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DO ECONOMIC WARFARE AND SANCTIONS WORK? THREE CENTURIES OF EVIDENCE

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File: Do Economic Warfare & Sanctions Work

Abstract: We draw lessons from three centuries of economic warfare and sanctions. Establishing cause and effect is difficult because much else was typically changing during periods of conflict. Unintended consequences were everywhere. Impact was followed (and sometimes preceded) by adaptation so that countermeasures blunted the effectiveness of economic warfare measures and sanctions. This does not mean that the original measures were unimportant, because countermeasures were costly to the target country. Civilian lives and interests were collateral damage. Economic warfare and sanctions worked most effectively when complemented by fighting power either engaged in conventional warfare or credibly threatening war as a deterrent, and they were ineffective in its absence.

Keywords: complementary force, conventional warfare, displacement effect, economic warfare, economic sanctions.

JEL Codes: H56, N4

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1. INTRODUCTION

What results are to be expected when one country tries to damage another's trade or resources? Why have the results so often disappointed? What options are open to a country under external economic attack? What are the economic stratagems that can mitigate the attack on the economy? What processes can allow the attack to succeed, and on whose side is time? Must civilian lives and interests be the first casualties? Can economic measures be effective if unaccompanied by force or the threat of force? These are questions for which scholars of modern economics, history, and international relations appear to have few generally accepted answers.

This paper is based on a team effort to look for clues in three centuries of global history. It provides a companion volume to our previous collections on the economics of the two World Wars (Harrison 1998; Broadberry and Harrison 2005), supplemented recently by eBooks featuring research updates to mark the centennial of the end of World War I (Broadberry and Harrison, 2018) and the 75th anniversary of the end of World War II (Broadberry and Harrison, 2020).

2. DEFINITIONS

Our field is spanned by three ideas: warfare, economic warfare, and economic sanctions. In warfare, one country uses its fighting power to attack the fighting power of another with the purpose of weakening or destroying it. Violence is regulated only, if at all, by the laws of war.

For simplicity we distinguish two aspects of warfare. One is conventional war, when the armed forces of each side attack each other directly. There is a theatre of war in which battles are fought on land, at sea, or in the air. The other aspect is economic warfare, which we define as armed attack on the adversary's economy.

Economic sanctions also impose losses on the adversary's economy but in peacetime, using peaceful means.

2.1 Economic warfare

The terms "economic warfare" and "economic sanctions" entered public discourse only in the twentieth century. Considering the frequency of the phrase in printed books in English, Figure 1 shows that economic warfare came first, spiking at the time of World War I. Economic sanctions, enshrined in the Charter of the League of Nations, followed quickly, spreading widely in the interwar period. With World War II, economic warfare took back its first place in literary usage, especially because of the temporary establishment of a British government department, the Ministry of Economic Warfare. After 1945 the usage of economic warfare again declined, while the United Nations Charter once again put sanctions at the disposal of the international community, which turned to them more and more over the postwar decades.

Figure 1 near here

In fact both economic warfare and sanctions were in use long before the twentieth century. The fact that they were not yet named did not prevent their application.

Economic warfare is the attack on the adversary's economy. Its purpose is the same as of warfare generally: to impair the adversary's fighting power (Medlicott 1952: 7; Vickers 1943:14). The essential difference is that the adversary's fighting power is impaired not by direct attack but indirectly, by economic damage. In this sense, economic warfare is simply a specialized aspect of warfare generally.

The opportunity for economic warfare is created by the economic needs of fighting power. Fighting power must be financed by the government and supplied by the economy. This was always the case to some extent, but the industrialization of warfare has made it more so. The finance and supply of war have become the targets of economic warfare.

The finance and supply of war represent two sides of the production of fighting power. Historically this has provided economic warfare with two focal points. There is no established terminology to distinguish them; we call them "demand-side focused" and "supply-side focused." In monetary economies, fighting power must be supplied and demanded. Demand-side focused economic warfare started from the point at which the government pays for fighting power. To buy fighting services and equipment, the government must have means of payment, in other words gold (in the eighteenth century, sterling (in the nineteenth), dollars (in the twentieth), or credit. One way to get means of payment was by selling commodities or by borrowing in foreign markets. During the Napoleonic Wars, the purpose of naval blockades was usually to stop the adversary from getting gold by blocking their ships from export markets and by stealing their cargoes. Deprived of market access, the adversary could not earn gold and would become unable to finance its war.

This policy was justified, in part, by the prevailing economic doctrine of mercantilism which regarded access to export markets and the accumulation of gold as the means and measure of national power.

If fighting power must be supplied and demanded, supply focused economic warfare started from the point of production and importation. The supply of fighting power was decided by domestic production and access to imports. By the time of the two world wars, the focus of blockade had switched from blocking the adversary's exports to blocking imports, which had the effect of reducing aggregate supply. The advent of long-range air power added a new capability, that of attacking domestic productive capacity directly.

This turn was soon harmonized with the then-new economics of national income accounting associated with J. M. Keynes. A country's national accounts made clear that the ultimate limit on the possible uses of resources was set by aggregate production capacity. If the supply side could be damaged by economic warfare, the adversary could continue to meet the extraordinary demands of military rearmament and war fighting only by imposing new sacrifices on the civilian sphere.

The particular effect of economic warfare is to weaken fighting power tomorrow, not today. Today's fighting power already exists, and it can only be attacked directly. But the production of fighting power takes time and resources. Today's fighting power will still be available tomorrow, only if civilian firms and households are given the time and the resources to make up today's losses. Attacking them makes fighting power less sustainable over time.

When does economic warfare make sense? In a war that can be won today, by direct attack alone, the attacker does not need to worry about the balance of fighting power tomorrow. Economic warfare is generally a feature of protracted conflicts. When today's fighting power is not enough to win a quick victory, and each side can only hold out while trying to wear the other down, targeting the adversary's future fighting power can become as important as fighting today's battles.

Economic warfare is primarily relevant, therefore, to wars of attrition. In a war of attrition, the winner is the side that turns out to have a superior capacity to bear losses. In the example of World War II (based on O'Brien 2015: 67-87), attrition was made up of the sum of losses at successive stages of the production of fighting power, of which the battlefield was only the final stage. Earlier stages involved losses in deployment, losses from stopped production, and losses in "pre-production" (when production facilities were destroyed or never built). Economic warfare was aimed at the stages of production and pre-production: it contributed to losses by halting the production of equipment directly or by disrupting intermediate supplies, by dispersing the workforce, by destroying production facilities altogether, and by preventing the construction of new facilities.

2.2 Economic sanctions

Like economic warfare, modern sanctions have a prehistory. From time to time in the nineteenth century the great powers practiced a “pacific blockade” or embargo of trade and exchange with a country that broke the international order; the intention was to coerce them by means short of war (Davis and Engerman 2006: 387-390). Later in the nineteenth century, the great powers imposed “supersanctions” (a modern term, not used then) on smaller countries to enforce sovereign debt obligations when a default was threatened (Mitchener and Weidenmier 2010).

Economic sanctions were first given foundations in international law by the Charter of the League of Nations after World War I. The experience of World War I suggested that Germany had suffered terribly from wartime blockade and had lost the war partly because of it. If blockade had helped to win the war for the Allies, perhaps the threat of blockade could help to keep the postwar peace (Dehne 2019, Mulder 2022). On similar arguments, sanctions were incorporated into the Charter of the United Nations after World War II and more recently in the European Union’s Maastricht Treaty. Such sanctions were to be imposed by legislation and enforced in the courts by civil authorities and, if by armed force, then only in support of the civil power.

The manner of enforcement is a critical difference between economic sanctions and economic warfare. The raison d’être of sanctions has always been to resolve conflicts by legal means, without violence. This may seem to set sanctions and economic warfare far apart.

A closer look reveals deep similarities and connections. An obvious similarity is found in the attack on the adversary’s economy. Economic sanctions and economic warfare both seek to make the adversary’s power less sustainable, not directly, but indirectly by causing economic losses. Economic warfare threatens the adversary’s military survival by reducing the resources available for future fighting power. Economic sanctions might undermine an aggressor’s military survival in the same way, or they might threaten the adversary’s political survival by reducing the resources available to the incumbent regime for co-option and repression. Either way, an incentive is created for the sanctioned regime to comply with the demands of the sanctioning authority.

Another similarity with economic warfare is that economic sanctions seem to have similar focal points, which we call demand (or finance) and supply. Discussing the period between the two world wars Mulder (2022: 203) contrasts the “Treasury theory” of “finance-based” or “currency draining” measures (such as an embargo on the adversary’s exports) with the more established “Admiralty theory” of “resource-based” or “resource draining” measures that would throttle an aggressor's imports. Our own usage, and that of other authors of this book, will vary with the context. But the distinctions involved are roughly interchangeable with a focus on demand versus supply.[1]

Table 1 summarizes our view of the similarities and differences of conventional warfare, economic warfare, and economic sanctions. Sanctions are applied in peacetime; war is the time for conventional warfare and economic warfare. In the first row, the similarities among all three begin with purpose, which has always been to overcome an adversary's power to resist. A difference is that, while the goals of combat and economic warfare may be limited or unlimited, ranging from renegotiation to surrender, the goal of sanctions has generally been limited to shifting the balance rather than destroying it.

The table's next row shows the different means employed in each case. In conventional warfare, armed forces are directed against each other in combat. In economic warfare armed force is directed against the economy of the other side. The attack on the economy can take various forms from commerce raiding and blockade to bombing and sabotage. Conventional and economic warfare are both violent, regulated only by the laws of war, whereas economic sanctions take the form of legal embargoes appropriate to peacetime.

The final row of the table shows the transmission from cause to effect. In the case of conventional war, the transmission is direct: the adversary's power is impaired by losses in combat. In economic warfare and sanctions, the impairment is achieved indirectly by the damage caused to the adversary's finances or supplies.

Table 1 near here

This framework is simplified, not only because it omits such aspects of war as political or psychological warfare and nuclear war. It also ignores the many possible spillovers among the categories that we do consider. As discussed below, a sanction adopted as a step short of war on one side may look like an act of war on the other. The expectation of sanctions and economic warfare can decide which battles are fought, while the conduct of the attack on the economy can decide who wins them. Defending against the attack on the economy is an extension of conventional war. But the pace of conventional war can also be so

[1] Our distinction is foreign to the wider literature on sanctions (e.g. van Bergeijk 2021: 6-7; Jentleson 2022: 10), which typically distinguishes the main types as on trade (combining sanctions on exports with those on imports under one heading), on finance (combining lending with borrowing), and on various "other" headings such as on non-state actors or on travel and so forth.

rapid as to make economic warfare irrelevant. Unravelling such complexities in history has made our work both demanding and rewarding.

The simultaneous consideration of economic warfare with economic sanctions is a distinctive feature of our project. Our rationale is not only the similarities between economic sanctions and warfare, but also their historical connections, which are many and deep. As already noted, the modern idea of sanctions arose out of the great powers' experience of economic warfare against each other in the two world wars. Less well known is that in the American Civil War (Chapter 2) and both world wars (Chapters 3 and 6), while practicing economic warfare against each other, the warring sides struggled simultaneously to monopolize access to the markets and supplies of the neutral powers by varying combinations of inducement and threat – in other words, by sanctions.

Most importantly, even if sanctions were always tried as a step short of war, this was not always how things turned out. When sanctions proved ineffective, and the sanctioning powers were too far committed to draw back, sanctions became a precursor of war (e.g. Lektzian and Sprecher 2007). Or the threat of sanctions could be too effective, posing an existential threat to which the sanctioned power responded by escalating violence. In that case, sanctions were a precipitant of war. "These sanctions that are being imposed are akin to a declaration of war," Vladimir Putin said (on 5 March 2022) of the first Western responses to Russia's invasion of Ukraine.[2]

Therefore, we think it sensible to cover a wide range of adversarial uses of economic action, whether these were peacetime sanctions or acts of war.

3. CASE STUDIES

In the field of economic warfare and sanctions, the bedrock of scholarship is made of case studies and historical narratives. For research on economic warfare there is no alternative method, because instances are too few and too varied to be studied in any other way than by the method of case studies.

Research on sanctions differs in that the number of cases available for study is now very large, with sanctions uses numbered in the hundreds in all decades from the 1970s. For that reason there are now several large-N sanctions datasets, coded numerically to enable quantitative analysis (van Bergeleijk 2021: 1-2, 7). But, while the number of cases is large, the problem of heterogeneity remains. The apparent clarity of numerical coding, for example, may be subverted by the

[2] "Putin says Western sanctions are akin to declaration of war," Reuters, 5 March 2022, available at https://www.reuters.com/world/europe/putin-says-western-sanctions-are-akin-declaration-war-2022-03-05/ (last accessed 23 August 2024).

wide range of roles available to the "sender" (the sanctioning authority) and the even greater variety of adaptive responses of the "target," which we discuss further below. As a result, scholars must continue to return to narratives and case studies because these may be the only way to capture the continuous interaction of sender and target and the rich array of choices available to both.

For that reason, in this introduction, we avoid the terminology of sender and target where possible. Depending on the context we use the "sanctioning power" (or "authority") or the "attacker" on one side and, on the other, the "adversary" as the country that is under sanction or attack.

Similar considerations have made it a simple choice for us to base our project on case studies. Arranged chronologically, these form the chapters of our book. The chapters were selected to include well-known cases alongside others that are less well-known. By this means we aimed to overcome a bias in the existing scholarship on economic warfare. The political scientist Paul Poast (2024) argues that the study of international security suffers from a "Russia bias": it has drawn excessively on Russia's experiences of war over the twentieth century. In a similar spirit, we realized, the study of economic warfare has been characterized by a "Germany bias": it is based largely on the experiences of a single country in the two world wars.[3]

To be sure, Germany's experiences are very important, and they are covered here in two of our eight chapters. But there should be more than Germany and more than two world wars, and we have included other cases to reflect this. Table 2 maps them chapter by chapter onto our field as we have described it above.

Table 2 near here

Chapter 1 ("The Second Hundred Years' War: France vs England (1688-1815)," by Charles and Daudin) reviews a century of conflict in which two powers clashed repeatedly at sea, raiding each other's shipping in order to seize cargoes and treasure. At stake was the market access of each side. The existence of neither side was threatened, and both could make concessions to the other if compelled, so each period of conflict typically ended in a new treaty that held

[3] Most of what we think we know about economic warfare can be traced back in some form to investigations conducted immediately after both world wars by the victorious powers as they tried to account for their victories over Germany: USSBS (1945), Medlicott (1952, 1959), Bell (1961, completed in 1937), and BBSU (1998, completed in 1946)). These provided a foundation for later studies by historians and, more rarely, economists including Webster and Frankland (1961), Olson (1962, 1963), Milward (1977), Overy (1980, 1994, 2014), Mierzejewski (1984), Hardach (1987), Davis and Engerman (2006), Tooze (2006), Brauer and van Tuyll (2008), Kramer (2013), Biddle (2015), and Kramer et al. (2024).

for a while until the desire arose to renegotiate through renewed conflict. Towards the end of the period, however, both sides raised the stakes, having concluded that all-out war was a practical way to achieve their aims. Correspondingly the spasmodic raiding of trade and treasure gave way to a more comprehensive supply-focused blockade, which aimed to degrade the enemy's overall capacities.

Chapter 2 ("Economic Warfare: The American Civil War," by Hanlon, Rhode, and Rockoff) opens with an exercise in supply-focused sanctions. The Southern rebels sought to withhold cotton exports in the belief that the resulting shortage of cotton would create unemployment in the North and force the Union states to recognise the Confederacy. At the same time, the Confederate leaders hoped that the threat of a cotton famine would coerce Britain into neutrality or, better still, into favourable intervention on the Confederate side. In a curious parallel, the Union began the war with a demand-focused blockade of Southern exports, with the opposite expectation that this would undermine the war finances of the Confederacy. As the conflict dragged on and became a war of attrition, however, the Union switched the focus of blockade to supply, aiming to stop Confederate imports of munitions, ships and other manufactured goods. It is not possible to identify the marginal contribution of the blockade to the defeat of the Confederacy; rather, the effects were merged with those arising from defeat on the battlefield. We will suggest below that this was typical of success in economic warfare.

The conflict described in **Chapter 3** ("Blockading Britain and Germany during World War I: Preparations, Conduct and Consequences of Economic warfare," by Broadberry and Vonyo) became a war of attrition within weeks. Britain used its naval superiority to stop German shipping and maritime trade; Germany developed a powerful submarine fleet to do the same to Britain. The focus of both blockades was the adversary's supplies of imported food and war materials. The British economy, seemingly far more exposed to blockade, survived, drawing on a wide range of countermeasures to maintain shipping capacity, economise on the use of shipping, reduce consumption of importable goods and boost agricultural production. The German economy eventually succumbed—but blockade was not the greatest of the pressures on supply. The single largest factor in the food shortage was the decline of supplies from domestic agriculture. This was a result of the excessive military mobilisation, which reallocated too many men and horses from Germany's farms into the military and diverted machinery and nitrate fertilisers into war industries.

Based on the experience of World War I, the victorious powers developed the idea of economic sanctions as a way of war prevention: an aggressor state could be deterred from going to war by the threat of economic isolation. **Chapter 4**

("Can Economic Sanctions Work in a Smaller Conflict? The case of the Italo-Ethiopian war of 1935-36," by Bertazzini, Eloranta, and Kuorelahti) considers one of the notorious cases of the interwar period when sanctions were tried and failed. In principle the sanctions on Italy were far reaching. Although this distinction was not made at the time, they were focused on both demand (embargoes on Italy's foreign exports and earnings, foreign credit, and borrowings) and supply (restrictions on Italy's imports of munitions and war materials). The problem, when Italy was threatened, was threefold. Mussolini's invasion of Ethiopia was part of a larger economic design to which he appeared to be committed and unwilling to concede. Fearing a wider conflict, the sanctioning powers were less than resolute; the prohibitions went largely unenforced and were quickly abandoned. And Italy retained other options, the most straightforward being closer commercial and military ties with Germany. Half-hearted sanctions were a double-edged sword, contributing to the increasing political alignment between the two countries from 1936.

The story of **Chapter 5** ("Economic Warfare against Japan in the 1930s and early 1940s," by Okazaki and Okubo) begins, like Chapter 4, with an aggressor state threatened by sanctions. In the 1930s Japan, like Italy, became committed to a war of conquest, but against China. Germany's experience of Allied blockade in World War I had made Japanese leaders acutely of their dependence on imported supplies of war materials. They determined to secure a self-sufficient colonial empire in East Asia. Japanese aggression was met by talk of League sanctions against Japan's exports (of textiles, for example) and imports (of scrap iron, oil, and machinery). For fear of provoking a wider war, however, little was done until 1938. As talk turned to action, Japan widened its wars to attack the sanctioning powers. The Japanese attack on Pearl Harbour in December 1941 is a classic illustration of how sanctions can lead to a wider war. By 1942, Japan had roughly achieved its aim of a self-sufficient colonial sphere. The weak point was its dependence on maritime transport for economic integration. America now pivoted from sanctions to a submarine blockade. While disrupting the supply of Japan's war effort, the attack on coastal and inter-island shipping also increased its demands. As shipping losses rose, shipyards were converted to merchant shipbuilding while Japan's naval strength was diverted from battles in the Pacific to anti-submarine warfare. By means of production innovations and severe consumption sacrifices Japan was able to postpone, but not avert, a progressive economic collapse.

A feature of **Chapter 6** ("War of Attrition: Economic Warfare between Britain and Germany in World War II," by Harrison and Voth), shared with Chapters 4 and 5, is how the Axis powers anticipated Allied blockade in their plans for conquest. This largely explains how a world war evolved from a series of border conflicts. Once the global war of attrition was in place, the blockades of World

War II largely reprised those of World War I. A novel feature of economic warfare in the 1940s, however, was the rise of strategic air power. Both sides bombed each other's economy, but with different outcomes. While Germany lost patience with the indifferent outcomes of a relatively superficial assault on British industrial towns and ports, the Allies doubled down on a much larger air offensive that gradually hollowed out the German civilian economy. The process took much time and visible effects were long delayed. Nonetheless the rising intensity of Allied bombing and its increasing focus on overland transportation in occupied Europe together help to explain the collapse of the German war effort in 1944/45.

Chapter 7 ("No trading with the enemy: COCOM commemorated," by Geloso and Ritschl) is set in the postwar period when, as between the wars, the great powers turned to economic sanctions for a peaceful means of conflict management that would avoid the cost of wars. In the late 1940s the United States, followed by Britain and other European partners, imposed an embargo on Western exports of munitions and dual-use equipment and materials to communist countries. The purpose was to weaken them militarily (by impeding the availability of munitions) and economically (by preventing their acquisition of leading-edge technologies – a novel consideration for the time). The chapter shows the difficulty of disentangling the effects on the adversary of two sources of economic friction – Western sanctions and the innately inefficient command economy. The chapter concludes that the economic effects of sanctions, although observable, were relatively small – and, in the case of Cuba, nearly non-existent. Consistently, the main Soviet-bloc countermeasure, industrial espionage, brought observable but small gains. The costs of the command economy were much larger than the costs of sanctions. Given that the communist leaders were willing to accept the costs, Western sanctions did not have any substantial political effects either.

Chapter 8 ("From condemnation to action? United Nations Sanctions on Rhodesia and South Africa," by Gardner and Mariotti) investigates the contribution of sanctions relative to other forces in ending the white-supremacist regimes of two countries of Southern Africa. The external sanctions were, on the face of it, coercive: they aimed to compel a peaceful handover of power to the majority. They were primarily demand focused, aiming to block the two countries' exports and access to international credit. Their depending on imported oil was also targeted as a weak link in supply. In both countries the white elites accepted a degree of economic isolation as the price of preserving minority rule. They were also able to redirect trade. Rhodesia had access to hydroelectric power, and South Africa was wealthy enough to develop its own synthetic oil industry (as Germany had done in the 1930s). Some white elites gained assets at discounted prices when foreign firms had to divest, or by association with state projects to replace imports. The costs of living under sanctions were substantially displaced onto African workers. The sanctions were in place for decades, were far from comprehensive, and were accompanied by internal resistance that did not shrink from armed insurgency. When apartheid was ended, sanctions were lifted, but the extensive government controls that had managed adaptation to sanctions did not disappear.

4. KEY THEMES

4.1 Preparations—conduct—consequences

We study economic warfare and sanctions in three phases: preparations, conduct, and consequences. The need to study preparations and consequences may seem obvious: we want to understand the spirit in which policy makers approached conflict and to evaluate the success or failure of their plans.

Comparing the preparations and consequences of economic warfare and sanctions raises many questions. Some questions are economic: how did those in charge of the design of economic warfare expect the adversary's economy to respond to attack? A fragile economy will be more immediately affected than a resilient one; how did they understand the sources of resilience and fragility? Other questions go beyond the economy. In peacetime, how were sanctions expected to work on the finance and supply of the target regime to restrain its behaviour? In wartime, how was economic warfare to be coordinated with combat to produce victory? Answers to these questions are required for us to trace the arrow of causation from preparations to outcomes.

If the need to study preparations and consequences is obvious, what links them is conduct. During the long peace since 1945 economic historians have paid little attention to the conduct of warfare, leaving it largely to military historians and IR specialists. Conduct also matters, however, because conduct is the stage at which instruments prove themselves (or not) in action. It is also the stage at which the adversary takes a hand. And expectations of how the conduct stage will work out must also influence preparations.

Implementing such a framework throws up many difficulties. Until World War I, preparations to raid or block the adversary's trade relied more on the traditions and experiences that made sense out of them than on clearly articulated concepts and objectives. This was especially the case for Anglo-French naval warfare from 1688 to 1918 (Chapters 1 and 3). Germany's unprecedented submarine blockade of World War I (also Chapter 3) was improvised using vessels acquired to counter another contingency (a close blockade of German ports) that did not happen.

After World War I, all the powers engaged in focused study of the blockades (Chapters 3, 4, 5, and 6). They selected lessons that they found congenial and applied them while mobilizing for the next war. World War II then gave economic warfare another novel dimension, that of strategic bombing, in which improvisation and learning by doing were key elements on both sides (Chapter 6).

A final difficulty is that in most cases that we discuss, the consequences of the attack on the economy remain hard to disentangle from the outcomes of a slow drip-feed or sudden avalanche of other measures that impede clear identification in retrospect. Rare exceptions are chiefly failures: the American Confederacy's failed attempt to sanction Britain by blocking its own exports of raw cotton (Chapter 2) and the failed sanctions on Italy and Japan (described in Chapters 4 and 5). We return to these issues below.

As a rule, our work suggests that the effects of economic sanctions and warfare have rarely been well anticipated. Believing in "King Cotton," the Confederate leaders (Chapter 2) relied too much on predictions that a cotton export embargo would be devastating. Similarly, German naval leaders (Chapter 3) believed that six months of unrestricted submarine warfare could starve Britain into surrender. Conversely, the expectation that even restricted sanctions could ruin economic life led to over-caution as the British and French tried to manage Italian and Japanese aggression (Chapters 4 and 5). Only the study of conduct can suggest the reasons: were the preparations based on deficient economic understanding, or was the conduct of economic warfare thrown off course by human weaknesses or by private agendas, or did the adversary have some hidden trump card that threw out the calculations?

4.2 The moving target

Who exercises agency in the conduct of economic warfare and sanctions? The language we use sets pitfalls for the unwary. The sanctions literature uses a shared terminology of "sender" and "target." One trap is to think of the sender as active, leaving the target in a passive role. As van Bergeijk (2021: 11-12) suggests, these terms are inadequate. The sender is not the only active player. Once the game is in play, the target has as many choices and as much agency as the sender. Because of this, the empirical relationship between sender and target is not one way. Another trap is to think of sending the sanction as a single act. Rather, the sending of a sanction is often the start of a lengthy interaction that can go back and forth through many cycles.

To illustrate, our chapters show that, when the economy was attacked, the expectation of the attacker was often that the adversary had two choices, to fold (i.e. to cease resistance) or to suffer (to accept the intended damage). But folding or suffering were rarely chosen. Instead the adversary could turn to surprisingly long list of other options, listed below and summarized in Table 3:

Table 3 near here

- To retaliate with countersanctions or an economic counter-war: the mutual commerce raiding between Britain and France (Chapter 1); the Union blockade of the Confederacy (Chapter 2); Germany's submarine warfare against Britain in World War I (Chapter 3) and World War II (Chapter 6).
- To defend the economy by fighting off the attacker's ships and planes: Germany's attempt to break the Allied naval blockade in the Battle of Jutland in 1916 (Chapter 3); British antisubmarine warfare in World War I (Chapter 3) and World War II (Chapter 6); German air defence against Allied bombing (Chapter 6).
- To economize on domestic uses of blocked commodities; to create new domestic supplies through import-substitution: Britain and Germany in World War I (Chapter 3) and World War II (Chapter 6); Italy in the interwar period (Chapter 4) and Japan between the wars and in World War II (Chapter 5); Eastern Europe under CoCom sanctions (Chapter 7); South Africa under anti-apartheid sanctions (Chapter 8).
- To re-route existing trade through third-parties or otherwise conceal it from the attacker by smuggling commodities or technological secrets: Germany in the opening months of World War I (Chapter 3); Eastern Europe and Cuba in the Cold War (Chapter 7); Southern Rhodesia under UN sanctions (Chapter 8).
- To find new allies willing to provide markets or sources for the commodities that were sanctioned or blocked: Italy's interwar partnership with Germany (Chapter 4); the Soviet Union's formation of an East European trading bloc and Cuba's alliance with the Soviet Union (Chapter 7).
- Or, if suitable allies could not be found, to conquer adjacent territory to provide the same: Italy's African empire (Chapter 4); Japan's Greater East-Asia Co-Prosperity Sphere (Chapter 5); Germany's Drang nach Osten (drive to the East) (Chapter 6).
- To escalate violence in such a way as to win the conflict quickly, with the fighting power on hand today, before the economic losses accumulate and so diminish fighting power tomorrow: Japan's attack on Pearl Harbor (Chapter 5) and Germany's attack on the Soviet Union (Chapter 6), both in 1941.

Finally, if economic measures were threatened, and if the threat was credible, the adversary could exercise foresight by responding in any or all of the ways listed above *in advance*. In that case, the effects of the attack on the economy would come before their cause.

For the attacker to underestimate the range of options available to the adversary, the efforts and ingenuity with which they might be pursued, and the possible timeline of their implementation looks to us like a typical bias in the historical practice of economic warfare and sanctions.

4.3 Impact is followed by adaptation

At the end of the nineteenth century, influential observers believed that the industrialized world had arrived at a state of unparalleled fragility. Noting Britain's dependence on imported food, the Polish financier Jan Bloch (1899: lx) commented:

> A single cruiser let loose upon one of your great trade routes would send up the price of provisions enormously . . . any interference with the stream of food products which are indispensable for the sustenance of your people, would endanger you far more than the loss of a pitched battle.

What would happen next could be imagined in different scenarios. Bloch expected that, cut off from imported food, civilians would quickly starve. Angell (1910) supposed that, cut off from imported materials and export markets, factories would close, forcing workers into unemployment and their families into poverty. Either way, the speedy collapse of economic life would bring down civil authority and end military resistance.

In the histories that we discuss, describe, the speedy collapse did not materialize. Behind the scenes, the effects of external pressure were slowed and softened by economic adaptation. Somehow, life went on. It appeared that the attack on the economy might pass without serious repercussions.

The canonical studies of economic adaptation to economic warfare were conducted by Mançur Olson after World War II. Olson (1962) investigated the repercussions of the Allied bombing of Schweinfurt, home of Germany's ball-bearing factories, in 1943. Olson (1963) did the same for the blocking of Britain's food supplies by France in the Napoleonic war and by Germany in two World Wars.

Each of these cases saw a surprising outcome. The air attack on Schweinfurt was successful in destroying half of Germany's ball-bearing industry, yet there was no visible effect on war production (Chapter 6). Olson showed that, while ball-bearings were indeed "essential" for some types of vital military equipment, there were plentiful stocks of them and many inessential uses. When new ball-bearings were suddenly scarce, it was not difficult to concentrate the reduced supply on the narrow range of truly essential requirements.

Similarly, Britain, of all countries the most reliant on food imports, survived their interruption without hunger (Chapters 3 and 6). Precisely because Britain was the richest, most industrialized, and least agricultural of the European powers, it was possible in emergency to return marginal land and marginal workers to home food production and get quick results. Again, in the two world wars, Britain's import capacity came under sustained attack. The shipping space available in peacetime was exceptionally large, however, and carried a large volume of commodities for uses that were not essential in wartime. When war came, therefore, by strict rationing and controls, it was possible for a substantially reduced wartime merchant fleet to continue to meet all essential needs.

The foregoing discussion is limited to adaptation after the event. When the impact was anticipated, it could also be pre-empted by adapting beforehand. All three Axis economies attempted this in the 1930s (Chapters 4, 5, and 6). Expecting to be blockaded in wartime, they sought to insulate their economies by the pursuit of autarky (economic self-sufficiency) before war broke out. They also directed the opening moves of their aggressive wars to bring sources of imported food and war materials under colonial control. In those circumstances, impact was *preceded* by adaptation.

4.4 Adaptation is costly

The fact that the first impact of economic attack could often be mitigated by adaptation often gave a false impression: that nothing had happened. The hopes pinned on economic warfare or sanctions were inflated because they failed to predict adaptation. When adaptation smoothed things over, the false hopes were replaced by disillusionment, as if the attack on the economy has been completely neutralized, and that the damage had been made to go away without trace. But the disillusionment, like the false hopes, was overdone.

The model of impact and adaptation has important implications. The adversary's adaptation was inevitable and predictable. But adaptation was costly and had to be paid for. The price of adaptation was expressed by the drive to economize at the margin, to search for alternative sources and substitutes, and to raid inventories.

Olson's ideas suggest a multi-period model of adaptation to economic attack. In the first period, the economy loses supply of a commodity – food, oil, or some material that is thought essential to war production or to another regime goal. Olson maintained that the idea of an essential good misses the importance of its marginal value. At the margin, all commodities have inessential uses, and this must be as true of "essential" goods as of any other. Even though *some* of its uses may be essential, the good is no more essential at the margin than any other commodity. In the first period, therefore, the loss arising from economic attack can generally be made up by economizing at the margin, finding alternative sources and substitutes, raiding inventories, and cutting back on inessential uses. There is little or no effect on resources available for essential uses.

Economizing and substitution are costly, however. Entering the second period, therefore, the effect is to push up the marginal cost of all goods, including those thought of as "essential." In the second period the economy has depleted reserves and reduced possibilities for further economizing. If the economic attack continues, the defence of regime priorities will require further cycles of economizing and substitution. This can continue only while worker households remain willing to exert increasing efforts and tighten belts. In other words, economic warfare works not through its immediate effects, which can generally be mitigated, but through the increasing costs of mitigation, which steadily hollow out the economy's reserves – the resources allocated to "inessential" uses such as civilian consumption.

The rising costs of adaptation were a factor in peacetime just as much as in the middle of an existential war. Between the wars, as noted previously, anticipation of sanctions and blockade in a future war led the Axis powers to seek to reduce their dependence on foreign trade through import substitution. To varying degrees they succeeded. The elimination of imports that were inessential or could easily be produced at home left them with greatly reduced foreign trade shares even before war broke out. This seemed to make them stronger.

But the imports that they failed to eliminate consisted increasingly of those essential commodities that could not be supplied domestically at any price – oil for most of Europe, high-quality iron ore for Germany, coal and oil for Italy, and iron and oil for Japan. Although the value of trade was reduced in the aggregate, its value *at the margin* rose. Contrary to expectation, import-substitution policies generally *increased* the economy's vulnerability to the loss of one more unit of imports. Meanwhile, civilian consumption had already started to feel the squeeze arising from trade limitation, so that the wearing down of civilian resources was already under way when war broke out.

The expected costs of adaptation to blockade presented the Axis leaders with a harsh dilemma: whether to gamble on a short war. In a short war leading to certain victory, there would be no need to bear the costs of adaptation, whether during the war or beforehand. But victory could not be guaranteed. In 1914, the Central Powers had gambled on Germany's quick victory over France and had lost. "Everyone's Armed Forces and Government must strive for a short war," Hitler remarked in May 1939. “But the government must, however, also prepare for a war of from ten to fifteen years’ duration. History shows that wars were always expected to be short . . .” (quoted by Overy 1994: 190).

For Italy and Japan as for Germany, bearing the costs of autarkic mobilization beforehand provided a degree of self-insurance against the likelihood of getting bogged down in a drawn-out conflict.

4.5 The displacement effect

Who would bear the costs of adaptation? The attack on the economy could be indiscriminate or selective. Indiscriminate measures targeted trade or infrastructure. Selective measures were aimed more precisely (or “smartly”) at regime goods (such as imported war materials or domestic war industries) or regime incomes (such as export revenues). It was hoped that selective targeting of the activities that directly supported the adversary’s goals would spare the lives and livelihoods of ordinary citizens.

As all our chapters show, however, economies were flexible under attack. Whether the attack was indiscriminate or smart, the regime would protect its priorities. Even if the immediate impact was successfully directed against regime goods or incomes, authoritarian rulers were generally able to displace the costs onto the ordinary citizens, and they encountered few scruples in doing so. Rerouting foreign trade or payments or investing in domestic capacities might be costly, but the government had enough fiscal and monetary means and coercive powers to compensate its servants and their enterprises by restricting the resources available to those outside the circle of power.

We call this shifting of the costs of adaptation the “displacement effect.” The displacement effect ensured that, whatever was chosen as the target for economic warfare or sanctions, the burden ultimately fell on ordinary people who were left with no choice but to economize, find substitutes and workarounds, tighten belts, and carry on.

The displacement effect would work up to a limit – the point at which civilians would have nothing left to give up. The existence of a limit set up another gamble: the adversary had to gamble on achieving its goal before the limit became binding. The failure of such a gamble was at work in the defeat of both Germany and Japan in 1945, although differently expressed.

Where the limit was, and when it would bind, was always uncertain beforehand. It is easy to think of the limit as physical, measured by hunger, sickness, and exhaustion (Chapters 5 and 6). But the limit also had moral and political elements. The moral element is measured by the will to exert effort and make sacrifices. The political element is reflected in the rising anxieties of political leaders as they called on the citizens to draw on reserves that they feared might no longer exist.

All that was certain was that a limit existed and that a process subject to a limit could not be pursued indefinitely. When the limit was reached, citizens would withdraw their cooperation, and the process would stop. In this model the economy responded to economic warfare in the same way that Mike Campbell (Ernest Hemingway's character in his novel *The Sun Also Rises*) went bankrupt: "Gradually, then suddenly."

4.6 Ceteris non paribus

Our project describes five moments when resistance collapsed: France in 1814/15 (Chapter 1), the Confederate States in 1865 (Chapter 2), Germany in 1918 (Chapter 3) and 1945 (Chapter 6), and Japan in 1945 (Chapter 5). Each of these moments of defeat was an "ultimate breakdown" (the words of Vickers 1943: 21-22) in which the "effects of economic war" became "completely merged with the phenomena of defeat."

The problem this raises is to what extent the historian can look back on the moment of defeat and isolate the particular contribution of economic warfare. While those just mentioned were extreme cases, in fact the same problem arises in all the episodes we consider, including those involving peacetime sanctions.

It was always hard to identify the effects of the attack on the economy with any confidence. A variety of factors could be invoked to explain the difficulty of causal inference, such as the indirectness and delays of transmission and the difficulty of holding other things equal over the time required for economic warfare or sanctions to work. One factor rises above all others in explaining the difficulty: the effects were always mediated by the adversary's responses.

The story of the adversary's response begins as we have already discussed. In the first instance the adversary, deprived of some existing source of an "essential" commodity, looked for some other source or substitute. The displacement effect shifted the burden onto civilian supplies, so that the ultimate effects of the attack was found in the wearing down of the civilian sphere.

This was never a complete model, however. As discussed above, the adversary's response to the attack on its economy might not be limited to economic adaptation. Military options among those already listed could also be brought into play, and some could be realized much faster than others. Whether the adversary would consider any of these a better response would depend on all the circumstances of the moment.

If we limited the case to economic adaptation, then to trace the arrow of causation might seem straightforward. Another problem then intervened, however: the civilian sphere was always affected simultaneously by other factors, not only random exogenous shocks, but also the endogenous burden arising from pursuit of the priority that originally led the adversary into conflict.

An illustration is Germany, blockaded in World War I (Chapter 3). Before the war, Germany imported approximately 20 percent of calories for human consumption. In the later stages of the war the German population suffered hunger deaths, diseases, and stunting, and these continued after the war while the Allied blockade continued. At the time it seemed straightforward to attribute the civilian suffering to the blockade. The blockade was indeed partly responsible, because it drastically curtailed Germany's import capacity. But the blockade was not the only factor, or even the largest factor. Germany's home production of food also declined, and the loss of domestic supply was three to five times greater than the loss of imports. The cause of the decline of home production was Germany's own war mobilization, which stripped German farms of young men and horses for the army and diverted supplies of machinery and nitrate fertilizers into the war industries.

German civilians starved not primarily because of the Allied blockade, but because Germany's own war effort imposed a large sacrifice on them – onto which the Allied blockade added a further, if smaller, burden. It was the combined effect that led to Germany's exhaustion and surrender.

4.7 Complementary force

Could economic warfare take the place of conventional warfare? Could economic sanctions get results without the need to prepare for war? Our histories suggest not. The attack on the economy was effective only when accompanied by some complementary force or credible threat of force.

Economic warfare entered the picture when a conflict became protracted. While conventional war occupied and eroded the adversary's fighting power today, economic warfare did the same for it tomorrow. In that sense, conventional war and economic war were complements. At the same time as today's losses required the adversary to find the resources to replace them, economic warfare diverted or destroyed the resources available. This was how conventional warfare and economic warfare combined to wear down the adversary's powers of endurance.

We find no cases in which a protracted war could have been won by economic warfare on its own. The eighteenth-century competition of Britain and France (Chapter 1) was not settled by raiding each other's commerce from time to time.

The rivalry was resolved only after the British joined in conventional war on the continent. The American Civil War was settled on the battlefield, where the Union blockade helped by cutting back the forces the Confederacy could equip and deploy (Chapter 2). In World War I, Germany could have survived the Allied blockade alone with relative ease (Chapter 3). What Germany could not survive indefinitely was the complementary pressure created by the armies on several fronts, which forced Germany to strip resources from its farms, just when food imports were shut off by blockade.

In World War II, German rearmament and war plans anticipated another blockade (Chapter 6). By contrast the role assumed by strategic air power was largely unexpected. Early hopes that long-range bombing might bring about Germany's defeat without the need to struggle for territory proved unrealistic. What economic warfare did was to weaken resistance to the Soviet Army in the East and the Allied armies in the West and bring forward the point of Germany's collapse.

In the Pacific theatre, an American naval blockade did much more economic harm to the Japanese islands than the Allied blockade to Germany in both World Wars (Chapter 5). Still, Japan could not have been defeated by blockade alone. In 1945, even after crushing military defeat, economic collapse, and the atomic destruction of two cities, a significant fraction of Japan's elite wished to fight on. Japan was defeated by everything, economic warfare and a range of complementary forces – not by any one force.

A related lesson applies to economic sanctions. The factor that too often made sanctions unproductive or counterproductive was the adversary's wide room for manoeuvre when threatened. Sanctions on their own could not be effective if the adversary remained free to find new allies, forge new trading partnerships, conquer new resources, or escalate violence to new levels. The effectiveness of sanctions required a complementary force to remove the room for manoeuvre.

In the rare cases when sanctions achieved quick results without violence, the adversary was small and lacked powerful allies. The would-be aggressor quickly drew back from a foreign adventure when credibly threatened by an overwhelming coalition (Mulder 2022: 151, 268). A great superiority of power was the complementary force that made those sanctions productive. By contrast, it was pointless for the Confederacy (Chapter 2), to sanction Britain by withholding an "essential" import of which multiple sources were available, when the Confederacy was a small power locked in its own conflict and Britain was a great power with a navy that dominated global sea routes.

In some circumstances the force that could complement an effective sanction was war readiness, which could have closed the gate to further escalation. But the gateway stood open when the peace was challenged by an established or rising power and the sanctioning powers were visibly unprepared for conflict.

The absence of a complementary force could be obvious in the moment. The authors of the League sanctions on Japan and Italy in the early 1930s (Chapters 4 and 5) neutered them because they feared that more serious sanctions could trigger a wider uncontrolled conflict, for which they were unprepared. When Japan seized Manchuria in 1931 the League powers were already committed to disarmament. When Italy invaded Abyssinia in 1935. British and French rearmament had barely begun. Faced with limited economic sanctions, the revisionist powers brushed them off. At the same time they correctly understood that those who sought to restrain them were militarily weak in the present but might become stronger in future: best to bring forward their own aggressive plans and preparations.

Credible war readiness was the complementary force missing from America's dealing with Japan in 1939 and 1940 (Chapter 5). US sanctions on Japan's supplies of oil and iron posed a serious threat to the Japanese economy and its war mobilization. The forward movement of the US Pacific fleet to Hawaii, which was intended to deter Japan, provided Japanese commanders with their best target.

After World War II the United States could sanction Cuba (Chapter 7). But the Cuban missile crisis ended with the superpowers' complementary forces stalemated. In that setting the Soviet Union could not be deterred from supplying the economic assistance that sustained the island regime. Economic sanctions on the apartheid regimes of Southern Africa (Chapter 8) worked only in combination with complementary force: years of relentless armed insurgency and non-violent resistance.

To conclude, economic warfare and sanctions became effective in a context framed by complementary force. For economic warfare, the complementary force was provided by conventional fighting power, which ensured that any attempt to escalate or widen a conflict would simply bring forward the adversary's exhaustion and defeat. For sanctions, the role of complementary force was deterrent: only readiness for war could stop the adversary from exercising the many outside options.

5. CONCLUSIONS

We draw data from three centuries of economic warfare and sanctions across four continents (Europe, North America, Africa, and Asia). How did economic warfare and sanctions work and how well did they work? To answer these questions requires us to isolate causes and effects from a complex, interactive process in a rapidly changing setting with many contingent intermediate choices and outcomes and long and variable time lags. The task is intrinsically difficult. It is only slightly easier for scholars with hindsight than it was for participants to learn from contemporaneous experience. With difficulty, therefore, and no doubt with the corresponding scope for error, we extract the following conclusions.

5.1 Surprising adaptability

1. Our field is thickly populated by unintended consequences. Those who made policy often failed to expect the unexpected.
2. The sender/target paradigm, interpreted too literally, presents the sender of a sanction as active and the target as passive or lacking in agency. In practice, the country targeted by economic attack could exercise choice over many options – military as well as economic, beforehand as well as concurrently.
3. Economic adaptation always attenuated the impact of economic measures. Measures of economic adaptation included economizing, trade diversion, technological and import substitution, and running down stocks.
4. Non-economic responses could also weaken the impact of economic attack. These ranged from self-defence to war escalation and the capture of external resources.
5. When economic attack was anticipated, it could be pre-empted by action beforehand. Measures of economic pre-emption included stockpiling and the pursuit of economic autarky. Measures of non-economic pre-emption included entering new alliances and starting pre-emptive wars.

5.2 The gradual accumulation of costs

6. All the possible responses to economic attack were costly. Just because a sanction or trade blockage was manageable or survivable does not mean that nothing happened. Rather, the effect took the form of a gradual accumulation of costs.
7. Wealthier, more marketized, more diversified economies were more resilient in the sense that they were better able to afford these costs. For example, a richer economy generally had more inessential uses of "essential" commodities, and this meant a greater capacity to economize in case of need.
8. The gradual accumulation of costs of economic warfare and sanctions took time to emerge. Rather than manifesting as a single act, it was normal for economic attack to develop into an interactive sequence of moves and countermoves. Consistently, immediate success was exceptional: it does not feature in any of our cases.

9. In other words, sanctions alone were a poor way to handle a crisis. Economic warfare alone could not produce a quick victory.

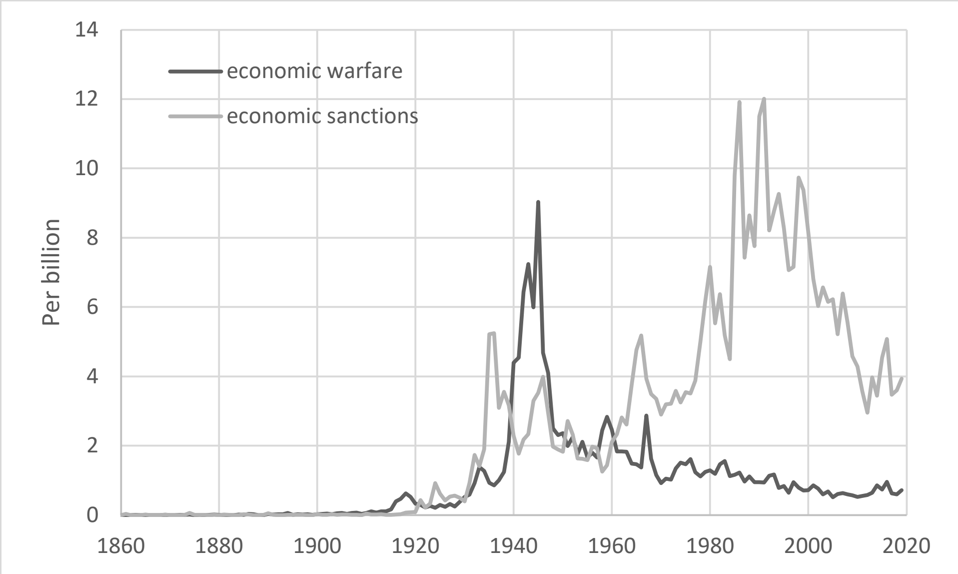
5.3 The displacement effect and the fundamental limit

10. In a flexible market economy, it was always possible for the regime under attack to make good its costs and losses by displacing the burdens of adaptation onto non-elites or non-combatants. The displacement effect would work as long as the civilian sector remained capable of bearing the burdens arising from conflict.
11. For the same reason, noncombatants or civilians were always the ultimate victims (and sometimes the first victims) of economic warfare and sanctions.
12. The fundamental limit that could end this process was the exhaustion of civilian reserves. “Exhaustion” was in large part material, but there was necessarily a moral and political factor.

5.4 The role of complementary force or threats

13. For another reason already mentioned – the wide range of options open to a country subject to economic attack – success generally eluded measures of economic warfare and sanctions unless they were accompanied by some kind of complementary force, which acted as a deterrent or forcible constraint to close off the outside options.
14. In peacetime, in other words, sanctions and other kinds of pressure such as investing in war readiness were generally not alternatives; they were complements. In wartime, conventional war and economic warfare were also complements.

Figure 1. "Economic warfare" and "economic sanctions": their frequency in printed books, 1860 to 2019 (per billion bigrams)



Source: A case-sensitive search for "economic warfare" over 1800 to 2019 (unsmoothed) on the Google Ngram viewer at https://books.google.com/ngrams/, using the English (2019) Google Books corpus. (A case-insensitive search is dominated by the existence of the UK Ministry of Economic Warfare from 1939 to 1945.)

Table 1. Combat, economic warfare, and sanctions: how they work

	Wartime:		Peacetime:
	Conventional warfare	Economic warfare	Economic sanctions
Purpose:	Destroy or weaken power to resist	Destroy or weaken power to resist	Weaken power to resist
Means:	Campaigns and battles on land, at sea, and in the air	Commerce raiding, blockade, bombing, sabotage	Legal embargoes on foreign transactions
Transmission of effects:	Direct attack on armed forces	Indirect through finance and supply	Indirect through finance and supply

Source: See the text.

Table 2. Three centuries of economic warfare and sanctions: a subject map

	Demand (market access) focus		Supply (capacity) focus	
Military actions:	Raiding trade and treasure	Chapters 1, 2	Naval blockade	Chapters 1, 2, 3, 5 6
			Aerial bombing	Chapters 3, 5, 6
Economic sanctions:	Export embargo	Chapters 2, 4, 7, 8	Import embargo	Chapters 4, 7, 8

Source: see the text.

Table 3. The adversary’s options under economic attack

	Economic responses	Non-economic responses
Concurrent responses:	Drawing down stocks	Air defence
	Economizing and substitution	Defence of shipping
	Trade diversion and import-substitution	Conquest of suppliers and markets
		Escalate war
Anticipatory responses:	Stockpiling	New alliances
	Economic autarky	Pre-emptive war

Source: see text

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