probe the generalizability of the argument. The empirical evidence and its implications are summarized in Table 1.

H1 and H2: Collapse of Empires

After 1945, states triumphed over empires as the principal form of political organization, and they did so in large part because of the spread of energy-modernity. First, the correlation of the two events should be noted. Consider the British, French, Belgian, and Dutch empires. WWII weakened them, but they might have survived had the political support for imperialism in the metropolises not shrunk following the war.⁵⁸ That loss of support was deeply connected to the industrial transition to energy modernity, which occurred in all four metropolises in the period 1945-1973. Overall, the

⁵⁶ Defining the threshold in terms of energy-equivalence has the advantage of including all sources of energy such as coal and natural gas, as it can be mathematically calculated based on their energy content.

⁵⁷ Hobsbawm 1996: 288

⁵⁸ Darwin 2006: 43-45

correlation of timing creates a *prima facie* case that once a metropole achieved energy-modernity, its economic demand for a colonial empire decreases.

The correlation between energy modernization and decolonization becomes stronger when one considers two outlier cases among overseas empires: the United States, an early decolonizer, and Portugal, a late decolonizer. Americans typically explain their country's lack of empire building in the 20th century, rather self-flatteringly, as a result of American exceptionalism and moral beliefs stemming from its own colonial history. Yet American foreign policy was actually quite imperialistic during the 19th century, especially c.1865-1918.⁵⁹ Recall that the United States waged dozens of wars against Native American tribes while settling much of its own Western Frontier, adding 30 states to the Union in the 19th century, as well as capturing the Philippines, Cuba, Guam, and other overseas territories as colonies or protectorates. It is therefore noteworthy that the United States was the first great power to motorize its economy in a sustained fashion, circa 1903. It then turned away from imperialism, granting Cuba its independence in 1902 and more actively opposing imperialism after 1918. European states, which had not yet energy-modernized, held a different view of empire for decades. At the other end of the spectrum, Portugal did not motorize until the 1980s. Its economy therefore continued to be oriented towards the primary sector and early-stage industrialization, making imperialism economically attractive to a substantial segment of its political elite even as other Western European states were decolonizing. Portugal actively resisted decolonizing its African and Indian possessions until 1974, resulting in a violent colonial war in Angola and severe repression in other Portuguese possessions such as Mozambique and Guinea. In India, Portugal maintained its claim on Goa long after the British and French had granted independence to their colonies. Note that decolonization is not entirely determined by motorization, but instead occurs somewhat faster (the Portuguese case) or slower (the US case) depending on the international political environment, and how legitimate imperialism is seen by domestic and international audiences. Overall, however, the cross-national variation suggests decolonization of overseas empires is correlated with energy modernization.

The international political environment is important in accounting for the USSR, a partial exception to the overall correlation between motorization and decolonization. Measured by energy consumption per capita, the Soviet Union motorized sometime around 1970, but did not collapse until two decades later. In the long view of history, this gap in timing is not large but it is noticeable. A state that can use the international political environment to legitimize its imperialist policies will maintain them for somewhat longer than is predicted by its transition to energy modernity. The USSR was able to

⁵⁹ Narizny 2007; Frieden 1989

legitimize its empire, for a while, in terms of defending itself from the evils of Western capitalism. Still, the international political environment does not allow infinite elasticity for the theory; a delay of more than a couple of decades would count as evidence against the theory.

H1a-c: Mechanisms of Decolonization

To test the proposition that the spread of energy modernization helped cause the demise of empires, rather than just being correlated with it, consider the empirical evidence for the three causal mechanisms. First, perhaps the single most important economic cause of decolonization was the decline of the beneficiaries of imperialism as compared to other sectors of the British economy.⁶⁰ Original source documents show that policymakers were attentive to changes in the aggregate costs and benefits of empire: for instance, Prime Minister Harold MacMillan explicitly called for “something like a profit and loss account for each of our Colonial possessions.”⁶¹ In the British Empire, the three largest groups of beneficiaries were (i) the textile industry, (ii) the iron and steel manufacturers, and (iii) the landowners of colonial mines and plantations. They benefitted in different ways: the textile industry from imperial policies that blocked the development of competing colonial infant industries; the steel manufacturers from protectionist tariffs in the colonies that secured their markets; and the landowners from colonial administration that allowed them to extract large rents without fear of expropriation or heavy taxation. The economic importance of all three groups declined over time.

Figure 2 provides a conceptual illustration of how political support for the British Empire ebbed over time. The vertical axis indicates influence over British politics, based on a combination of the share of the electorate associated with a particular industry and the political and economic clout of the individuals involved. The three key support groups for the Empire – landowners, textile industry, and iron and steel manufacturers – gradually lose their economic and thus political significance, whereas those who do not economically benefit from colonialism – especially advanced manufacturing industries and the financial sector – grow in significance. This figure is purely illustrative. Specific empirical evidence is as follows.

In the 19th century, the landowners of colonial mines and plantations extracted large profits from overseas investments, approximately 10 percent of national income,⁶² and they feared that decolonization would ruin these investments. Their fear was justified: when decolonization finally did

⁶⁰ Narizny 2007

⁶¹ CAB 134/1555, CPC(57)6 “Future constitutional development in the colonies: minute by Mr. MacMillan to Lord Salisbury,” 28 Jan 1957. Reprinted in Hyam and Louis 2000: 1-3.

⁶² Doyle 1986: 268

occur, mines were often rapidly nationalized or heavily taxed, even where solemn promises not to do so had been made by the future leaders of newly independent states.⁶³ In the nineteenth century, the sheer size of colonial landowners' profits, which gave them strong preferences to support imperialism, combined with the entrenched advantages that landowners had in Parliament at this time, helped assure that their preferences prevailed over the lukewarm support for empire from the manufacturers and middle classes (who had to bear much of the costs of empire). In the twentieth century, however, both the relative size of landowners' profits and their representation in Parliament shrank. Figure 3 shows how overseas income fell from being roughly a third the size of Britain's gross exports in 1900 to about a tenth in 1950.⁶⁴ This was driven by the modernization of Britain's economy, which meant that other sectors were growing more rapidly than the primary sector.⁶⁵ In the 20th century, fortunes were increasingly being made in the manufacturing and financial sectors, not by extracting rents from colonial holdings.⁶⁶ Moreover, landowners' political representation in Parliament declined significantly.⁶⁷ In sum, one of the groups that had the strongest economic stakes in the British Empire, and thus resisted decolonization most fiercely, experienced both economic and political decline in the period 1900-1950.

The British textile industry was doubly unfortunate: it opposed (or only weakly supported) imperial expansion for much of the 19th century at a time when business interests were politically weak compared to the landed aristocracy, then opposed decolonization in the 20th century as business interests grew politically stronger but the textile industry's importance waned. Only in the period 1880-1940 did British imperialist policy align roughly with the preferences of this once-mighty industry.⁶⁸ In 1841, it employed 33 percent of the British male labor force and made over 80 percent of the world's textile exports.⁶⁹ Centered in Manchester and Lancashire, it was significantly more cost-effective than its competitors around the world until about 1880. Exports were the industry's lifeblood: by 1900, the

⁶³ Faber and Potter 1971

⁶⁴ Cain and Hopkins 2001: 431. Moreover, other lending and financial services generated significant net transfers to Britain in 1900, but by 1950 Britain was buying more of those services than it was selling.

⁶⁵ Lee 1979; Mitchell 1988: 427-429

⁶⁶ Cain and Hopkins 2001: 115 (Table 3.3) and 419 (Table 17.2). For instance, in 1860-1879 there were 44 individuals with fortunes in excess of \$0.5 million at death from the manufacturing and mining sector, compared to 280 such individuals in the landed classes. By the period 1920-39, 153 came from the manufacturing and mining sector, as compared to just 91 from the landed classes.

⁶⁷ Cain and Hopkins 2001

⁶⁸ The textile industry was also able to influence imperialist economic policy in the 19th century, even though imperial expansion did not follow its preferences. For instance, in 1853 and again in 1890, the British textile industry managed to thwart attempts by the Indian colonial government to develop a local textile industry by imposing tariffs on British textiles. Doyle, 1986: 264

⁶⁹ Wrigley reports 250,941 in textiles and 277,562 in clothing and footwear out of a total of 1,608,423 (Wrigley 2010: 201).

cotton industry exported almost four-fifths of its production by value. In the 20th century, the industry's cost advantage fell as British wages rose and industries elsewhere adopted the technology required to compete. Consequently, the Manchester School, the 19th century champions of free trade and reluctant imperialists until about 1880, became the Lancashire lobby in the 20th century, champions of the empire to preserve market access for British textiles in the colonies.⁷⁰ For example in the period 1900-1947, the Lancashire lobby bitterly resisted moves to give India more control over its economic policy, because India sought to raise tariffs on British textiles to protect its own infant industry.⁷¹ The limited political clout of the Manchester School in the 19th century, in comparison to the later influence of the Lancashire lobby, is indicated by the change in economic interests of British Members of Parliament (MPs) over time. In 1868, less than 10 percent of British MPs were linked to manufacturing interests; by 1910, that proportion was 25 percent.⁷² In contrast, the MPs linked to the landowning classes and military service declined precipitously over the same period. The net effect was that while the Manchester School had limited success in resisting imperial expansion in the 19th century, the Lancashire lobby was initially influential in maintaining imperial economic policies in the early 20th century. The textile industry contributed to, and was represented by, groups like the Empire Industry Association (EIA).

Yet over time, the textile industry grew isolated within a British business community that favored a postwar free trade policy. Britain's motorized manufacturing base left behind the labor-intensive textile industry to take advantage of ever-cheaper electricity and energy as inputs: the average price of industrial power plummeted by 60 percent from 1945 to 1965.⁷³ Britain's economy shifted towards more capital-intensive manufacturing where it had a comparative advantage and thus did not need protected colonial markets. The textile industry shrank rapidly, both in absolute terms and relative to the rest of the British economy: the number of cotton spindles in operation fell in half from 1913 to 1951 (see Figure 4).⁷⁴ Consequently, its lobby group the EIA was forced as early as 1949 to modify its support for imperialism to a general defense of free enterprise, to try to retain the support of its industrial base. That shift created ideological tensions and inconsistencies, leading to declining

⁷⁰ By 1880, industrial interests were supporting the expansion of empire in Asia and Africa in the search for new markets. Cain and Hopkins 1980: 485

⁷¹ Dewey in Dewey and Hopkins 1978

⁷² Cain and Hopkins 2001: 132 (Table 3.5)

⁷³ Fouquet, 2008: 416-417. The postwar decline was not due to wartime increases: British industrial power cost less in 1945 than in 1939.

⁷⁴ Figure 4 based on Woytinski and Woytinski 1953: p.1067 (Table 453) and Mitchell 2003a: 511 (Table D15). There were 55.7 million operating spindles in 1913, 36.9 million in 1938, and just 29.0 million in 1951.

membership and financial support for the EIA, which undermined its political clout. The effect was like an avalanche: a gradual erosion of support for a long while, and then a rapid collapse. In 1954 some 267 Conservative Members of Parliament were still nominally members of the EIA; just five years later, the Executive Committee reported that it would soon be necessary to wind up the EIA's activities due to lack of funds.⁷⁵ Declining political clout created a feedback cycle of declining membership, and "the once powerful [EIA] was reduced to shifting its political appeals [away from imperialism] in an effort to win financial support from increasingly skeptical businessmen."⁷⁶ Note that what mattered here was the industry's share of Britain's economy and labor force, not its share of the world textile market (which had been declining since about the middle of the 19th century).

Finally there were the iron and steel manufacturers. Along with textiles, iron and steel lay at the heart of the British industrial revolution. At their height in 1871, metal manufactures employed 12 percent of the British industrial workforce.⁷⁷ Even in the 19th century, however, British industry was losing ground to its international competitors.⁷⁸ Increasingly it relied on markets protected by tariffs for its sales.⁷⁹ Moreover, the British iron and steel industry remained focused on relatively simple metal products like railway track, for which they faced increasing global competition. This continued into the 20th century, creating an incentive for the British metal industry to favor imperialism, which gave them protected imperial export markets. Only relatively late in the game (during WWII) did Britain's manufacturing base shift toward the more advanced manufacturing specialties of motor vehicles, airplanes, electrical equipment, and chemical industries.⁸⁰ Once this shift was underway, the traditional metal manufacturing industry represented a declining share of British business interests. Again, what mattered most was the decline of the industry relative to other sectors within the British metropole – not the British share of the world market, which began to decline earlier. As with the textile industry, the makeup of British manufacturing shifted away from an industry that had gained from imperialism and resisted decolonization.

The second hypothesized causal mechanism is that the payoff to empire declined over time, as the real and opportunity costs of imperial administration and defense rose significantly. One authority reports "between 1870 and 1913 Britain spent an average of about 3 percent of her national income on

⁷⁵ Kahler, 1984: 276

⁷⁶ Kahler, 1984: 312

⁷⁷ Lee 1979; see also Doyle 1986: 263

⁷⁸ See Figure A-2 based on Woytiski and Woytiski 1953: 1117 (Table 465); see also Narizny, 2007

⁷⁹ Hobsbawm 1969: 161; Doyle 1986: 275

⁸⁰ Hobsbawm 1969; Lee 1979

defence ... [which was small] compared with 5 or 6 percent of a much larger economy after 1945.”⁸¹ In 1952, the British cabinet pegged the cost of imperial defence even higher, at 10 percent of national product, and rising personnel costs were a priority concern.⁸² Military costs increased, in part, because labor wages increased dramatically after 1945 due to motorization. Rising civilian wages were not just a problem because they put upward pressure on soldiers’ wages (a problem that could have been avoided, at least theoretically, by conscription). An equally significant issue was that civilian wages reflected domestic labor productivity, which represented the opportunity cost of deploying soldiers for imperial occupation.

Newly available data demonstrate the rapid increase in wages in Britain and Western Europe during the period of motorization.⁸³ Figure 5 shows the trend in daily real wages of unskilled laborers in Western Europe over time. Note the increase in real wages in the three decades of energy modernization (1940s - 1970s) was as large as the increase over the entire previous century (1820s-1930s). Country-specific data confirm that the increase in UK wages was similar.⁸⁴ These rapidly rising wages reflected productivity gains from motorization, which in turn represented a growing opportunity cost of imperial military occupation and defense. Simply put, British young men could be put to use more profitably at home than ever before. Archival evidence suggests that policymakers were aware of the opportunity costs of defense, though not necessarily the underlying structural forces of the declining economics of colonialism.⁸⁵ Britain’s military also grew after 1945 in response to global competition in the Cold War (creating external threats) and the rise of nationalism (creating internal threats from within the colonies). Yet even without these changes in the international threat environment, the secular change in the opportunity costs associated with deploying soldiers would have increased the costs of empire.

⁸¹ Offer, chapter 30 in Porter 1998: 704-705

⁸² CAB 129/52, C(52)166 “Economic policy: Cabinet memorandum by Mr. Butler,” 17 May 1952, reprinted in Goldworthy 1994b: 31.

⁸³ OECD 2014: 80

⁸⁴ OECD 2014: 81

⁸⁵ For example, British policymakers noted “it is not in fact possible to recruit large bodies of men for defence purposes without prejudicing the supply of labour to local industrial and agricultural projects whose output is important ... in the economic sphere.” DEFE 7/415, no. 5a “The share of the colonies in defence: memorandum by Trafford Smith,” 24 Oct 1951, reprinted in Goldworthy 1994a: 1-2. A second example, regarding the opportunity costs of rising defence expenditures: “It is not only a financial question. It is also a question of whether the industrial resources required for the rearmament programme can be spared from other vital uses.” CAB 129/54, C(52)253 “The Defence programme: Cabinet memorandum by Lord Alexander,” 22 July 1952, reprinted in Goldworthy 1994a: 20.

The third hypothesized mechanism was that energy modernization changed the nature of overseas investment, lowering the demand for colonialism as a form of protection against overseas asset expropriation.⁸⁶ Investment can be crudely categorized by the difficulty by which it can be expropriated: “seizable” investments such as plantations and mines in the primary sector and physical assets like railroads, and “non-seizable” investments such as manufacturing and service companies.⁸⁷ Frieden shows that British investors preferred to make seizable investments within its Empire, and non-seizable investments in the rest of the world, suggesting that colonialism served to protect overseas investments.⁸⁸ As the theory predicts, investors in colonial mines and agriculture lobbied against decolonization, whereas manufacturing interests in the colonies generally did not.⁸⁹ Energy modernization in the metropole meant that the balance gradually shifted away from seizable investments towards non-seizable investments. For instance, while manufacturing, industry, and services made up less than 10 percent of British investment 1865-1914, that portion increased to 25 percent 1918-1931.⁹⁰ It continued to increase, and by 1965, foreign direct investment (FDI) in the manufacturing sector accounted for roughly half of all British outward FDI.⁹¹ Consequently, motorization reduced the demand for empire by causing relative decline in the type of investment that most benefited from it.

H3: Petro-Colonies

Britain’s great periods of imperial expansion occurred in the 18th and 19th centuries. In the 20th century, the last gasp of imperial expansion focused on the acquisition and control of a single resource: petroleum. In the closing days of World War I – actually after the armistice ending the war – the British military extended its Mesopotamian Campaign in modern-day Iraq to seize the oil fields near Mosul.⁹² British control of Iraq was formalized in the Anglo-Iraq treaty of 1920. Britain also exerted increasing influence over Iran, ultimately militarily occupying it (along with Russia) in 1941 and forcing Reza Khan to abdicate the throne in favor of his (more compliant) son. It acquired resource-rich Qatar as a protectorate in 1916. It already had control of Kuwait, Bahrain, Aden, and the Trucial States (UAE) from

⁸⁶ Frieden 1994; Brooks 2005; Narizny 2007

⁸⁷ Frieden 1994: 568

⁸⁸ Frieden 1994

⁸⁹ Kahler 1984. Note that this was less a factor in the French empire, because colonial manufacturing investment was minimal.

⁹⁰ Frieden 1994

⁹¹ Shepherd et al. 1985: 15-20

⁹² Kelanic 2012: 145

the late 19th century. Thus Britain exerted hegemonic control (via international “mandates” and other mechanisms) over much of the Middle East after 1918. Britain never colonized Saudi Arabia but did its best to exert influence over its politics. By contrast, Britain’s long occupation of Egypt, which did not produce oil in significant quantities, came to an end in 1922. The upsurge in imperialist control after 1918 was driven by oil.⁹³

Energy supply was the reason for this late surge in colonization, even as momentum was beginning to swing against imperialism in other parts of the world (e.g., India, which obtained increasing autonomy from 1919 onward; and the British Dominions like Canada, which obtain full foreign policy independence in 1934). The technologies of the 20th century made oil reserves very valuable, raising the payoff to imperialism. Thus while rising energy consumption in the imperial metropolises was lowering the relative payoff to colonization in most cases, that was not true of territories containing oil. For a while – until about the early 1970s – the benefits of maintaining political control of oil-rich territories, or at least influence in them, were too valuable to ignore.

Consequently, the oil-rich colonies were among the last to be decolonized. Britain fought to retain its political influence over the Middle East countries for as long as possible, and the Foreign Office reminded Cabinet that British interests were “above all the security of oil supplies.”⁹⁴ Nowhere was this more dramatically illustrated than in Iran, where in 1953 Britain (with US support) successfully orchestrated a coup against Mossadegh, a leader who wanted to nationalize the oil industry, and replaced him with the Shah, a leader who was more friendly to British and Western oil interests.⁹⁵ The small and oil-rich British protectorates were among the last to be granted independence: Bahrain in 1971, Qatar and UAE in 1973, and Brunei not until 1984. Britain and France also sought to control the flow of oil through the Suez Canal, which led to the Suez Crisis in 1956 – though in that case the Americans forced them to back off (and again oil played a crucial role, as the US threatened to stop exports to Britain and France).⁹⁶ Of course, not every oil-rich protectorate was slow to leave the Empire’s grasp: Iraq gained independence in 1932, Kuwait in 1961. In the main, however, Britain was still fighting hard to keep its control and influence of petro-colonies even after it concluded that it would have to decolonize in India and Africa.

Ultimately, though, even the valuable oil fields were not sufficient to justify imperialism. Nationalist sentiment following World War II made occupation increasingly costly. Moreover, rising

⁹³ Yergin 2008; Marcel 2006; Painter 1986

⁹⁴ Goldsworthy 1994: xxxiii

⁹⁵ Painter 1986; Yergin 2008

⁹⁶ Yergin 2008

industrial capacity made it more cost-effective to simply buy the oil and energy supplies rather than militarily seizing them. Two great events illustrate this tendency: the British withdrawal of its presence in the Middle East (territories “east of Suez”) in 1971, and the United States’ decision not to militarily conquer Saudi Arabia in 1973-74 after the latter declared an oil embargo. The United States explicitly considered the option of invading Saudi Arabia to seize its oil fields, but concluded that it was simply too costly.⁹⁷

Similar Patterns in Other Empires

Energy modernization contributed to the collapse of other European empires after 1945. Rising military costs due to higher labor prices, a shifting domestic political economy that disfavored the winners from empire, and a reduced need to militarily protect foreign investment all played a role. In France, for instance, the rising military costs of protecting a far-flung empire weighed heavily, as they did in Britain. The real annual costs (inflation-adjusted) of military pacification and colonial administration in French West Africa, for instance, were almost ten-fold in the period 1946-1957 as compared to the years 1844-1945.⁹⁸ In an era of postwar rebuilding, high French military expenditures competed directly with the needs of domestic investment⁹⁹ and the French Union eventually came to be seen as an economic burden.¹⁰⁰ Moreover, France fought bloody wars in its attempt to control Algeria and Vietnam in the mid-1950s. Even after sending 400,000 troops to Algeria and suffering 25,000 French casualties, France gradually lost control of its colonies anyway.¹⁰¹

Further, motorization shifted the domestic political economy in France against the winners from empire, thereby weakening the anti-decolonization lobby. The textile industry in France, for instance, resisted decolonization just as the British one did, but it too was experiencing relative decline. The French industry had even greater incentive to preserve the empire, because the colonies represented a protected market for French producers, even more than for British producers: the colonies paid a surcharge on non-French cotton textiles averaging 23 percent above world prices.¹⁰² Predictably, the barons of the textile industry and trade associations such as the *Sydicat général de l’industrie cotonnière* and the *Comptoir de l’industrie cotonnière* vociferously opposed the end of empire. Other industries

⁹⁷ Congressional Research Service 1975; Bronson 2006

⁹⁸ Huillery 2014: 26 (Table 1). The annual cost was \$15.4 million 1844-1945, then \$136.9 million 1946-1957 (in constant 1914 dollars).

⁹⁹ Saxe 1958: 151

¹⁰⁰ Saxe 1958: 127

¹⁰¹ Cooley and Spruyt 2009: 59

¹⁰² Kahler 1984: 273

benefiting from French imperial economic policies, especially the heavily-subsidized colonial wine and wheat businesses, also sought to block decolonization.¹⁰³ Yet ultimately, and similar to the experience in Britain, the French textile and other pro-imperial industries were out of step with the rest of the country's business interests after 1945 and failed to prevent decolonization.¹⁰⁴

As with the British, oil played a crucial role in the imperial motivations of other metropolises. In the 1920s, French, Anglo-Dutch, and US oil companies joined the British to form the Red Line agreement, which governed oil extraction in the Persian Gulf.¹⁰⁵ Even more dramatically, imperial Japan invaded Southeast Asia in 1941 in search of petroleum, after being cut off from American oil. The Japanese lost their petro-colonies in World War II, but the European metropolises did their best to hang on, thereby inciting violent resistance. Indeed, the metropolises' reluctance to decolonize led to some of the bloodiest colonial and post-colonial conflicts: in Algeria for the French, in Indonesia for the Dutch, and in Angola for Portugal. Motorization and demand for oil thus incentivized states to try to maintain their imperial control and influence even at high costs.

The causal forces of decolonization were not entirely the same in other empires as it was in Britain. Another factor was crucial: the unwinding of the international competitive processes that led to empire-building in the 19th century. For France especially, empire-building was as much about national prestige as it was about economics. Thus in France it was the military more than business interests that was a principal supporter of empire-building in the 19th century, as officers searched for career advancement and national prestige.¹⁰⁶ After 1945, however, empires were no longer viewed as prestigious, as Charles de Gaulle explicitly acknowledged.¹⁰⁷ Moreover, the unwinding of imperial competition also unlocked the mercantilist trade blocs as free trade gradually spread, meaning that metropolises had less economic reason to fear decolonization.

Conclusion

This paper advances the claim that the global collapse of empires was driven in part by energy modernization and motorization in the imperial metropolises. That is not to dispute the importance of normative factors, such as the spread of nationalism following World War II. The aim is rather to supplement an ideational account by observing how motorization facilitated the acceptance of

¹⁰³ Kahler 1984: 278, 282-283. Note however that landowners of colonial mines, quite important in the British case, were less important in the French case.

¹⁰⁴ Kahler 1984: 275

¹⁰⁵ Painter 1986; Yergin 2008

¹⁰⁶ Doyle 1986: 310-319

¹⁰⁷ Spruyt 2005: 4

normative changes. Motorization helps us explain not only the timing of global decolonization, but also why anti-imperialist norms gained acceptance in some states earlier or later than others.

Understanding the causes of the end of empire is important because it sheds light on whether and under what conditions empires might re-emerge. My findings suggest that so long as the global economy is shaped by the incentives of modern energy consumption, empires are unlikely to re-emerge. By contrast, several scholars suggest that empires have disappeared only temporarily and might re-emerge at any time.¹⁰⁸ Alexander Motyl even proposes, “empire may belong to the future.”¹⁰⁹ Such conjectures, however, rest uneasily with the evidence that motorization changes the political economy of imperialism. That evidence has important implications for understanding China’s rise. China is currently undergoing the transition to energy modernity, suggesting that China will view the costs of colonialism as outweighing the economic benefits. Moreover, the cause of this change is motorization within China, rather than rising economic interdependence between China and the rest of the world, or greater integration of China into international institutions.¹¹⁰ Of course, reducing the profit motive for territorial acquisition does not make war impossible, but it does make it less likely.

If the argument here is correct, it implies that state behaviors in pursuit of energy consumption can be important for international peace, even when those behaviors have negative consequences in other areas of world politics (e.g., resource curse, oil geopolitics, carbon emissions). Unless it is possible to greatly reduce the energy intensity of economic output, scholars and policymakers should recognize that modern energy consumption plays an important role in stabilizing the international order and reducing incentives for imperial conquest. Artificially cutting off a state’s energy supply can actually increase the incentive for imperialism – as the US discovered in 1941 when it placed an oil embargo on Japan. This, too, could have important implications for US-China relations. In the interests of peace, the US might want to allow and even encourage China’s efforts to obtain a secure modern energy supply, so that it can safely enrich itself through motorization rather than through imperialism.

¹⁰⁸ See contributions by Tilly, Hobsbawm, and Motyl (three separate chapters) in Barkey and von Hagen 1997

¹⁰⁹ Motyl in Barkey and von Hagen 1997: 28

¹¹⁰ Brooks 2007; Rosecrance 1986

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Table 1: Summary of hypotheses from an energy-based account of imperialism

Hypotheses	Evidence	Theoretical contribution
Motorization and modern energy consumption supports decolonization and reduces payoff to territorial conquest (H1)	Variation in decolonization timing among metropolises explained in part by motorization: US first (early 20 th century), then a cluster of empires post-1945 (UK, France, Holland, Belgium), then Portugal	- Complements the “rise of nationalism” explanation of decolonization - Serves as a corrective to conventional view of energy as a cause of war
Timing of decolonization and acceptance of sovereignty norms explained in part by energy modernization (H1a, b, c)	In UK and elsewhere, economics of empire worsened as metropolises motorized, facilitating norm acceptance	Complements the “rise of nationalism” explanation of decolonization
Simultaneous decline of empires occurs when motorization and modern energy are widely available (H2)	Overseas empires disappear nearly simultaneously 1945-1975, an event not explained by most cyclical theories	Challenges cyclical theories of the rise and fall of empires
Variation in timing of decolonization among colonies explained in part by energy modernization (H3)	Petro-colonies late to achieve independence compared to non-petro-colonies; metropolises try to retain influence in petro-colonies	Complements the “rise of nationalism” explanation of decolonization

Table 2: Energy consumption per capita for select countries, 1816-2007

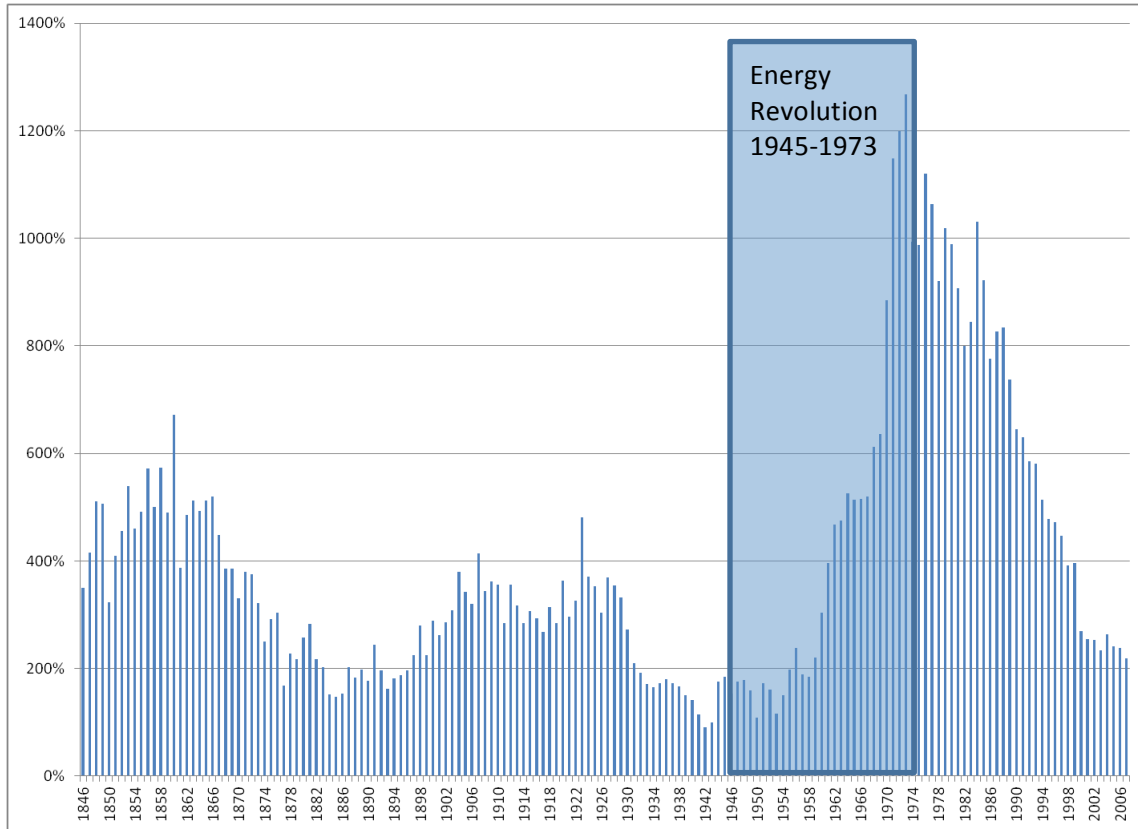
	USA	UK	Russia	Germany	France	China	Holland	Belgium
1816	0.1	5.6	0.0	0.6	0.2	0.0	1.0	n/a
1850	1.6	10.5	0.0	1.7	1.0	0.0	1.9	4.2
1900	16.1	21.6*	1.2	10.5	6.0	0.0	5.2	14.7
1939	30.3	22.0*	5.1	15.3	9.1	0.3	8.6	17.7
1970	57.7	30.4	27.8	29.2 **	23.0	2.6	47.4	35.9
2007	88.1	53.7	52.5	67.4	55.3	14.9	107.5	98.2

Units: Barrels of oil-equivalent consumption per capita, annually

Legend: **bold** indicates motorized / energy-modernized state; * UK did not consistently cross threshold of energy consumption until early 1950s; ** figure is for West Germany

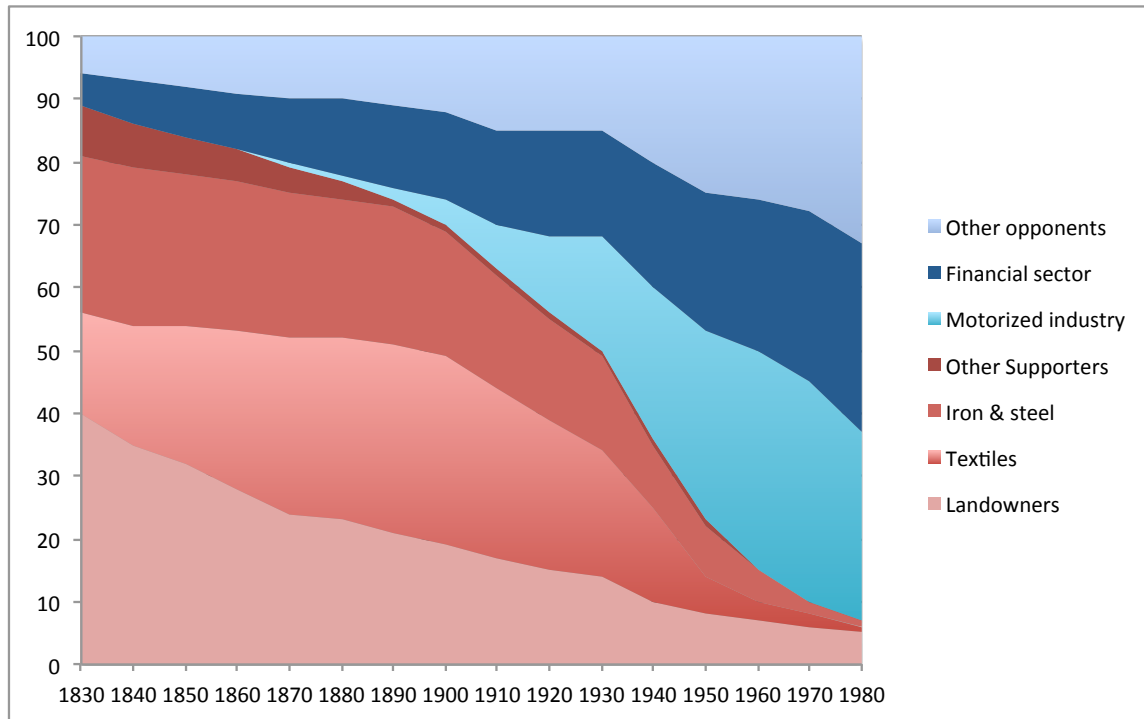
Source: Correlates of War data; author's calculations

Figure 1: Percentage gain in the previous 30-years of global energy consumption, 1846-2007



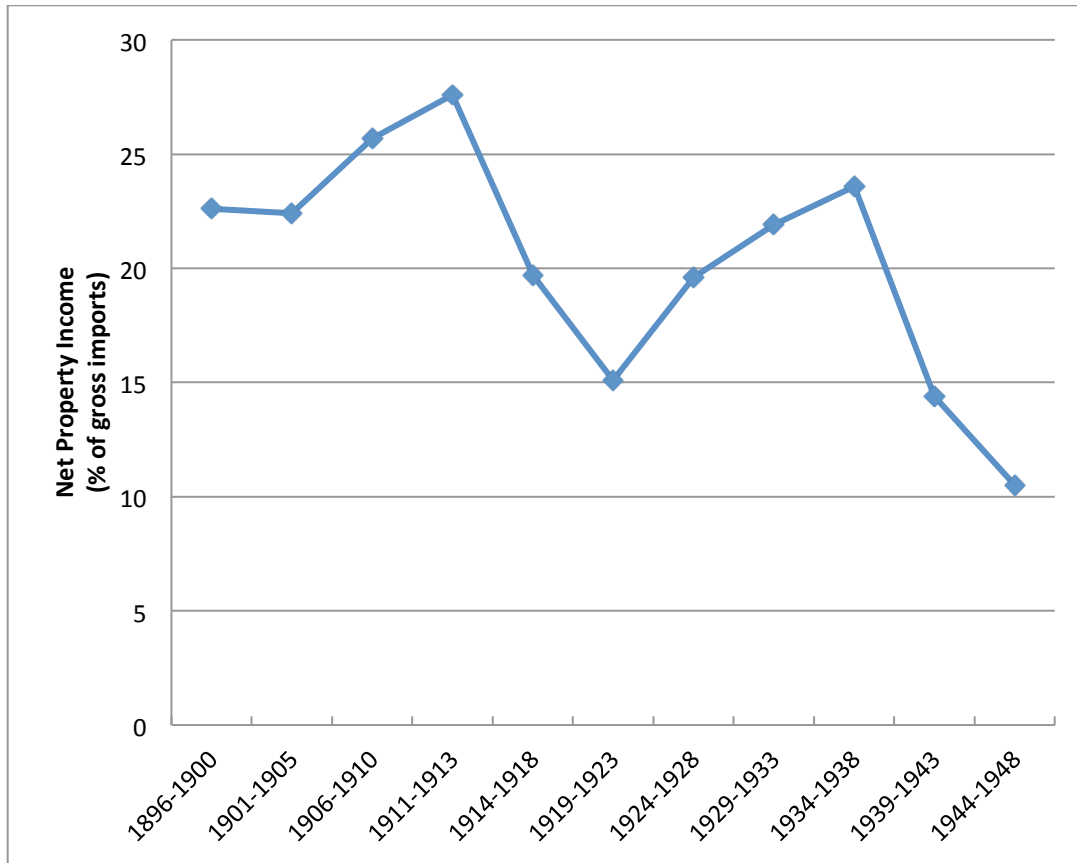
Source: Correlates of War data; author's calculations

Figure 2: Political support for the British Empire, 1830-1980



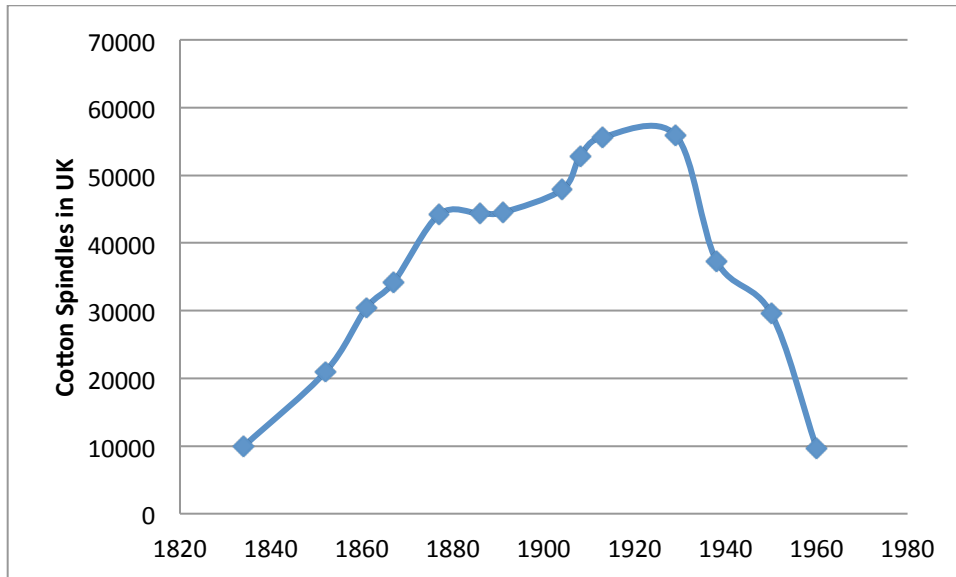
Note: Red sectors indicate economic winners from empire; blue sectors indicate those who do not benefit economically from empire. Figure is strictly conceptual.

Figure 3: British net overseas property income 1896-1948 (as percentage of gross imports)



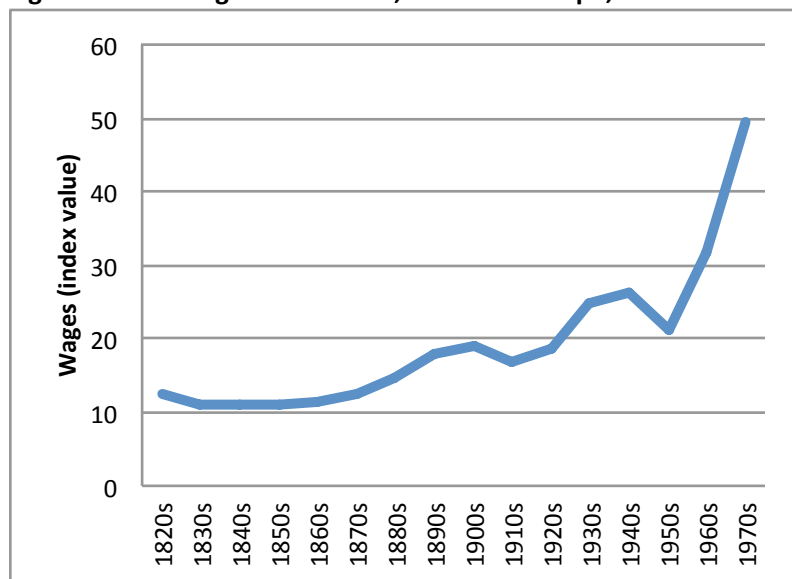
Source: Cain and Hopkins 2001

Figure 4: British industrial cotton spindles, 1834-1960



Source: Mitchell 2003a: 511; and Woytinski and Woytinski 1953: p.1067

Figure 5: Real wages of laborers, Western Europe, 1820s-1970s



Source: *How was life?* (OECD 2014): 80, Table 4.4