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Economic Growth and Imperialism

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School of Business & Economics
Discussion Paper

Economics

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Economic Growth and Imperialism

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Abstract

History shows militarily dominant states that pursue imperialism, relying on their might to extort resources from weaker states. Occasionally, the latter revolt and the dominant state suffers some casualties. This paper explores imperialism along steady-growth paths. If the dominant state maximizes domestic welfare, it should eventually abandon imperialism because its safety costs asymptotically overrun its material benefits. To shed light on diametrically opposed historical records, I propose a model of endogenous ideology and war bias in which the political elite cares about self-image. If that concern is strong enough, the political elite gradually identifies with its country's mission of hegemony and imperialism persists. It is first driven by material concerns and later by ideal ones. Despite its divergent preferences, the population of a dominant state generally has little interest to oppose imperialism.

Keywords: imperialism, long-run growth, value of life, self-image.

JEL-Classification: H8, N4, O0, Z1.

1 Introduction

Historically, most empires were ended by violence: either a rival great power destroyed them, or they imploded from within, following some major intestine conflict, or all their colonies successfully fought for independence.[1] Imperial core countries could peacefully relinquish their dominion on the periphery. But in most cases they do not: rather, they pursue imperialism as long as they can, i.e. until they are forced to give it up by outer force or in the wake of internal strife. I define imperialism as the policy of a militarily dominant state that exploits its might in order to systematically extract tributes of various kind from militarily weaker states. The latter may be provinces or colonies of the empire as well as vassal states that are formally independent of the militarily dominant country. I thus consider informal as well as formal empires.

Why don't imperialist states voluntarily cease to extort resources from weaker states? Imperialism is a costly and risky undertaking that recurrently unleashes wars. These wars may be not so dangerous as to threaten the survival of the imperialist state, but harmful enough to inflict upon it a significant loss of human lives. Once in a while, a subordinated state rejects the imperial diktat, challenges the dominant power, and wages war against it. Imperialism is thus a gamble and it is practiced only if the militarily preeminent state accepts to take that gamble. This paper sets out to theoretically explore how long-run economic growth affects the conditions for that gamble to be accepted; it thus links a branch of international relations to growth theory. It also bears on a century-old controversy in political economy: is imperialism a necessary by-product of capitalism? Or, rather, to the extent that capitalism promotes economic growth, is capitalism a force for peace?

As a first step, I begin investigating the benchmark case in which the foreign policy of the hegemonic country is set to maximize its domestic social welfare. Under a relatively mild assumption on preferences, I find that steady economic growth at any strictly positive rate is bound to eventually terminate imperialism. On the one hand, thanks to economic growth, imperialism can transfer an ever-rising amount of resources from the periphery to the core. This tends to enhance the core's incentive to practice imperialism. On the other hand, rising living standards in the core country imply that the value of human life keeps growing there. Therefore, the fatalities among the own population that are caused by imperialism entail an ever-rising safety cost that reduces the core's welfare. I

[1] See e.g. Doyle (1986) and the appendix in Sylwester (2023) for extensive historical documentation.

show that in the long run this safety cost must outweigh any consumption benefit that the core country obtains by predating the periphery. This result proves to be robust to a number of generalizations of the baseline theoretical framework in which I first exhibit it. It carries over to models in which the civilian economy of the militarily dominant state grows more slowly than the resources it is in a position to extort, the militarily dominant state cares about the living standards of its citizens as compared to those in the rest of the world, and technological progress in the military leads to a steady decline of the fatalities suffered by the core country.

Having established a wide range of circumstances under which economic progress should eventually make imperial powers voluntarily turn peaceful, the remainder of this paper is devoted to trying to explain the puzzling dearth of historical support for that prediction. I build on the intuitive notion that, in contrast with the benchmark assumption of a benevolent policy-maker, a great power may pursue goals that substantially diverge from domestic social welfare. As pointed out by Jackson and Morelli (2007) among others, the political elite of a great power may display a war bias: it may be more willing to risk war than ordinary people because it receives a disproportionate share of the spoils of war and faces a lower risk of being killed in war, or maimed for life. As a result, foreign policy may be more aggressive than commanded by a concern for domestic social welfare. While such a war bias may depict some empirically relevant incentive structures, I show that it cannot solve the puzzle: it cannot alter the theoretical prediction that imperialism be eventually discarded. As compared to the benchmark case of a domestically benevolent policy-maker, this type of war bias merely delays the date at which the great power is predicted to voluntarily cease to predate other countries.

The solution of the puzzle proposed in this paper grounds on the following insight. Imperialism increases the likelihood of war and thus of being killed in war. The welfare loss from this existential threat rises over time because the value of human life relative to consumption is larger at higher levels of consumption. Under steady growth, that existential threat eventually outweighs the consumption motive behind imperialism. Even if the political elite is biased toward imperialism because it gets more out of it than ordinary citizens and risks less, in the long run also the political elite should prefer peace. In order to solve the puzzle, a competing existential threat must arise if imperialism is discarded, one that outweighs the benefit of physical safety. I argue that such a threat is the loss of self-esteem that the elite would suffer if it betrays its imperial identity.

The main contribution of this paper is a model of endogenous identity and war bias that sheds some light on the historical record: imperialism may never be jettisoned if the decision to exploit other countries is made by a political class that maintains and pam-

pers its self-image by cultivating world hegemony. My model predicts that at low levels of economic development, imperialism is driven by material concerns: the tributes and resources forfeited by weaker states are the decisive motive for aggression. As per-capita income grows, this motive loses momentum, while the ideological one sets in. Eventually, faithfulness to imperial ideology becomes the crucial driver and the original economic motivation evaporates. Imperialism may then persist forever even if it is a loss-making business, i.e. its costs exceed its material benefits in terms of tributes. Interestingly, these features are reminiscent of Schumpeter's (1951) theory of imperialism - on which I briefly elaborate in Sect. 5.5.

My model predicts that imperialism may persist in the long run even if it hurts the vast majority of the population of the core country. More precisely, it shows that its population generally has a weak incentive to oppose the elite's imperialistic policy because its relative welfare gain would be small if imperialism were discarded. The bulk of imperialism's welfare costs is suffered by states of the periphery that take up the fight against the imperial core. In the core country, domestic opposition against imperialism can only rise if its ordinary citizens come to endorse values that make them internalize to some extent the suffering that imperialism inflicts upon other peoples. This is likely to be a historically rare and relatively recent phenomenon.

The next Section illustrates the kind of historical observations that underpin this investigation and discusses some related literature. Section 3 develops a baseline model of imperialism and growth, and derives the result that imperialism should voluntarily be abandoned at some point in time. Its robustness is analyzed in Section 4, in which various generalizations are examined. The main model with endogenous ideology and war bias is developed in Section 5. Section 6 concludes by putting this paper's results in the perspective of the literature on international relations and indicating possible future extensions of its main model.

2 Historical examples and related literature

Imperialism is a recurrent feature of recorded history, from antiquity to the present day. While the practice of extorting tributes from other populations is a historical constant, the distinctive type of tributes varied a lot. Wood (2003) offers a reasoned overview of this form of collective predation and relates it to the varying endowments, technologies, and institutional settings that characterize various historical circumstances. Tributes in form of slaves, gold, silver, crops, staples, and furs account among the earliest ones. With the consolidation of property rights, confiscation of land and its appropriation by

imperial elites came to play a major role, e.g. in Roman times. Commercial empires, like the Venetian one and the Dutch one, gained wealth by imposing monopoly rights on distinctively profitable foreign trade centers. Mature capitalistic imperialism was rather based on the imposition of various monopoly and monopsony markets, as well as privileged direct investment. While this sequence broadly describes the general historical pattern, sometimes ancient forms of tributes and exploitation can be found in later periods. For instance, the exploitation of the Congo Free State by the Belgian monarchy and a few corporations between 1885 and 1908 was mainly based on the appropriation of natural rubber collected by means of coerced labor that was tantamount to slave labor.

In the course of history, rebellions of the periphery against exploitation by the imperial core have been endemic, and they triggered numerous military conflicts. Historical examples of rebellions may be classed into the unsuccessful and the successful ones. There are many examples of sedation of those rebellions, followed by a relatively long period of imperial rule. Thucydides (1972), for example, describes how Athens cracked down on Naxos, Samos, Mitylene and Melos, among others - all islands that rebelled against Athens' abuses at the time of the Delian League. While some rebellions were so easily repressed by the dominant power that they did not manage to make it in history books, others are especially remembered because of the heavy death toll suffered by the insurgents or because of their greater significance for world history. A well-known example is the Irish rebellion after the seizures of Irish-owned land by the English Crown in the 16th and 17th century, culminating in the Eleven Years' War of 1641-1653, with more than 200,000 deaths. Another failed attempt to resist imperialism ended with the two Opium Wars (1839-1842 and 1856-1860). Along with the legalization of opium - bought from the British East India Company - China was compelled to grant favorable tariffs, trade concessions, reparations, and territory. In the same years, the British also fought the Indian Mutiny of 1857, a rebellion against taxes and land confiscation that costed some estimated 800,000 Indian lives. In comparison, the US-backed coup in Guatemala in 1954 was an almost surgical strike that swiftly achieved the kind of regime change requested by the US monopolist in Guatemala at the time, the United Fruit Company.

There are also several historical examples of successful rebellions against imperial oppression. They include those wars of independence that are the stuff of history textbooks. An early example is the Uprising of Asen and Peter in 1185-1188, following a tax increase by the Byzantine Empire and leading to the independence of Bulgaria. The most well-known example of successful rebellion is perhaps the US War of Independence in 1775-1783, triggered by British-imposed tax hikes and attempts to enforce custom duties, leading first to tax revolts, then to military ones, and finally culminating in the

proclamation of independence by the Thirteen Colonies.

History cannot always be neatly classified. There are cases where rebellions started successfully, but their outcome changed later on. An example of a very protracted attempt to reject imperial rule is the one of Zadar (called Zara at that time), fighting against Venice from around 1000 to 1409. During those four centuries, the Dalmatian city gained and lost independence from Venice several times. Eventually, Zadar was returned to the Venetian Empire and belonged to it until its demise in 1797. A later example is the Anglo-Boer conflict, one in which gold mines and diamonds played a major role. The first Anglo-Boer war (1880-1881) was lost by the British Empire, but after the second one (1899-1902), the British could impose imperial rule again. Just eight years later, the Union of South Africa was created as a nominally independent dominion, eventually becoming the Republic of South Africa. Coming to the present day, to some pundits the ongoing Russo-Ukrainian war is an instance of a rebellion against an imperial power, a rebellion with alternating degrees of success, and the outcome of which is uncertain at the time of writing.

The main prediction of the theory elaborated in this paper is about the drivers of imperialism: over the course of economic development, its main driver is predicted to switch from material to ideal concerns. Much anecdotal evidence that speaks to this prediction is offered by Schumpeter (1951), whose accounts range from the Egyptian, Assyrian, and Persian empires to imperialism at the eve of World War I. Further corroboration might be found in some military interventions in the name of human rights and democracy that were conducted by the US during its unipolar period after winning the Cold War.

The current paper is related to various strands of economic literature. With regard to empirical research, it is related to studies that have documented the role played by economic motives in shaping US-backed coups in rebelling vassal states before the end of the Cold War - coups that could be studied thanks to recently declassified CIA documents. Berger et al. (2013) find that CIA interventions were instrumental in boosting markets for US products in the intervened country, especially for industries in which the US had a comparative disadvantage. Dube et al. (2011) estimate the impact of coups authorizations on stock returns of highly exposed firms in intervened countries and find significant economic gains for corporations that stood to benefit from a US intervention. Another strand of empirical literature focuses on the log-run economic heritage of imperial power. Nunn (2008) and Nunn and Wantchekon (2011) put forward the long-lasting damage of slave trade on African development. Gokmen et al. (2020) document the trade-facilitating effect of empires within their controlled territories and how this effect remains visible today.

The theoretical literature that is most closely related to the current paper is the eco-

nomics of conflict, which deals with situations in which property rights are altogether absent or imperfectly enforced - see the overview by Garfinkel and Skaperdas (2007). A bulk of that literature focuses on the incentives to build weapons and attack. Differently from the model in this paper, that literature analyzes strategic models of conflict, as recently surveyed by Kimbrough et al. (2020). My model rather portrays a unipolar situation, in which there is only one dominant power facing a sequence of weak opponents, or situations in which different great powers have not come across each other. Alternatively, it may capture a bipolar or multipolar world in which the great powers have agreed upon a division of the world into spheres of influence. In situations of that type, the great powers tend not to interfere in each other's business directed at their respective vassal states. By contrast, in situations of ongoing conflict with a rival empire, the model in this paper can only portray the relationship of a core country with those parts of its periphery that play no role in the conflict with its rival empire, e.g. because they cannot be captured by the enemy. In the final Section, I speculate about how the effects analyzed in this paper may contribute to shape great power rivalry.

While the economics literature on war explores how its expected costs and benefits affect the propensity to engage in a military conflict, I am not aware of any paper that investigates the impact of long-run economic growth on the outbreak of war. In the growth literature, my baseline model is closely related to the one by Jones (2016), who studies how economic growth interacts with safety considerations. He shows that if the marginal utility of consumption declines rapidly enough, society should eventually give up potentially profitable innovations that carry with them a positive probability of a disaster that kills some fraction of the population. This is analogous to the imperial gamble analyzed in my baseline model. At the end of his article, Jones (2016) mentions the realm of international relations as one in which mechanisms of this kind may have interesting implications.

3 Baseline model

3.1 Assumptions

There are two types of infinitely-lived states: a single, militarily strong, state - the core - and a collection of ex-ante identical militarily weak states - the periphery. States are populated by generations of individuals that are born at the start of each period $t = 0, 1, ..\infty$ and live for at most one period. In each period, the following sequence of events and decisions occur. At the beginning of the period, a transferable economic rent randomly appears in one of the weak states. The strong state has two options: either to ask that

the rent be transferred to it, lest it takes it by military force, or to ignore the matter. Its decision is denoted by $d_t \in \{I, P\}$, for imperialistic policy and peaceful policy, respectively. In the initial period $t = 0$ the condition for the strong state to prefer imperialism, whence $d_0 = I$, is assumed to be met, which enables me to study imperialism's persistence in the subsequent periods $t \geq 1$.

If the strong state asks the weak one for transfer of the rent, the weak state may either give in or engage in a military conflict against the strong state. The political leader of the weak state can be of two types: with probability λ she is "sane", with the complementary probability she is "mad". The weak state's type is randomly chosen anew by Nature in each period and is private information. When challenged, a sane type always accepts to pay the requested tribute; a crazy type always goes to war. The size of the requested tribute may be interpreted as the largest tribute such that the sane type accepts to pay it, and is exogenously given. The crazy type may be interpreted as a behavioral type that preemptively attacks when challenged.

If war breaks out, its outcome is random. With a large probability p, the militarily strong state wins the war and with the complementary probability it loses it. In case of victory, the strong state obtains the rent from the weak state; in case of defeat, no rent is transferred and the strong state suffers fatalities that represent a fraction $\mu > 0$ of its population. Without significant loss of generality, I neglect the strong state's costs of war in terms of wasted material resources.

Exogenous productivity growth occurs at the instantaneous rate $g > 0$.[2] This is the rate at which per-capita GDP, $y_t > 0$, grows in the strong state, and the rate at which the per-capita tribute obtained from weaker states grows; the tribute is denoted by $\delta_t > 0$. The latter is to be interpreted as a net addition to consumption in the strong state; δ_t is thus the tribute paid by the weak state net of any dissipation costs. Each generation living in the strong state consists of a continuum of mass one of identical individuals, so that aggregate and average variables coincide. I assume that if war casualties occur, they have a negligible impact on the strong state's intergenerational demography: its birth rate temporarily increases, so that population size recoups its long-term level at the beginning of the next period. Therefore, the size of the total population of the strong state is equal to one at the beginning of each period, independently of any war casualties suffered during the previous period.[3] This implicitly requires the fraction μ of its population killed in war to be small.

At the beginning of each period, the strong state chooses d_t so as to maximize its

[2] As each generation lives for one period, productivity grows at rate $e^g - 1$ per generation.

[3] Without some demographic response, the population of the strong state would mechanically shrink to zero in finite time.

expected social welfare, measured according to the utility function of the living,

$$U(c_t) = u\left(c_t\right) + \overline{u}, \tag{1}$$

where $u\left(c_t\right) = \frac{c_t^{1-\gamma}}{1-\gamma}$ with $\gamma > 0$, describes how utility increases with consumption c; the constant $\overline{u}$ is related to the value of life versus death, the utility of which is normalized to zero. Thus, if a fraction μ of the population perishes, social welfare amounts to $(1-\mu)U(c_t)$. Following the greater part of the literature discussed by Jones (2016, p.558-9), I assume $\gamma > 1$, which implies $\overline{u} > 0$ for life to be worth living - i.e. for $U(c_t)$ to be positive, which I assume throughout. Jones (2016) adopts the values $\gamma = 1.5$ and $\gamma = 2$ for his numerical computations. Parameter γ in the assumed utility function is both the coefficient of relative risk aversion and the inverse of the elasticity of intertemporal substitution (EIS). Large literatures on asset pricing and labor supply suggest that the coefficient of relative risk aversion is larger than one. Evidence on the EIS is less clear-cut. Recent work by Crump et al. (2022) finds an EIS of about 0.5, which is equivalent to $\gamma = 2$ in my setup. A meta-study by Havránek (2015), based on 2,735 estimates from 169 published papers, documents a broad range of results, including some estimates of the EIS above one; it concludes that the most common values of the EIS are in the range 0.3-0.4. In sum, much of the available evidence suggests that $\gamma > 1$ is the empirically more relevant case, and this is the case that I will posit in the sequel. For the sake of completeness, I will also briefly discuss the case $\gamma \leq 1$.

An equilibrium is defined as an infinite sequence of policy decisions $\{d_t\}_{t\in\mathbb{N}}$, so that d_t maximizes the expected utility of generation t of the core country for every t, given the initial conditions y_0 and δ_0 and their common growth rate g.

3.2 Main result

At the beginning of each period t, the militarily strong state chooses either to demand a tribute or let it. In the latter case, the outcome is certain: no lives are lost, everyone consumes what is produced, and social welfare in the strong state amounts to $U(y_t)$. If instead the strong state releases a diktat to the weak state, three outcomes are possible. With probability λ, the weak state is governed by a sane politician who gives in and pays the tribute, so that the strong state's social welfare raises to $U(y_t + \delta_t)$. With probability $(1-\lambda)p$, the weak state, this time governed by a crazy politician, rejects the ultimatum but is rapidly defeated in a military conflict. That war may be very mortiferous for the weak state; for the strong state, casualties are negligible. Thus, also in this state of the world the strong state extracts the rent and its domestic social welfare is equal to $U(y_t + \delta_t)$. Finally, with a probability $(1-\lambda)(1-p) \equiv q > 0$, the war badly ends for

the strong state: it gets no rent and a fraction $\mu > 0$ of its population loses its life. The probability q of this event is small because the strong state's probability of victory, p, is large. In this case of military defeat, social welfare in the strong state only amounts to $(1-\mu)U(y_t)$.

The outcomes and associated probabilities described above characterize the imperial gamble faced in each period by the strong state. It will opt for imperialism if and only if its expected social welfare is larger under $d_t = I$, which is equivalent to the following condition:

$$(1-q)U(y_t+\delta_t) + q(1-\mu)U(y_t) > U(y_t). \tag{2}$$

The following Proposition states the main prediction of the baseline model.

Proposition 1. *Let condition (2) be satisfied in period* 0. *There exists a finite* $\bar{t} \geq 1$ *such that imperialism is pursued in period* t *if and only if* $t < \bar{t}$*; faster economic growth implies that imperialism is abandoned sooner.*

Proof. Using the utility function (1), condition (2) for $d_t = I$ can be written as

$$(1-q)u(y_t+\delta_t) - (1-q+q\mu)u(y_t) > q\mu\overline{u}.$$

Inserting the CRRA specification for $u(.)$ and rearranging terms, this condition becomes:

$$\frac{1-q+q\mu}{y_t^{\gamma-1}} > q\mu(\gamma-1)\overline{u} + \frac{1-q}{(y_t+\delta_t)^{\gamma-1}}. \tag{3}$$

Since y_t and δ_t steadily grow at rate $g > 0$ and $\gamma > 1$, the LHS of this condition asymptotically goes to 0 from above, while its RHS goes to $q\mu(\gamma-1)\overline{u} > 0$. Hence, condition (3), which is satisfied at $t = 0$ by assumption, will be violated in finite time. Because of steady growth, that condition can be written as

$$\frac{1-q+q\mu}{y_0^{\gamma-1}} > q\mu(\gamma-1)\overline{u}e^{gt(\gamma-1)} + \frac{1-q}{(y_0+\delta_0)^{\gamma-1}}.$$

Its LHS is independent of t, while its RHS strictly increases in t without bound. Therefore, the optimal policy of the strong state changes forever in some switching period $\bar{t}$: the smallest integer value of t for which this condition is violated. This condition immediately reveals that the larger is the growth rate g, the smaller is $\bar{t}$.

For the sake of completeness, I now prove that assuming condition (2) at the initial date $t = 0$ does not contradict the requirement that life is preferred to death. By the CRRA specification, we have

$$U(y_0) = \overline{u} - \frac{1}{(\gamma-1)y_0^{\gamma-1}},$$

which is positive if $\overline{u} \geq y_0^{1-\gamma}/(\gamma-1)$. At date $t=0$, condition (2) becomes, using (3),

$$\frac{1-q+q\mu}{y_0^{\gamma-1}} > q\mu(\gamma-1)\overline{u} + \frac{1-q}{(y_0+\delta_0)^{\gamma-1}}.$$

In order to show that this condition and $U(y_t) \geq 0$ can simultaneously hold, select for $\overline{u}$ the value $\overline{u} = y_0^{1-\gamma}/(\gamma-1)$, which implies $U(y_0) = 0$ and $U(y_t) > 0$, $\forall t \geq 1$. Inserting it in the above condition and rearranging terms shows that (2) is equivalent to

$$\frac{1-q}{y_0^{\gamma-1}} > \frac{1-q}{(y_0+\delta_0)^{\gamma-1}},$$

which is necessarily true because $\delta_0 > 0$. **QED**

In order to grasp the intuition behind Proposition 1, it is useful to arrive at it through a small detour. Condition (2) tells us that in the initial period imperialism is the optimal strategy for the strong state if and only if

$$(1-q)[U(y_0+\delta_0) - U(y_0)] > q\mu U(y_0).$$

Taking a first-order Taylor expansion around $U(y_0)$, the term in square brackets can be approximated by $\delta_0 U'(y_0)$. Inserting it in the above inequality and rearranging terms yields the following condition for preferring imperialism:

$$\frac{\delta_0}{y_0} > \mu \frac{q}{1-q} \frac{U(y_0)}{U'(y_0)y_0}. \tag{4}$$

Consider how this condition is affected by economic growth, i.e. if t increases beyond 0. Since δ_t and y_t grow at the same rate, the LHS of (4) does not depend on t. The evolution of its RHS entirely depends on how the term $U(y_t)/U'(y_t)y_t$ evolves over time. Jones (2016) offers a useful interpretation of that term. Since we have normalized to 0 the utility level associated with death, its numerator is the value of human life expressed in utils; dividing it by $U'(y)$, that value is converted into units of consumption. Therefore, the term $U(y)/U'(y)y$ is the value of life in consumption units as a ratio to the level of consumption. Using the CRRA assumption, that ratio reads:

$$\frac{U(y_t)}{U'(y_t)y_t} = \overline{u} y_t^{\gamma-1} - (\gamma-1)^{-1}.$$

Since $\overline{u} > 0$ and $\gamma > 1$, this term strictly increases with t and goes to $+\infty$ when t does the same. Therefore, condition (4) will be violated in finite time, the sooner the faster is the growth of GDP. This is precisely the claim made in Proposition 1.

If the coefficient of relative risk aversion γ is larger than unity, the value of human life relative to consumption must become larger at higher levels of consumption: as each

generation gets richer, life becomes increasingly valuable relative to consumption. Moreover, the relative value of life grows without bound. At some point in time, there must be a first generation for which the potential consumption gain that can be achieved by carrying out the predatory policy of the past is not worthwhile the potential loss of human lives that comes along with it. That generation voluntarily discards imperialism and stops demanding tributes. The faster is economic growth, the sooner is reached that switching moment. Subsequent generations optimally remain peaceful, provided that the growth rate stays positive. To sum up, the fact that the safety costs of imperialism grow faster than its benefits in terms of consumption is the crucial reason for its demise. Under $\gamma > 1$, economic growth is therefore a force for peace.

Notice that if you suppose $\gamma < 1$, the value of human life relative to consumption, $U(y)/U'(y)y$, decreases along the growth path. In this case, if imperialism was optimal at $t = 0$, it never stops being optimal for the strong state. The knife-edge case $\gamma = 1$ yields the log utility. In this case, $U(y)/U'(y)y = \overline{u} + ln(y)$ and the value of life relative to consumption increases with economic growth. Hence, with logarithmic utility the strong state optimally abandons imperialism in finite time. In the rest of the paper, the empirically likely case $\gamma > 1$ will be assumed throughout.

4 Extensions

How robust is Proposition 1, the prediction that the imperial core will eventually find it optimal to stop oppressing the periphery and risking war? Three robustness checks will be considered in turn. Each of them puts forward a novel mechanism that goes against the one that drives Proposition 1, and scrutinizes whether it is powerful enough to offset it.

4.1 Tributes grow faster than GDP

Arguably, imperialism might indefinitely persist despite its mounting safety costs if the growth of potential foreign tributes outstrips the growth of the civilian economy of the strong state. In such a situation, predation of the periphery would become over time the main source of domestic consumption in the core country, up to the point of trivializing the contribution made by its civilian economy.

Assume that GDP per capita in the strong state grows at rate g as before, whereas potential tributes now grow at a rate $\hat{g} > g$, so that the ratio δ_t/y_t increases over time. This may capture situations in which new natural resources are discovered in colonies or in which their territory widens in the wake of new conquests. It may also capture a long-

lasting sclerosis of the economy of the core country, one that prevents it from achieving the potential growth rate $\hat{g}$ that is achieved by the periphery. Given that the strong state initially chooses $d_0 = I$, i.e. condition (2) is satisfied at $t = 0$, the issue to be addressed is how its policy preferences evolve under such a differential growth of y_t and δ_t.

Proposition 2. *Assume that condition (2) is satisfied in period* 0 *and that tributes grow at rate* $\hat{g} > g$*. There exists a finite* $\hat{t} \geq 1$*, the earliest period in which the strong state refrains from imperialism for all* $t \geq \hat{t}$*; the higher is the rate* $\hat{g}$*, the later will imperialism be definitively abandoned.*

Proof. If y_t instantaneously grows at rate g and δ_t instantaneously grows at rate $\hat{g}$, their sum $y_t + \delta_t$ grows at an increasing rate $\tilde{g}_t$ which is a weighted average of them:

$$\tilde{g}_t = \frac{y_t}{y_t + \delta_t} g + \frac{\delta_t}{y_t + \delta_t} \hat{g}.$$

As shown in the proof of Proposition 1, condition (2) is equivalent to (3), which in the current extension reads

$$\frac{1 - q + q\mu}{y_0^{\gamma-1} e^{(\gamma-1)gt}} > q\mu(\gamma - 1)\overline{u} + \frac{1 - q}{(y_0 + \delta_0)^{\gamma-1} e^{(\gamma-1)\int_0^t \tilde{g}_x dx}}. \tag{5}$$

This condition is satisfied by assumption at $t = 0$. Over time, its LHS monotonically decreases towards 0, while its RHS monotonically decreases towards $q\mu(\gamma - 1)\overline{u} > 0$. Hence, it must be violated forever after some finite time: there exists a $\hat{t} \geq 1$, the period in which the strong state switches forever to a peaceful policy.

In order to determine how $\hat{g}$ affects $\hat{t}$, use $LHS(t) > RHS(t)$ as a shorthand for condition (5). Denote by $\tau \in \Re_+$ the largest root of the equation $LHS(t) = RHS(t)$ and by $\hat{t}$ the smallest integer such that $\hat{t} > \tau$. Notice that $LHS(t)$ does not depend on $\hat{g}$, while $RHS(t)$ is strictly decreasing in $\hat{g}$ through the definition of $\tilde{g}$. Hence, τ depends on $\hat{g}$ and is implicitly determined by

$$LHS(\tau(\hat{g})) = RHS(\tau(\hat{g}); \hat{g}).$$

Differentiating this equation with respect to $\hat{g}$ and rearranging terms yields:

$$\frac{\partial \tau}{\partial \hat{g}} = \frac{\partial RHS/\partial \hat{g}}{\partial LHS/\partial t - \partial RHS/\partial t}. \tag{6}$$

At $t = \tau$ the slope of the LHS is larger than the slope of the RHS, i.e.

$$\left|\frac{\partial LHS}{\partial t}_{t=\tau}\right| > \left|\frac{\partial RHS}{\partial t}_{t=\tau}\right|,$$

as can be shown by contradiction. Suppose namely that the contrary be true. Then, there exists an interval $(\tau, \tau + \epsilon)$ with $\epsilon > 0$ arbitrarily small, on which $LHS(t) \geq RHS(t)$. Because

$$lim_{t\to\infty} LHS(t) = 0 < lim_{t\to\infty} RHS(t)$$

and both $LHS(t)$ and $RHS(t)$ are continuous in t, there must exist a $\tau' > \tau$ such that $LHS(\tau') = RHS(\tau')$. But this contradicts the premise that τ be the largest root of $LHS(t) = RHS(t)$. Therefore, $\partial LHS/\partial t < \partial RHS/\partial t$ at $t = \tau$, which implies that the denominator of (6) is negative. Its numerator is negative too because $RHS(t)$ is strictly decreasing in $\hat{g}$. Hence, $\partial\tau/\partial\hat{g} > 0$. Since $\hat{t}$ is weakly increasing in τ, a higher $\hat{g}$, by increasing τ, postpones $\hat{t}$. **QED**

The faster growth of tributes merely postpones the date at which imperialism will be abandoned. As compared to the baseline model, in this extension the strong state's incentive to extort a tribute is larger in every period. Yet, also in this case the value of life relative to consumption grows without bound over time. At some point, the potential consumption gain offered by imperialism is not worthwhile the potential loss of human lives that comes along with it. This holds true even if that consumption gain gets arbitrarily large in relative terms, i.e. $lim_{t\to\infty}\delta_t/y_t = \infty$.

4.2 National security progress

Technological progress in defensive and offensive weapons may change the expected number of casualties in case of war. One may wonder whether a distinctive enhancement of defense weapons and tactics, leading to a steady improvement of national security in the strong state, may be able to explain why imperialism persists.

In order to investigate this conjecture, I now assume that the share of the domestic population of the strong state that is expected to be killed in case of a war is not constant but declines over time. Specifically, I posit the following exponential-decay process:

$$\mu_t = \mu_\infty + (\mu - \mu_\infty)e^{-\check{g}t}. \tag{7}$$

Total casualties in the strong state are the sum of two terms. The first one, $\mu_\infty \in (0, \mu)$, represents the casualties that cannot be prevented by national security progress - because of diabolical suicidal terror attacks, "unknown unknowns", etc. The second one, $\mu - \mu_\infty$, are avoidable casualties: those time-0 casualties that decrease over time thanks to a myriad of improvements in national security - and $\check{g}$ is the rate at which their decay

occurs. The baseline model obtains in the special case $\check{g} = 0$. Here, I examine the case $\check{g} > 0$.

Proposition 3. *Assume that condition (2) is satisfied in period* 0 *and that avoidable casualties decrease at rate* $\check{g}$*. There exists a finite* $\check{t} \geq 1$*, the earliest period in which the strong state refrains from imperialism for all* $t \geq \check{t}$*; the higher is rate* $\check{g}$*, the later will imperialism be definitively abandoned.*

Proof. Using the CRRA specification and (7), condition (2) can be written as

$$\frac{1-q}{e^{(\gamma-1)gt}}\left[\frac{1}{y_0^{\gamma-1}} - \frac{1}{(y_0+\delta_0)^{\gamma-1}}\right] > (\gamma-1)q\bar{u}[\mu_\infty + (\mu-\mu_\infty)e^{-\check{g}t}] - q\frac{\mu_\infty + (\mu-\mu_\infty)e^{-\check{g}t}}{y_0^{\gamma-1}e^{(\gamma-1)gt}}.$$

This condition is satisfied by assumption at $t = 0$. Inspection of its LHS reveals that it is monotonically decreasing in t and converges to 0 as $t \to \infty$. Its RHS is monotonically decreasing in t and converges to $(\gamma-1)q\bar{u}\mu_\infty > 0$. Hence, the condition for $d_t = I$ to be optimal will be violated in finite time. Denote by $\check{t}$ the earliest period such that that condition is violated and remains so for all successive periods.

The proof that increasing $\check{g}$ postpones $\check{t}$ is analogous to the corresponding part of the proof of Proposition 2. As in that proof, use $LHS(t) > RHS(t)$ as a shorthand for the above condition and denote by $\tau \in \Re_+$ the largest root of the equation $LHS(t) = RHS(t)$; $\check{t}$ is the smallest integer such that $\check{t} > \tau$. Only $RHS(t)$ depends on $\check{g}$. Therefore, τ depends on $\check{g}$ and is implicitly determined by

$$LHS(\tau(\check{g})) = RHS(\tau(\check{g}); \check{g}).$$

Differentiating this equation and rearranging terms yields:

$$\frac{\partial\tau}{\partial\check{g}} = \frac{\partial RHS/\partial\check{g}}{\partial LHS/\partial t - \partial RHS/\partial t}. \tag{8}$$

In order to verify that $RSH(t)$ is decreasing in $\check{g}$, compute its derivative,

$$\frac{\partial RHS}{\partial\check{g}} = (1-\gamma)q\bar{u}(\mu-\mu_\infty)\check{g}e^{-\check{g}t} + \frac{q(\mu-\mu_\infty)\check{g}e^{-\check{g}t}}{y_t^{\gamma-1}}.$$

It follows that $\partial RHS/\partial\check{g} < 0$ if and only if

$$(1-\gamma)\bar{u} < -\frac{1}{y_t^{\gamma-1}},$$

or, equivalently,

$$\frac{y_t^{1-\gamma}}{1-\gamma} + \bar{u} > 0,$$

which is implied by the assumption that life is preferred to death.

By the same steps as in the proof of Proposition 2 it can be shown that at $t = \tau$ the slope of the LHS is larger than the slope of the RHS, i.e.

$$|\frac{\partial LHS}{\partial t}_{t=\tau}| > |\frac{\partial RHS}{\partial t}_{t=\tau}|.$$

Hence, both the numerator and the denominator of (8) are negative, which implies $\partial\tau/\partial\check{g} > 0$. Since $\check{t}$ is weakly increasing in τ, a higher $\check{g}$, by increasing τ, postpones $\check{t}$. **QED**

Progress in national security delays the ultimate change of foreign policy because the rise of the cost of imperialism in terms of own casualties is contained by the decrease in the number of those casualties. At some point in time this containment will not suffice to outweigh the rise in the value of lost lives, and the strong state will turn peaceful.

Notice that imperialism is predicted to be discarded also in the rather implausible case that national security progress can asymptotically guarantee zero casualties, provided the speed of that security progress is bounded. Formally, it is not difficult to verify that Proposition 3 still holds if $\mu_\infty = 0$, provided that $\check{g} < (\gamma - 1)g$.

4.3 International relative concerns

As a final robustness check, I now examine the impact of international rivalry in living standards. Social welfare in the strong state may depend not only on the absolute level of domestic consumption, but also on how it compares with consumption in the rest of the world. The rest of the world may include not just the weak states but also neutral countries and other imperial powers.

A concern for relative economic position in international comparisons may be driven by various factors. One is jealousy at the individual level: citizens of the strong state may meet foreigners at touristic venues and derive pleasure from showing off and, conversely, feel humiliated by seeing those foreigners consuming things that they cannot afford. Another reason why a high standard of living as compared to other countries may matter is that it affects national prestige. Finally, there may be other great powers around, with whom an arms race takes place. In this case, the relative concern is ultimately driven by the desire to win the arms race.

Intuitively, such a concern for international relative position might prompt the strong state to keep demanding tributes so as to sustain its economic preeminence in face of the

rest of the world. For this reason it may become especially compelling if economic growth is faster abroad than in the strong state.

In order to scrutinize this conjecture, I adopt the formulation of relative concerns in the utility function introduced by Gali (1994) and extend it to international comparisons.[4] The specification of the first term of the utility function (1) now reads:

$$u(c_t) = \frac{\left(c_t/c_t^{*\rho}\right)^{1-\gamma}}{1-\gamma}, \tag{9}$$

where c^* denotes average consumption in the rest of the world and $\rho \in [0,1]$ measures the intensity of relative needs. This formulation encompasses the consumption utility (1) of the baseline model, which obtains in the special case $\rho = 0$. Foreign economic per-capita growth is assumed to occur at rate g^*, which may differ from the domestic rate g. In order to preclude the implausible case of a perpetual decline of utility in the strong state, I posit the following upper bound for the ratio of foreign to domestic growth: $g^*/g < \rho^{-1}$. If, for example, $\rho = .25$, the growth rate in the rest of the world is posited to be smaller than the fourfold of the domestic rate.

Proposition 4. *Assume that condition (2) is satisfied in period* 0*, the strong state cares about its relative economic performance, and foreign growth occurs at rate* g^**. There exists a finite* $t^* \geq 1$ *such that imperialism is pursued in period* t *if and only if* $t < t^*$*; faster foreign growth implies that imperialism is abandoned later.*

Proof. Using (9), condition (2) can be written as

$$(1-q)\left[\frac{1}{(\gamma-1)y_t^{\gamma-1}} - \frac{1}{(\gamma-1)(y_t+\delta_t)^{\gamma-1}}\right] c_t^{*\rho(\gamma-1)} > q\mu\left[\overline{u} - \frac{c_t^{*\rho(\gamma-1)}}{(\gamma-1)y_t^{\gamma-1}}\right].$$

Rearranging terms yields

$$\frac{1-q+q\mu}{y_t^{\gamma-1}} > \frac{q\mu\overline{u}(\gamma-1)}{c_t^{*\rho(\gamma-1)}} + \frac{1-q}{(y_t+\delta_t)^{\gamma-1}}.$$

Using the respective growth rates finally leads to the inequality

$$\frac{1-q+q\mu}{y_0^{\gamma-1}} - \frac{1-q}{(y_0+\delta_0)^{\gamma-1}} > \frac{q\mu\overline{u}(\gamma-1)e^{(\gamma-1)(g-\rho g^*)t}}{c_0^{*\rho(\gamma-1)}}.$$

Its LHS is positive and time-invariant. Since $g^*/g < \rho^{-1}$, $g > \rho g^*$ and its RHS grows without limit if $t \to \infty$. Hence, $d_t = I$ necessarily ceases to be optimal in some finite

[4] Fisher and Hof (2000) thoroughly discuss Gali's (1994) specification and its implications for growth models.

period $t^* \geq 1$. Furthermore, increasing g^* decreases the RHS, while leaving the LHS unaffected. As a consequence, increasing g^* postpones t^*. **QED**

In sum, the robustness checks in this Section confirm the main insight from the baseline model: thanks to economic growth, imperialism should eventually disappear. Yet, while we do observe economic growth, we rarely if at all observe imperial powers that voluntarily abdicate and cease to extort resources from their periphery. This suggests that the baseline model and its extensions miss some crucial element.

5 War bias and the elite's self-image

If the policy-makers of the strong state maximize domestic social welfare, they should eventually jettison imperialism. A natural way to try explaining discordant historical evidence is to replace the assumption of benevolent policy-makers with one of self-interested policy-makers who stand to disproportionately profit from imperialism.

The claim that political leaders have a war bias is a longstanding one, which is not surprising in view of the fact that most governments in the course of history were not democratic and their leaders belonged to the caste of warriors. Kant (2003, originally published 1795) famously asserted that a state with a republican constitution is less prone to wage war than a despotic one because only the former fully internalizes the social costs of war. Later, several scholars put forward the symbiotic relationship between great powers' policy-makers and some commercial and financial elites that reap most of imperialism's benefits. In his classic text on 19th-century imperialism, Hobson (1902) devotes an entire chapter to the "economic parasites of imperialism": those investors and speculators who were the main winners of British imperialism and had the power to work their will in the arena of politics.[5]

In the language of the baseline model, one could argue that policy-makers have a systematic war bias because they receive an over-proportional share of the tribute δ paid by the weak states and/or because they face a reduced risk μ to be killed or injured in case of a war. However, this type of war bias cannot alter the model's prediction that imperialism be eventually discarded. In order to see it, let us reinterpret the baseline model so that d_t maximizes the expected utility of the representative policy-maker in period t; assume further that this policy-maker receives a larger tribute than the average

[5] At the beginning of that chapter, Hobson approvingly quotes the following words of Thomas More: "Everywhere do I perceive a certain conspiracy of rich men seeking their own advantage under the name and pretext of the commonwealth". Jackson and Morelli (2007) develop a strategic model of war in which each country has a pivotal decision maker with a political bias. Causal empirical evidence on the role of private rents in shaping legislation on war policy is offered by McGuirk et al. (2023).

citizen (δ_0 is larger, and hence all subsequent δ_t too) and faces a smaller, but still strictly positive, risk to be killed in case of war (μ is lower). Then, we can apply Proposition 1 and its proof just by positing the parameters that are relevant for the policy-makers, rather than for the overall population of the strong state. As shown by the next Proposition, this kind of war bias merely delays the date at which imperialism will be jettisoned.

Proposition 5. *Add war bias to the baseline model: an increase of δ_0 and a decrease of μ simply postpone period $\bar{t} \geq 1$ in which imperialism is abandoned forever.*

Proof. Imperialism is the preferred policy if condition (3) is met, which can be rewritten as:

$$\frac{1-q+q\mu}{y_0^{\gamma-1}} > q\mu(\gamma-1)\overline{u}e^{(\gamma-1)gt} + \frac{1-q}{(y_0+\delta_0)^{\gamma-1}}.$$

Use $LHS(x) > RHS(t;x)$ as a shorthand for this condition, where $x \in \{\delta_0, \mu\}$, and denote by $\tau \in \Re_+$ the unique value of t such that $LHS(x) = RHS(t;x)$. $\bar{t}$ is the smallest integer such that $\bar{t} > \tau$. τ depends on x and is implicitly determined by

$$LHS(x) = RHS(\tau(x);x).$$

Differentiating this equation with respect to x and rearranging terms yields:

$$\frac{\partial \tau}{\partial x} = \frac{\partial LHS/\partial x - \partial RHS/\partial x}{\partial RHS/\partial t}.$$

We have that $\partial RHS/\partial t > 0$. For $x = \delta_0$, $\partial LHS/\partial \delta_0 = 0$ and $\partial RHS/\partial \delta_0 < 0$. Therefore, $\partial \tau/\partial \delta_0 > 0$. For $x = \mu$, $\partial LHS/\partial \mu = q y_0^{1-\gamma} > 0$ and $\partial RHS/\partial \mu = q(\gamma - 1)\overline{u}e^{(\gamma-1)gt} > 0$. Therefore, $\partial \tau/\partial \mu < 0$ if and only if

$$(\gamma-1)\overline{u}e^{(\gamma-1)gt} > y_0^{1-\gamma},$$

or, equivalently,

$$\frac{y_t^{1-\gamma}}{1-\gamma} + \bar{u} > 0,$$

which is implied by the assumption that life is preferred over death. **QED**

If foreign policy is a prerogative of the political elite of the strong state and that political elite is enticed by disproportionate material gains from imperialism and special safety provisions, there is certainly a war bias. Yet, this war bias only has transitory

significance: imperialism lasts longer than in the case of a domestically benevolent policy-maker, but sooner or later it is replaced with a peaceful policy. It is easy to verify that the same conclusion holds true for the extensions of the baseline model that were examined in the previous Section.

The notion of war bias can however be spelled out in terms that are alien to the baseline model. War bias may encompass nobler motives than economic parasitism and security privileges, with possibly opposite long-run implications. Political leaders may be lured by the glory that is to be bestowed upon them in the wake of a military victory; they may sincerely feel a deep attachment to the might and honor of the country they are called upon to serve. In fact, the Homeric epics of those Greek princes who struggled to death because they strove for immortality are too well-known to be recalled here. More relevant for describing the war bias of political elites in modernity is the rise of nationalism and development of a group narcissism that makes them identify with their nation as an abstract, sacred, entity. For those elites, risking war in order to accomplish their country's mission in world history is a compelling move in order to affirm their identity and pamper their self-esteem. This element is missing in the notion of war bias that flows from the baseline model.

In order to shed light on this facet of imperialism and its long-run implications, I will modify the baseline model so as to include a concern for positive self-image by the political elite of the strong state. Endogenous identity and values have been modeled in economics by Akerlof and Kranton (2000), Bisin and Verdier (2000), Bénabou and Tirole (2011) and Bernheim et al. (2021), among others. Here, I will apply the theory of symbolic values developed by Corneo and Jeanne (2010) that appears to be well suited to the issue at stake and is relatively parsimonious in terms of modeling. In that approach, each individual is endowed with a value system: a mapping that associates a symbolic or ideal value to each characteristic, e.g. an action, within a set. After choosing an action, the individual's self-esteem is determined by the symbolic value attached to it in that individual's value system. Individuals are assumed to care about their self-esteem, along with consumption; value systems are endogenously determined by a socializing agency, e.g. the individual's parents.[6]

In the model developed below, there is a political elite of the strong state that in every period autonomously decides whether to pursue imperialism. That political elite is a subset of the population of the strong state and reproduces itself along dynastic lines. This may capture a whole spectrum of political regimes, from autocracy to the kind of

[6]Other socialization agencies, that could be accommodated by the theory and whose influence greatly varied across epochs and places, include priests, schools, the media, philosophers, political entrepreneurs, and public discourse.

delegating democracy examined by Gradstein (2024), in which an incompetent majority of voters chooses to delegate policy-making to a competent elite despite their partially divergent interests. The political elite is homogeneous and its representative member - the policy-maker for short - enhances her self-esteem by acting in accordance with her values, which mirror the elite's ideology. The value system of policy-makers is endogenous and transmitted from one generation to the next by altruistic parents.

5.1 Assumptions

Let us modify the baseline model by positing an elite of the strong state that unilaterally selects its foreign policy. This political elite consists of overlapping generations of identical individuals living for two periods. In the first period of their life they are children who get socialized by their parents to selected values; in their second period, they are adults who choose the policy of the strong state, $d_t \in \{I, P\}$, consume, and socialize their children. I call generation t the generation that is active in t and was born in the previous period. Elite parents choose the policy of the strong state so as to maximize their expected utility and choose the values of their children so as to maximize their children's expected utility.[7]

Each member of the political elite is equipped with a value system. A value system associates a non-negative index $v(d)$ to each possible policy decision of the elite, $d \in \{I, P\}$. Analogously to a price system, the key property of a value system is to fix the relative evaluation of actions. I thus define values to be elements of the unit simplex:

$$v(I) + v(P) = 1. \tag{10}$$

The value system of an individual that was socialized in period $t-1$ and is a policy-maker in t is denoted by $\{v(I,t), v(P,t)\}$. The value system describes the ideology of the political elite. In the special case of the value system $\{1/2, 1/2\}$, I will say that the elite has no ideological bias. The most extreme ideological endorsement of imperialism occurs for the value system $\{1, 0\}$, while the most extreme attachment to pacifism is captured by $\{0, 1\}$. It is natural to think of a value system as being framed in a specific narrative. Over the course of history, a broad range of narratives that bestow intrinsic value upon some concrete form of imperialism can be observed. Paramount among them are narratives that extol a certain religion, the greatness of a nation, racial superiority, some version of world socialism, or a given conception of human rights.[8]

[7] One can also interpret this model as depicting policy-makers who live only one period and choose their own values at the beginning of that period. In this interpretation, that choice is related to the theoretical setting that Bernheim et al. (2021) call "perfect mindset flexibility".

[8] For instance, imperialism in early modern times came to be advocated by reference to the doctrine of natural rights. According to Tuck (1999), Grotius was pivotal in shaping the modern ideological

Values are purposely transmitted along dynastic lines: parents transmit values that, in expectation, are conducive to the highest possible utility level for their children. However, it is not possible for parents to raise their children to values that are too different from those that the parents themselves endorse. Formally, I posit that each parent from generation t chooses the values of her child subject to the constraint

$$v(I, t+1) \in [v(I,t) - \eta, v(I,t) + \eta] \cap [0,1], \tag{11}$$

where parameter $\eta \in (0, 1 - q\mu)$ captures the maximum distance between the parent's values and those of her child.[9] One may interpret η as being inversely related to the costs to a parent of socializing her child to values that the parent does not endorse. A smaller η may stand for a more rigid personality, characterized by closed-mindedness, as well as for steeply rising pecuniary costs to raise children to values that depart from the traditional ones. In the limit, if η is arbitrarily small, children mechanically inherit their parents' values.

Endorsed values, in combination with policy choice, determine the self-esteem of the members of the political elite: the political elite achieves higher life satisfaction if it acts in accordance with its values. A policy-maker's self-esteem is defined as the value of the policy she chooses, according to her own value system: $v(d_t, t)$, with $d_t \in \{I, P\}$. Apart from this, policy-makers are endowed with the same preferences as the rest of the population with regard to consumption and life, which are given as in the baseline model. The overall utility of a policy-maker of generation t is thus given by:

$$U_t = u(c_t) + \overline{u} + \kappa v(d_t, t), \tag{12}$$

where $u(c_t)$ is the CRRA specification and $\overline{u} > 0$ as in the baseline model, while parameter $\kappa > 0$ captures the strength of the concern for self-esteem.

In the current model, policy-makers choose not only whether to practice imperialism, but also the values of the next generation of policy-makers. Thus, an equilibrium consists not only of an infinite sequence of policy decisions $\{d_t\}_{t\in\mathbb{N}}$, but also in a sequence of value systems $\{v(I,t), v(P,t)\}_{t\in\mathbb{N}}$ that maximize the expected utility of the policy-makers of generation t subject to (10) and (11). I posit that for generation 0 imperialism is both the optimal policy, i.e. $d_0 = I$, and the optimal ideology, i.e. $\{v(I,0), v(P,0)\} = \{1, 0\}$, and investigate under which conditions economic growth is conducive to the demise of

justification of imperialism. He sought to demonstrate that a just war could also be launched by a private trading company to pursue its commercial advantage. This occurred at a time when the Dutch were embarking on commercial expansion in the Indies and Grotius himself had connections with the Dutch East India Company.

[9] Recall that both q and μ are small, so that the upper bound on η is close to one; η equal to one would effectively remove the constraint.

imperialism. Since the choice of values is constrained by the values of the preceding generation as by (11), this requires an initial condition on the values of the parents of generation 0. In a first step, I assume those initial values to be purely imperialistic, i.e. $v(I,-1)=1$ and $v(P,-1)=0$. In a second step, I will investigate the general case of an arbitrary initial ideology.

5.2 Socialization of policy-makers

As implied by (10), values are relative, so that we can concentrate on the determination of just one of them, say the value attached to acting as an imperial power, $v(I,t)$. Let us introduce the notation $\overline{v}_{t+1} \equiv Inf\{v(I,t)+\eta, 1\}$ and $\underline{v}_{t+1} \equiv Sup\{v(I,t)-\eta, 0\}$, so that policy-makers in t choose the value that their children will attach to imperialism in the interval $[\underline{v}_{t+1}, \overline{v}_{t+1}]$. Notice for later use that the assumed initial condition about ideology implies $\underline{v}_0 = 1-\eta$ and $\bar{v}_0 = 1$.

In a perfect-foresight equilibrium, each parent generation knows the policy choice of its offspring. Hence, every parent invests the maximal symbolic value on that policy, since this increases her offspring's self-esteem without affecting other determinants of her utility. Formally, an equilibrium path necessarily satisfies the following property:

$$v(I,t+1) = \overline{v}_{t+1} \qquad if \qquad d_{t+1} = I, \tag{13}$$

$$v(I,t+1) = \underline{v}_{t+1} \qquad if \qquad d_{t+1} = P. \tag{14}$$

5.3 Endless growth and imperialism

In a perfect-foresight equilibrium, policy-decisions and socialization decisions go hand in hand in the distinctive way described by (13) and (14): elite parents of generation $t-1$ transmit an enhanced imperialistic ideology to their children ($\bar{v}_t$) if they expect them to choose $d_t = I$, and transmit a weakened imperialistic ideology ($\underline{v}_t$) if they expect them to choose $d_t = P$. The condition for parents at $t-1$ to optimally transmit an enhanced imperialistic ideology to their children therefore implies the condition that policy-makers at t opt for imperialism rather than peace. That condition mirrors condition (2) in the baseline model; it now reads:

$$(1-q)U(y_t+\delta_t; \bar{v}_t) + q(1-\mu)U(y_t; \bar{v}_t) > U(y_t; 1-\underline{v}_t), \tag{15}$$

where I made explicit the self-esteem that is enjoyed by the representative member of the political elite if $d_t = I$, LHS of (15), and if $d_t = P$, RHS of (15). Parameters δ_t and μ need

not be the same as for ordinary citizens. As compared to the corresponding condition in the baseline model, there is an additional wedge due to the difference in self-esteem conveyed by the two policy options. Condition (15) can namely be expressed as

$$(1-q)u(y_t+\delta_t)-(1-q+q\mu)u(y_t)+\kappa[\bar{v}_t(1-q\mu)-1+\underline{v}_t]>q\mu\bar{u}, \tag{16}$$

where its new term,

$$\kappa[\bar{v}_t(1-q\mu)-(1-\underline{v}_t)]\equiv V_t,$$

can be interpreted as the boost to the policy-maker's utility from self-image if they pursue imperialism.

The variable V_t will play a crucial role in the analysis to follow; a few remarks on it are in order. First, its definition includes a leak of welfare from self-esteem if imperialism is chosen: $-\kappa\bar{v}_t q\mu$. This is due to the fact that with probability q a fraction μ of the political elite will perish if it pursues imperialism. Second, V_t is strictly increasing with $v(I,t-1)$ through the definitions of $\bar{v}_t$ and $\underline{v}_t$. Third, V_t takes values in the interval $[V^{min},V^{max}]$, where $V^{min}=\kappa[\eta(1-q\mu)-1]<0$ and $V^{max}=\kappa(1-q\mu-\eta)>0$; V^{min} results from pacifist parents, while V^{max} occurs if parents endorse pure imperialism.

We can now establish the main result of this inquiry:

Proposition 6. *Let condition (16) be satisfied in period* 0. *Imperialism persists forever if and only if the policy-maker's concern for self-esteem is sufficiently strong, i.e. if* $\kappa\geq q\mu\overline{u}/(1-q\mu-\eta)$.

Proof. Inserting the CRRA specification and steady growth into (16) yields

$$\frac{1-q+q\mu}{y_0^{\gamma-1}}+(\gamma-1)V_t e^{(\gamma-1)gt}>\frac{1-q}{(y_0+\delta_0)^{\gamma-1}}+(\gamma-1)q\mu\bar{u}e^{(\gamma-1)gt},$$

or equivalently,

$$\frac{1-q+q\mu}{y_0^{\gamma-1}}+(\gamma-1)[V_t-q\mu\bar{u}]e^{(\gamma-1)gt}>\frac{1-q}{(y_0+\delta_0)^{\gamma-1}}. \tag{17}$$

By assumption, this condition is initially satisfied, i.e.

$$\frac{1-q+q\mu}{y_0^{\gamma-1}}+(\gamma-1)[V_0-q\mu\overline{u}]>\frac{1-q}{(y_0+\delta_0)^{\gamma-1}}. \tag{18}$$

Consider now generation $t=1$ and the corresponding socialization incentives faced by their parents. Notice that $V_1=V_0=V^{max}$ because $\bar{v}_0=\overline{v}_1=1$ and $\underline{v}_0=\underline{v}_1=1-\eta$.

Using (17), parents at $t = 0$ transmit their imperialistic ideology to their children if and only if

$$\frac{1-q+q\mu}{y_0^{\gamma-1}} + (\gamma-1)[V_1 - q\mu\bar{u}]e^{(\gamma-1)g} > \frac{1-q}{(y_0+\delta_0)^{\gamma-1}}. \tag{19}$$

There are two cases to consider. First, consider the case $\kappa \geq q\mu\bar{u}/(1-q\mu-\eta)$. Then, the term in square brackets in the above expression is positive because it reads:

$$V_1 - q\mu\bar{u} = V^{max} - q\mu\bar{u} = \kappa(1-q\mu-\eta) - q\mu\bar{u} \geq 0.$$

Since $V_1 = V_0$, $e^{(\gamma-1)g} > 1$ and (18) is true, inequality (19) must be true too. Hence, the policy-makers of generation $t = 1$ identify with imperialism exactly as their parents. By forward induction, this reasoning applies to all generations $t > 1$.

Consider now the case $\kappa < q\mu\bar{u}/(1-q\mu-\eta)$, which implies that the term in square brackets in (19) is negative. Since $V_1 = V_0 = V^{max}$, the corresponding term in square brackets in (17) can never become non-negative $\forall t > 1$. Then, there there must be a $\bar{t} \geq 1$ such that condition (16) is violated. Before $\bar{t}$, values stick to pure imperialism. At that date, values begin to change and becomes pacifist in finite time. **QED**

In this model, endless imperialism and war are compatible with indefinite economic progress and a corresponding rise of the value of human life. The intuition behind this result is as follows. On a steady growth path, existential concerns eventually outdo consumption concerns, provided the marginal utility of consumption declines sufficiently rapidly ($\gamma > 1$). For the policy-makers in the current model, there are two sorts of existential concerns, that respectively refer to their physical existence and their psychic existence, i.e. identity. Imperialism threatens the policy-makers' life, while peace threatens their identity. The relative strength of these two existential concerns is determined by the sign of the term in square brackets in (17), $V_t - q\mu\bar{u}$. If pure imperialism was the initial ideology and the intensity of the concern for self-esteem, κ, is strong enough, that term is always positive. In this case, imperialism will never be discarded - despite the fact that its safety costs eventually outstrip the value of the consumption gains obtained through it. Imperialism is never abandoned in order to preserve the identity of the political elite.

Proposition 6 implies that the persistence of imperialism hinges upon an imperfect malleability of values, i.e. on η being smaller than $1 - q\mu$. This assumption squares well with the notion that identity is subject to a substantial inertia and man is not a blank slate. If instead value transmission were unconstrained, values would passively adjust to the policy preferences implied by the baseline model and self-image concerns would be irrelevant. Conversely, a smaller η increases the role of the parents' ideology, which makes

it likelier for imperialism to persist. Formally: a smaller η reduces the critical value of κ that is required for imperialism to persist.

5.4 Arbitrary initial values and ideological change

Proposition 6 was proven under the assumption that the parents of the initial generation of policy-makers have purely imperialistic values. In order to assess the possibility of persistent imperialism starting from any initial ideology, it is useful to formulate the trade-off faced by policy-makers so as to highlight the distinctive effect from self-image concerns. Then, condition (16) for imperialism to be preferred over peace can be written as

$$\Delta_t + V_t > 0, \tag{20}$$

where

$$\Delta_t = (\gamma - 1)^{-1} \left[\frac{1 - q + q\mu}{y_0^{\gamma-1}} - \frac{1 - q}{(y_0 + \delta_0)^{\gamma-1}} \right] e^{-(\gamma-1)gt} - q\mu\overline{u}$$

is the expected utility gain from imperialism as determined in the baseline model. As in that model, I assume that such a gain is initially positive: $\Delta_0 > 0$. We already know that Δ_t decreases over time and asymptotically converges toward $-q\mu\overline{u} < 0$. This mirrors the rising value of human life that drives Proposition 1. The second term,

$$V_t = \kappa[\bar{v}_t(1 - q\mu) - 1 + \underline{v}_t],$$

is the net benefit of imperialism in terms of self-esteem enjoyed by the policy-makers. Proposition 6 says that if at $t = 0$ condition (20) is met and $V_0 = V^{max} = \kappa(1 - q\mu - \eta) \geq q\mu\overline{u}$, in equilibrium that condition is satisfied in every period.

Starting from an arbitrary ideology and a corresponding V_0, the condition $\kappa \geq q\mu\bar{u}/(1 - q\mu - \eta)$ is still necessary to generate endless imperialism; however, it is not sufficient.

Proposition 7. *Let condition (16) be satisfied in period* 0 *for some arbitrary initial ideology. The condition* $\kappa \geq q\mu\overline{u}/(1 - q\mu - \eta)$ *is necessary for imperialism to persist forever, but it is not sufficient.*

Proof.

Necessity: refer to condition (20), which is equivalent to (16). As previously remarked, Δ_t converges toward $-q\mu\overline{u} < 0$ from above. Hence, (20) can asymptotically be satisfied only if $V_t \geq q\mu\overline{u}$ for $t \to \infty$. If $\kappa < q\mu\overline{u}/(1 - q\mu - \eta)$, then $V^{max} < q\mu\overline{u}$ and $V_t \geq q\mu\overline{u}$ is impossible because $V_t \leq V^{max}$.

Sufficiency: assume that $\kappa \geq q\mu\bar{u}/(1-q\mu-\eta)$ is satisfied. Let the parents of the initial generation of policy-makers be pacifist, which implies $\underline{v}_0 = 0$ and $\bar{v}_0 = \eta$, whence $V_0 = V^{min} < 0$. Denote by $\bar{t} \geq 1$ the smallest integer such that $\Delta_t \leq 0$. Let $\eta \leq 1/(\bar{t}+1)$ be sufficiently small for the inequality

$$(\bar{t}+1)\eta(1-q\mu) - 1 + (\bar{t}-1)\eta \leq 0$$

to hold.

Consider the following two types of equilibrium path until period $\bar{t}$.

In a path of the first type, period $\bar{t}$ is the first period such that $\Delta_t + V_t \leq 0$. In that period,

$$V_{\bar{t}} = \kappa[(\bar{t}+1)\eta(1-q\mu) - 1 + (\bar{t}-1)\eta] \leq 0, \tag{21}$$

because the symbolic value of imperialism increases by η from one generation to the next until period $\bar{t}-1$ and η was assumed to be such that the term in square brackets is non-positive. Then, starting with period $\bar{t}$, in equilibrium the symbolic value of imperialism begins to decrease. Since both Δ_t and V_t are negative and decrease over time for $t \geq \bar{t}$, we have $d_t = P$ for all periods $t \geq \bar{t}$.

In a path of the second type, the first period such that $\Delta_t + V_t \leq 0$ occurs at some $t_- < \bar{t}$. Since V_t is strictly increasing in $v(I, t-1)$ and $V_{\bar{t}} \leq 0$ in an equilibrium path of the first type, it follows that $V_{t_-} < 0$. By the same reasoning as before, starting in that period, the symbolic value of imperialism must decrease in equilibrium, so that $d_t = P$ for all later periods.

Because of (21), imperialism can never be optimal beyond period $\bar{t}-1$ and these are the only possible equilibrium paths. Hence, imperialism does not persist despite $\kappa \geq q\mu\overline{u}/(1-q\mu-\eta)$. **QED**

Condition (20) allows us to recover qualitatively different equilibrium paths, starting from arbitrary initial ideologies, under different parameter constellations. The term Δ_t exogenously declines over time, from its initial positive value to its negative asymptotic one, $-q\mu\overline{u}$. The term V_t is endogenously determined according to the equilibrium conditions (13) and (14) and can be negative or positive. A possible equilibrium path is one in which there is no imperialistic ideology to begin with, and hence $V_0 \leq 0$, and still imperialism is pursued forever, i.e. $d_t = I, \forall t \in \mathbb{N}$. If y_0 is low, a sufficiently large tribute δ_0 can yield such a utility gain Δ_0 that the policy-makers of generation 0 opt for imperialism even if this makes them feel guilty, i.e. they suffer under a low level of self-esteem. If also Δ_1 is positive and large enough, generation 0 will praise imperialism to their children, so that its symbolic value will increase by η. After imperialism being practiced by T generations,

where $T = Inf\{n \in \mathbb{N} : n \geq 1/\eta\}$, there will be a first generation that comes to endorse pure imperialism as an ideology. If $\kappa \geq q\mu\overline{u}/(1 - q\mu - \eta)$, that generation meets the conditions stated in Proposition 6 with regard to generation 0; then, imperialism persists forever. This type of equilibrium thus describes a situation in which at the beginning imperialism is chosen exclusively for its material benefit, and later for its ideal one. In the Appendix, I work out a numerical example of this type of equilibrium path.

Interestingly, this model can also produce equilibrium paths that are non-monotonic. As in the equilibrium just described, imperialistic ideology may gradually build up from scratch because of the initial material benefits conferred by predation, and may even reach pure imperialism, i.e. $v(I,t) = 1$ for some t. Yet, if $\kappa < q\mu\overline{u}/(1 - q\mu - \eta)$, there must arrive a generation for which the value of human life comes to dominate the trade-off, e.g. $-\Delta_t > V_t$, and (20) is violated. Then, the strong state abandons imperialism and its elite's ideology gradually swings back to a pacifist one. The Appendix presents a simple numerical example also of this type of equilibrium.

Let us consider again the case of an initial ideology that is purely imperialistic, as assumed when proving Proposition 6. That Proposition also holds in the limiting case $\delta_t = 0, \forall t$. Recall that δ_t stands for the tribute received by the strong state from the weak one. This equals the tribute paid by the weak state after subtracting from it whatever costs are suffered by the strong state in order to militarily threaten the weak state, transfer the tribute from the weak state to itself, and make it available to its citizens. If these costs exactly dissipate the rent extracted from the weak state, then $\delta_t = 0$. Therefore, imperialism can persist forever even if it generates no consumption gain at all for the oppressor. By continuity, imperialism may persist forever even if it generates a consumption loss, provided that such a loss is not too large.

More realistically, one may consider a slightly modified version of the model in which $\delta_0 > 0$ and large, but the growth rate of the tribute, that was denoted by $\hat{g}$ in Sect. 4.1, is negative. The corresponding equilibrium could depict a situation in which the consumption motive behind imperialism is initially overwhelming and gradually loses momentum, until it virtually disappears. At that point, the political elite has however come to identify with its country's hegemonic mission in world history and, if $\kappa \geq q\mu\bar{u}/(1 - q\mu - \eta)$, imperialism is indefinitely carried on for its own sake: it is a purely symbolic matter that has taken on a life of its own. This is reminiscent of what Schumpeter (1951) had to say about imperialism.

5.5 Schumpeter's theory of imperialism

Schumpeter's (1951) theory of imperialism was originally published as an essay in German in 1919, while its English translation appeared posthumously in a book edited by P. M. Sweezy. As reconstructed by Sweezy (1951), Schumpeter, shortly before passing away, named that essay as one of the six most important works of his entire scientific career.

From a methodological angle, Schumpeter (1951) rejects the fiction of the representative agent and analyzes imperialism through the lens of various social structures in which classes with different interests and values cooperate and conflict with each other. In many historical instances, a caste of warriors developed for survival of the group and raised to a political elite. While predation of other groups initially imposed itself for its survival value, later the material interest for it gradually vanished and was replaced by ideological motives: " ... history ... shows us nations and classes ... that seek expansion for the sake of expanding, war for the sake of fighting, victory for the sake of winning, dominion for the sake of ruling. ... It values conquest not so much on account of the immediate advantages ... as because it *is* conquest, success, action. Here the theory of concrete interest in our sense fails." (p.6) The concrete interest referred to by Schumpeter in this quote is analogous to the utility gain conferred by the consumption increase δ_t in my model.

Schumpeter (1951) illustrates the crucial role of social structures and value systems inherited from the past with many historical examples. For instance, "... [T]he Arabs were mounted nomads, a persistent warrior type, like the nomadic Mongol horsemen." (p.45). Initially, they were organized in "... a gentile and patriarchal type of democracy." (p.46). Its military leaders were especially receptive to the message of Mohammed: "... the call for war on behalf of the faith - the jihad - as the most important practical demand, the normal outward attitude of the faithful." (p.47). The endorsement of this type of religious values suited the material interests of the Bedouins. Over time it prompted them to undertake policies of conquest just for the sake of it, policies that were eventually self-defeating: "We have, then, a typical case of "objectless," violent expansion, born of past necessities of life, grown to the proportions of a powerful drive by virtue of long habit, persisting to the point of exhaustion." (p.50).

Summing up, Schumpeter (1951) stresses that "numberless wars ... have been waged without adequate "reason" - not so much from the moral viewpoint as from that of reasoned and reasonable interest. ... The explanation lies ... in the fact that psychological dispositions and social structures acquired in the dim past in such situations, once firmly established, tend to maintain themselves and to continue in effect long after they have lost their meaning and their life-preserving function." (p.83-84).

In contrast to prominent Marxist scholars of his time, Schumpeter did not view im-

perialism as a necessary stage of capitalism. He rather claimed that the rational mood impressed on people by market competition would ultimately banish nationalism, militarism, and thus imperialism, from capitalism. This would definitively be the case in the model of this paper only if the elite's concern for self-esteem is not too strong, i.e. $\kappa < q\mu\bar{u}/(1-q\mu-\eta)$.

5.6 Domestic welfare and political stability

The political elite in the current model can be viewed as a small minority of the population of the core country, with interests that diverge from those of the rest of the population. This raises the question of the political stability of the persistent imperialism put forward by Proposition 6. Such a stability is doubtful if ordinary citizens could be made substantially better off by a different foreign policy. Conversely, imperialism may be considered politically stable if the welfare gain for ordinary citizens from jettisoning imperialism is small, i.e. insufficient to outweigh the costs of mobilizing against the political elite in order to bring about a policy change.

Investigating the welfare gain from abandoning imperialism requires making assumptions on ordinary citizens' preferences and values. With respect to the former, I posit that citizens have the same utility function as the elite. In particular, they care about their self-esteem and the intensity of this concern is measured by κ, as in the case of the elite. With respect to the latter, I begin with the assumption that the self-esteem enjoyed by ordinary citizens is determined by their achievements in their own private domain - and is thus independent of their country's foreign policy. For example, the young may come to attach symbolic value to relative occupational success and their parents may socialize them so as to favor an efficient use of their talent.[10] In this case, it is natural to posit that the representative citizen's self-esteem does not depend on the specific foreign policy that is conducted by the government and that it is constant over time. I denote that level of self-esteem by $\tilde{v} \in [0,1]$.

A proxy measure for the collective incentive of the population of the strong state to move against the political elite in order to get a policy change is the relative welfare gain from jettisoning imperialism.[11] It can be written as:

$$G_t = \frac{(1-q+q\mu)U(y_t;\tilde{v}) - (1-q)U(y_t+\delta_t;\tilde{v})}{(1-q)U(y_t+\delta_t;\tilde{v}) + q(1-\mu)U(y_t;\tilde{v})},$$

where δ_t and μ now refer to the tribute and mortality risk associated with the representative citizen. They need not be equal to the corresponding variables of the representative

[10] A model along those lines is developed by Corneo (2013).

[11] Recall that the utility function is normalized so that its level is zero in case of death.

member of the political elite. If we posit, as in the baseline model, that ordinary citizens initially benefit from imperialism, then $G_0 < 0$.

The evolution of G_t can be recovered from the analysis of the baseline model because in the current setup the additional utility from self-esteem is a constant, independent of foreign policy and given by $\kappa\tilde{v}$. Steady economic growth thus implies that G_t increases over time. Popular aversion against imperialism, which begins when $G_t > 0$, becomes increasingly strong. However, it does not explode: G_t is bounded from above by

$$\lim_{t\to+\infty} G_t = \frac{q\mu}{1-q\mu}, \tag{22}$$

because each of the terms $U(y_t;\tilde{v})$ and $U(y_t+\delta_t;\tilde{v})$ converges to $\bar{u}+\kappa\tilde{v}$.

The asymptotic value of G_t, given by (22), captures the maximal collective incentive of the domestic population of the core country to mobilize against imperialism. Since both q and μ are small, the asymptotic relative welfare gain from abandoning imperialism is also small.[12] Therefore, the ordinary citizens' incentive to replace the political elite with a peaceful government is weak even in the long run, when it is maximal. In this sense, one can say that the persistent imperialism predicted by Proposition 6 is politically stable despite failing to be socially optimal.

This insight should be qualified in view of the assumption that the self-esteem of ordinary people is unaffected by the policy choice. The consequences of relaxing that assumption vary depending on the political system of the strong state. It is instructive to compare two political regimes: autocracy and delegating democracy. In an autocracy, the political elite exerts control of the education system and the mass media. It can use them in order to try to indoctrinate the population to some imperial creed. Such an attempt need not succeed; but there have been historical circumstances in which such attempts were successful. In the current model, a successful attempt could be captured by positing that ordinary people's self-esteem is higher if $d_t = I$ because they identify with the autocrat. Clearly, this would reinforce the preceding conclusion that imperialism is politically stable.

A different perspective obtains in the case of a delegating democracy in which some autonomous public discourse affects people's values (Habermas, 1998). To the extent that such a public discourse can promote moral judgments based on impartiality, e.g. humanism, ordinary people may come to internalize the harm inflicted by imperialism on foreign populations - and thus condemn it. Furthermore, in a democracy, ordinary people are free to vote; in this way they come to share some responsibility for policy decisions.

[12]The largest welfare costs of imperialism arise in the weak states, that pay tributes and occasionally suffer a great number of casualties in wars against the strong state.

Therefore, it is not so implausible that policy decisions affect their self-esteem. Then, in such a democracy, the citizens' payoff from bringing about imperialism's demise need not be small.

For the sake of illustration, suppose that ordinary citizens come to endorse pacifist values,

$$\{v(I,t), v(P,t)\} = \{0,1\}\,,\ \forall t.$$

Furthermore, suppose that citizens' self-esteem depends on both their achievements in their private sphere and on their pride or shame about their government's conduct in foreign affairs, so that their self esteem is given by

$$\alpha\tilde{v} + (1-\alpha)v(d_t,t),$$

where the exogenous weight $\alpha \in [0,1]$ is inversely related to the degree of politicization of citizens.

Under these assumptions, a citizen's utility from self-esteem under imperialism ($\kappa\alpha\tilde{v}$) and under peace ($\kappa(1-\alpha+\alpha\tilde{v})$) immediately obtains. The relative welfare gain from discarding imperialism is thus given by:

$$G_t^{pac} = \frac{(1-q+q\mu)\left[u(y_t)+\overline{u}\right] - (1-q)[u(y_t+\delta_t)+\overline{u}] + \kappa(1-\alpha+q\mu\alpha\tilde{v})}{(1-q)[u(y_t+\delta_t)+\overline{u}] + q(1-\mu)\left[u(y_t)+\overline{u}\right] + \kappa(1-q\mu)\alpha\tilde{v}}.$$

The collective incentive to mobilize against imperialism increases over time and is positively related to the degree of politicization, i.e. $\partial G_t^{pac}/\partial\alpha < 0$. Furthermore, that hypothetical welfare gain converges to the strictly positive limit

$$\lim_{t\to+\infty} G_t^{pac} = \frac{q\mu + (\kappa/\overline{u})(1-\alpha+q\mu\alpha\tilde{v})}{1-q\mu+(\kappa/\overline{u})(1-q\mu)\alpha\tilde{v}} \equiv G_\infty^{pac}. \tag{23}$$

If politicization is negligible ($\alpha = 1$), this asymptotic welfare gain is the same as in (22), and imperialism is politically stable. Otherwise, imperialism might be challenged by the citizenry, as can readily be shown in the case of maximal politicization, i.e. for $\alpha = 0$. Inserting it into (23) yields

$$G_\infty^{pac} = \frac{q\mu + (\kappa/\overline{u})}{1-q\mu}.$$

Recall that, as stated by Proposition 6, imperialism is the ongoing choice of the political elite if $\kappa/\overline{u} \geq q\mu/(1-q\mu-\eta)$. Hence, by raising the concern for self-esteem κ, the term $\kappa/\overline{u}$ can be made arbitrarily large, and the same holds true for G_∞^{pac}.

Summing up, domestic opposition in the core country against imperialism cannot be ruled out. However, it depends on a number of conditions that have been unveiled by the

foregoing analysis: (i) some impartial moral reasoning is conducted by ordinary citizens, which makes them internalize to some extent the harm inflicted by imperialism on foreign peoples; (ii) citizens are politicized, so that their self-esteem heavily depends on being proud of their country's conduct in foreign affairs; (iii) their concern for self-esteem is strong enough; (iv) economic growth has led to sufficiently high living standards in the core country. A historical episode where all these conditions might have been met to a considerable extent is the antiwar movement that began in the US in 1965, in the wake of the US military involvement in Vietnam.

6 Conclusion

This paper has developed a tractable model of the long-run effects of economic growth on the practice and ideology of imperialism, defined as the policy choice of a militarily strong state that attempts to extort tributes from militarily weak ones. Such a state's propensity to pursue imperialism is limited by its own costs, and in the long run the loss of human lives among its domestic population is the overwhelming source of those costs. I have shown that this safety concern rises with economic growth and must eventually override any consumption gain that can be obtained by means of predation of other countries.

In order to explain the persistence of imperialism, I have explored the implications of a competing existential concern, namely the concern of the political elite of the strong state for a positive self-image. While the rise of the value of human life must eventually override any concern for consumption, it need not override the concern for being faithful to one's identity. Through this mechanism, endless imperialism and war become compatible with unbounded economic progress and rise of the value of human life.

My model endogenizes the way in which the political elite defines its identity and shows that the psichic cost of betraying it can explain why the political elite never abandons imperialism. Similarly to Schumpeter (1951), over time imperialism can first be driven by material concerns and later by ideal ones. If the concern for identity is strong enough, imperialism persists indefinitely, causing potentially huge welfare losses in oppressed countries, small welfare losses in the core country, and preserving the high level of self-esteem of its political elite. While that elite may appear as distinctively self-conscious of its own value, the welfare losses it causes indicate that such a self-consciousness could also be characterized as self-deception.

There are various ways in which the analysis in this paper could be further developed. First, one may envisage an empirical scrutiny of its main predictions. In-depth case studies

of imperialism may reveal the temporal pattern of material and ideological motivations and thus relate historically observed empires to the equilibrium paths put forward by the theoretical model. Such an empirical investigation may take advantage of some rich databases on past empires that have recently become available.

Second, the theoretical model could be enriched along various lines, e.g. by including a full-fledged political-economy model that depicts either a representative democracy or an authoritarian regime based on repression and co-option. Alternatively, one may maintain the simple dual structure consisting of political elite and ordinary citizens and examine a strategic model of competing empires, rather than the unipolar situation that is the object of the current paper. The evolution of the value of human life and the endogenous determination of ideology may have far-reaching implications also in a strategic model of great power rivalry. For instance, one may conjecture that a great power's efforts to promote its rival's economic growth may be helpful in some situations because in this way that great power raises its rival's value of life and thus reduces its rival's propensity to wage a war. The meaningfulness of this type of international economic cooperation is likely to depend on the values endorsed by the political elite of the rival power and on their malleability. These and related questions are left for future research.

APPENDIX - Two numerical examples of Schumpeterian imperialism

This Appendix examines the model with self-image concerns when initial conditions are such that early imperialism is only driven by material interests. Specifically, I posit that the parents of the initial generation of policy-makers endorsed pacifist values, which implies $\underline{v}_0 = 0$ and $\bar{v}_0 = \eta$. I then compute two equilibrium paths that are reminiscent of several historical examples described by Schumpeter (1951) in support of his theory.

Inequality (16) is the condition that determines whether imperialism is pursued in equilibrium ($d_t = I$). It is useful to rewrite it as

$$(1-q)[u(y_t+\delta_t) - u(y_t)] > q\mu[u(y_t) + \bar{u}] - \kappa[\bar{v}_t(1-q\mu) - 1 + \underline{v}_t].$$

Taking a first-order Taylor expansion around $u(y_t)$, using the CRRA assumption, and rearranging terms, this condition becomes

$$\frac{\delta_t}{y_t} > \frac{y_t^{\gamma-1}}{1-q}\{q\mu\bar{u} + \kappa[1 - \underline{v}_t - \bar{v}_t(1-q\mu)]\} - \frac{q\mu}{(1-q)(\gamma-1)}. \tag{24}$$

I will use this condition to compute the following equilibrium paths. In the first one (Scenario A), imperialism is pursued forever: initially for its material benefit, later for its ideal one. In the second equilibrium (Scenario B), imperialism first rises and then falls, with a corresponding non-monotonic ideological path of the political elite. The selected parameter values are as follows:

$\delta_0 = .04$

$y_0 = 1$

$g = ln2$

$\gamma = 2$

$q = .1$

$\mu = .01$

$\kappa = .01$

$\eta = .5$

$\bar{u} = 1$ in Scenario A; $\bar{u} = 10$ in Scenario B.

The two scenarios only differ with respect to the parameter $\bar{u}$, which is positively related to the value of life, as shown in the baseline model. In scenario B, the concern for safety eventually prevails over the concern for identity, while in Scenario A the concern for identity prevails in the long run. In both scenarios, successful imperialism is supposed to raise living standards in the strong state by 4 %, which is compatible with the use of the Taylor approximation. Notice that the instantaneous growth rate $g = ln2$ implies

that both foreign tribute and domestic GDP double every period; as one period has generational length (e.g., thirty years), positing such a growth rate is a sensible choice.

Scenario A

As a preliminary step, check that imperialism is initially optimal, i.e. condition (24) is satisfied at $t = 0$. Using $\underline{v}_0 = 0$ and $\bar{v}_0 = \eta = 1/2$, at that date its RHS can be computed as

$$RHS_0 = \frac{10}{9}\left[10^{-3} + 10^{-2}\left(\frac{1}{2} + \frac{10^{-3}}{2}\right)\right] - \frac{10^{-2}}{9} = \frac{10}{9}\left[\frac{10^{-2}}{2}\left(1 + 10^{-3}\right)\right],$$

whence,

$$RHS_0 = \frac{1 + 10^{-3}}{180} = 0.56\bar{1}\% < 4\% = \frac{\delta_0}{y_0}.$$

Therefore, in equilibrium $d_0 = I$ and endorsed values are $v(I, 0) = v(P, 0) = \eta = 1/2$. Differently from their pacifist parents, this generation of policy-makers has no ideological bias; it follows that $\underline{v}_1 = 0$ and $\bar{v}_1 = 1$. Then, we can compute

$$RHS_1 = 2\frac{10}{9}\left[10^{-3} + 10^{-2}10^{-3}\right] - \frac{10^{-2}}{9} = \frac{1}{9}\left(10^{-2} + 2 \cdot 10^{-4}\right) = 0.11\bar{3}\% < 4\%.$$

Therefore, in equilibrium $d_1 = I$ and $v(I, 1) = 1$. This generation endorses a purely imperialistic ideology; after two generations, there has been a complete ideological reversal. Moreover, the conditions of Proposition 6 now apply to the current generation because:

$$\kappa = 10^{-2} > q\mu\bar{u}/(1 - q\mu - \eta) = 10^{-3}/\left(\frac{1}{2} - 10^{-3}\right).$$

So, imperialism will persist forever thanks to identity reasons that were completely lacking when imperialism took off.

In this scenario, imperialism will persist forever even if $\delta_t = 0\ \forall t \geq 2$. In order to verify it, we only have to check that the RHS of (24) becomes strictly negative at $t = 2$ and remains so in all later periods. Since $v(I, 1) = 1$, we have $\underline{v}_2 = 1/2$ and $\bar{v}_2 = 1$. Then,

$$RHS_2 = 2^2\frac{10}{9}\left[10^{-3} + 10^{-2}\left(-\frac{1}{2} + 10^{-3}\right)\right] - \frac{10^{-2}}{9} = -4\frac{10^{-1}}{9}\left(\frac{2}{5} - 10^{-3}\right) - \frac{10^{-2}}{9} < 0.$$

For $t \geq 3$ it is apparent that RHS_t further decreases because the above term in square brackets stays negative and y_t keeps growing. This later section of the equilibrium path, with $\delta_t = 0\ \forall t \geq 2$, depicts a sort of imperialism for its own sake.

Scenario B

As a preliminary step, let us check that imperialism is initially optimal, i.e. condition (24) is satisfied at $t = 0$. Using $\underline{v}_0 = 0$ and $\bar{v}_0 = .5$, at that date its RHS yields

$$RHS_0 = \frac{10}{9}\left[10^{-2} + 10^{-2}\left(\frac{1}{2} + \frac{10^{-3}}{2}\right)\right] - \frac{10^{-2}}{9} = \frac{10}{9}\left(\frac{3 \cdot 10^{-2}}{2} + \frac{10^{-5}}{2} - 10^{-3}\right),$$

whence,

$$RHS_0 = \frac{1}{60} - \frac{1}{9 \cdot 10^2} + \frac{1}{18 \cdot 10^4} = 1.556\bar{1}\% < 4\%.$$

This verifies that $d_0 = I$. It follows that $v(I, 0) = .5$ and socialization is bounded by $\underline{v}_1 = 0$ and $\bar{v}_1 = 1$. Then, we can compute

$$RHS_1 = 2\frac{10}{9}(10^{-2} + 10^{-5}) - \frac{10^{-2}}{9} = \frac{2}{90} + \frac{2}{9 \cdot 10^4} - \frac{1}{9 \cdot 10^2} = 2.11\bar{3}\% < 4\%.$$

Therefore, in equilibrium $d_1 = I$ and $v(I, 1) = 1$. This generation endorses a purely imperialistic ideology; again, after two generations there has been a complete ideological reversal. It follows that $\underline{v}_2 = 1/2$ and $\bar{v}_2 = 1$. Then,

$$RHS_2 = 2^2\frac{10}{9}\left[10^{-2} + 10^{-2}\left(-\frac{1}{2} + 10^{-3}\right)\right] - \frac{10^{-2}}{9} = \frac{1}{9}\left(\frac{1}{5} + 4 \cdot 10^{-4} - 10^{-2}\right).$$

Hence,

$$RHS_2 = 2.\bar{2}\% + \frac{1}{9}(0.04\% - 1\%) = 2.11\bar{5}\% < 4\%.$$

Equilibrium is thus as in the preceding period: $d_2 = I$ and $v(I, 2) = 1$. It follows that $\underline{v}_3 = 1/2$ and $\bar{v}_3 = 1$. However, this situation is not the steady state. For generation $t = 3$ we obtain

$$RHS_3 = 2^3\frac{10}{9}\left[10^{-2} + 10^{-2}\left(-\frac{1}{2} + 10^{-3}\right)\right] - \frac{10^{-2}}{9} = \frac{1}{9}\left(\frac{2}{5} + 8 \cdot 10^{-4} - 10^{-2}\right).$$

Hence,

$$RHS_3 = 4.\bar{4}\% + \frac{8}{9} \cdot 0.01\% - 0.\bar{1}\% = 4.34\bar{2}\% > 4\%.$$

Therefore, in equilibrium a change of policy occurs: $d_3 = P$ and $v(I, 3) = 1/2$. Since the term in square brackets stays positive and y_t grows, both the practice and the ideology of imperialism are abandoned in all future periods $t \geq 4$. This equilibrium path depicts a rise and peaceful fall of an empire - similar to Schumpeter's outlook on the future of imperialism under capitalistic conditions.

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